Islands District Council

Paper IDC 16/2010

Report on Environmental Impact Assessment Organic Waste Treatment Facilities Phase I in Siu Ho Wan, North Lantau

Purpose

At the **Islands** District Council meeting of June 2009, we briefed Members on the Government's proposal on the Organic Waste Treatment Facilities (OWTF) Phase I development at Siu Ho Wan, North Lantau (see Figure 1). This paper presents the results of the Environmental Impact Assessment Study on the proposed project.

2. The OWTF is designed to convert organic waste, mostly food waste, into usable resources, including compost and biogas. Compost is a form of organic fertilizer for farming and horticulture, while biogas is a renewable energy that can be used to generate electricity. Biogas from the OWTF Phase I could meet the electricity demand of 2,000 households, thus contributing to the reduced use of fossil fuel and the reduction of greenhouse gas emission. In addition, through the operation of the OWTF, some

200 tonnes of food waste could be diverted from landfills every day, thereby helping to lengthen the landfills' life spans.

Background

3. At present, Hong Kong disposes of about 9,400 tonnes of municipal solid waste at landfills every day. This amount includes some 3,000 tonnes of food waste, of which about 850 tonnes are from the industrial and commercial sectors. The disposal of such biodegradable waste direct to the landfills is not sustainable as it leads to rapid depletion of the limited landfill void space and the formation of landfill gas and leachate that require proper treatment for the protection of the environment.

4. In *A Policy Framework for the Management of Municipal Solid Waste* (2005-2014) published in December 2005, the Government proposes that biodegradable waste (e.g. industrial and commercial food waste) should be source-separated and collected for recycling into usable compost products or renewable energy. This will yield the two-fold benefit of reducing waste deposit and recycling usable resources. To this end, we plan to build the OWTF for treating source-separated food waste.

Site Selection

5. In 2007, the Environmental Protection Department (EPD) conducted a site selection study in conjunction with the Planning

Department. Basing on criteria such as land planning, site size, surrounding areas, traffic/transport and infrastructure, several sites including Siu Ho Wan, North Lantau and Sha Ling Livestock Waste Composting Plant, Sheung Shui were identified for further assessment.

6 Results of the assessment indicate that the proposed site in Siu Ho Wan is suitable for the OWTF Phase I development. The site was zoned for use as a waste treatment facility. Other favourable factors such as there being no residential development nearby, the availability of infrastructure facilities including sewage treatment works and refuse transfer station in the vicinity, and good traffic and transport are identified during the assessment. All in all, Siu Ho Wan is considered to be a suitable site for the development as an OWTF.

The Proposed OWTF Phase I in Siu Ho Wan, North Lantau

7. OWTF Phase I shall handle some 200 tonnes of food waste per day. Industrial and commercial food waste will be converted into biogas and compost through anaerobic digestion and composting technologies. Major facilities provided at the OWTF would include:-

(i) Pre-treatment facilities – Incoming food waste would be unloaded in an enclosed waste reception area and then pre-treated through a trommel screen, overhead magnets and shredder, etc, so that materials that cannot be

treated could be sorted out.

(ii) Anaerobic digestion process – The pre-treated food waste would be fed into large cylindrical digesters for anaerobic digestion and then converted and separated into biogas and residue.

(iii) Post-treatment of digestate – After digestion, the residue would be put through a dewatering process and then treated and stabilized into usable compost by means of tunnel composting.

(iv) Energy recovery system – Biogas produced by anaerobic digestion would be converted into electricity and energy. To protect the environment, it is proposed that the surplus electricity would be exported to the grid to help reduce the use of fossil fuel.

(V) Air and wastewater treatment facilities – Centralized air pollution control and wastewater treatment units would be installed at the OWTF to treat the vented air extracted from sealed units and wastewater generated during treating of food waste.

8. The proposed site in Siu Ho Wan is accessible via Cheung Tung Road and Sham Fung Road adjacent to the North Lantau Highway. Our projection indicates that about 50 journeys would be made to the OWTF by enclosed waste vehicles every day for waste delivery when the facility completes and starts

operation. It is anticipated that the traffic impact on existing public road network of Lantau would be minimal.

Key Findings of the Environmental Study

9. We have submitted an *EIA Report on the Organic Waste Treatment Facilities Phase I* for the Director of Environmental Protection's approval in accordance with the Environmental Impact Assessment Ordinance. Details of the Report can be found at the EPD website (http://www.epd.gov.hk/eia).

10. The EIA Study was conducted basing on the reference design of the OWTF Phase I development. The objective of the Study was to provide information on possible environmental impact that could arise during construction and operation of the Project and other related activities conducted concurrently. Detailed studies and proposed solutions to environmental issues such as air quality, hazard to life, water quality, waste management, landscape & visual, noise, environmental monitoring and audit which could arise during the course of construction and operation of the facility are made in the Report. Salient points of the assessment are as follows:-

11. **Air quality** – The major sources of air emissions from the OWTF would be from the Centralized Air Pollution Control Unit, the cogeneration units and the standby flare. Notwithstanding that emissions from these sources are of a low level, we have

conducted a study on the cumulative air quality impact of possible emissions from the OWTF and other current and planned projects in the vicinity (including facilities such as Siu Ho Wan Sewage Treatment Works, North Lantau Refuse Transfer Station, as well as the power station, Chap Lap Kok Airport and major regional emission sources that contribute to the surrounding background air quality). Results of the Study show that the level of projected cumulative air quality is in line with the requirements of the Environmental Impact Assessment Ordinance Technical Memorandum (EIAO-TM).

12. During the operation of the OWTF, a Centralized Air Pollution Control Unit would be used to remove air pollutants, dust and odorous gas in the air extracted from the main buildings including the waste collection area, the compost unit and the wastewater treatment unit. In order to ensure that air quality complies with the emission standards and requirements set by EPD, a monitoring system would be installed inside the air vents of the OWTF. The EIA Study also proposes that, for the purpose of odour emissions control, odour monitoring work should be carried out in the vicinity of the OWTF.

13. **Hazard to Life** – As the OWTF is located close to Siu Ho Wan Water Treatment Works (SHWWTW), we need to evaluate the risks pose to construction workers and operational staff of the OWTF due to the transport, storage and use of chlorine associated with the Works.

14. Results of the quantitative risk assessment indicate that the impact of risks the SHWWTW poses on individuals and the community during construction and operation phases of the OWTF is at an acceptable level and would meet with the "*As Low As Reasonably Practicable*" principle upon implementation of the proposed mitigation measures.

15. **Other environmental impacts** – Other environmental impacts including water quality, noise, waste management and landscape and visual, are covered and scrutinized in the EIA Study. Results of the Study indicate that the project would meet the various requirements of the EIAO-TM upon implementation of the proposed mitigation measures.

16. **Environmental Monitoring and Audit –** The environmental monitoring and audit (EM&A) requirements for the Project have been specified in an EM&A Manual. We will refer to the plans set out in the Manual and monitor baseline operation/ compliance and the implementation of environmental protection/mitigation measures.

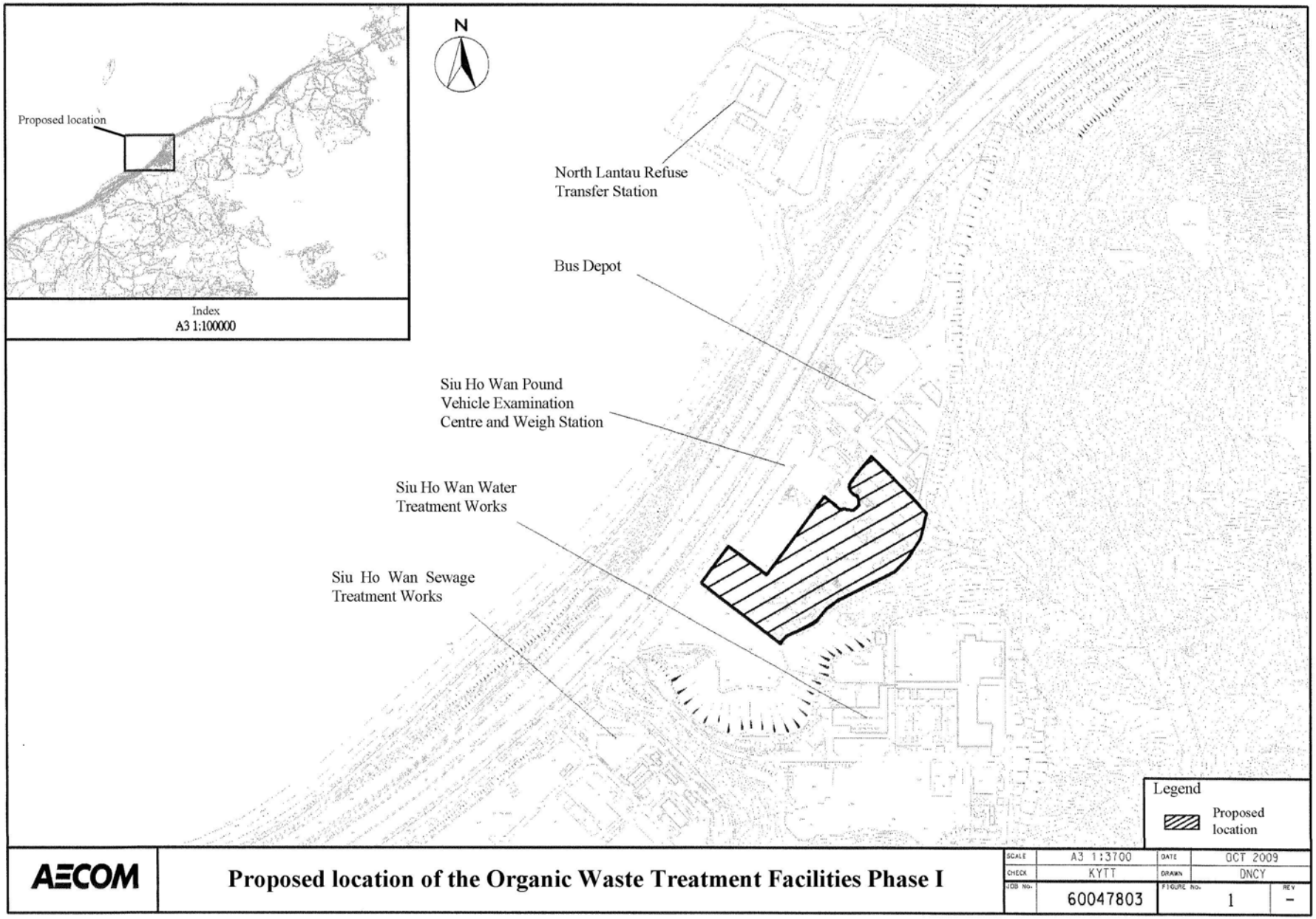
Conclusion

17. The EIA Study has examined the possible impact of the Project on the environment and the proposed mitigation solutions. It has been pointed out in the Report that environmental impact of

the project would be of an acceptable level with the implementation of the proposed mitigation measures and that no unacceptable residual impacts are envisaged

Environmental Protection Department

January 2010


Proposed location
Index
A3 1:100000
N
North Lantau Refuse Transfer Station
Bus Depot
Siu Ho Wan Pound Vehicle Examination Centre and Weigh Station
Siu Ho Wan Water Treatment Works
Siu Ho Wan Sewage Treatment Works
Legend
Proposed location
AECOM
Proposed location of the Organic Waste Treatment Facilities Phase I
SCALE A3 1:3700
DATE OCT 2009
CHECK KYTT
DRAWN DNCY
JOB No. 60047803
FIGURE No. 1
REV -