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ACE Paper 4/2009

For advice on 16 February 2009

Report on the 107th Environmental Impact Assessment Subcommittee Meeting

INTRODUCTION

On 21 January 2009, the Environmental Impact Assessment (EIA) Subcommittee considered the EIA reports on –

(a) Kai Tak Development (KTD) (submitted by the Civil Engineering and Development Department);

(b) Sludge Treatment Facilities (submitted by the Environmental Protection Department (EPD)); and

(c) Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate (submitted by ASB Biodiesel (Hong Kong) Limited).

ADVICE SOUGHT

2. Members are requested to consider the views of the Subcommittee and advise on the EIA reports.

Kai Tak Development
(ACE-EIA Paper 1/2009)

Need for the project

3. The EIA report points out that, during various stages of the public participation process conducted under the Kai Tak Planning Review, the general public aspiration is in favour of the early implementation of the project. There is a

need to implement the construction of supporting infrastructure as well as initiate the land disposal to materialize the full development of the land left vacant at the disused Kai Tak airport and its benefits to the surrounding hinterland.

Description of the project

4. The scope of the project consists of an engineering feasibility study of an urban development, with a study area covering about 328 ha in the south-eastern part of the Kowloon Peninsula, which constitutes a Schedule 3 designated project (DP) under the EIA Ordinance (EIAO), being greater than 20 ha in the study area. The project comprises the apron and runway areas of the former Kai Tak Airport and the existing waterfront areas at To Kwa Wan, Man Tau Kok, Kowloon Bay, Kwun Tong and Cha Kwo Ling. It also covers the Kowloon Bay, the Kwun Tong Typhoon Shelter (KTTS) and the adjacent water bodies. The project is estimated to result in a total population and employment of about 86,000 and 84,000 respectively.

5. The EIA has also identified the following 18 Schedule 2 DPs within the study area. The project location is shown in **Figure 1**.

(i) **DP1**: New distributor roads serving the planned KTD;

(ii) **DP2:** New sewage pumping stations serving the hinterland and the planned KTD;

(iii) **DP3a**: Decommissioning of the remaining parts [Ex-Government Flying Service Building and Radar Station] of the former Kai Tak Airport;

(iv) **DP3b**: Decommissioning of the remaining parts [Hong Kong Aviation Club site and existing Headquarters of the Electrical and Mechanical Services Department] of the former Kai Tak Airport;

(v) **DP4:** Decommissioning of the former Kai Tak Airport other than the North Apron;

(vi) **DP5**: Kai Tak Airport North Apron decommissioning;

(vii) **DP6**: Dredging works for proposed cruise terminal at Kai Tak;

(viii) **DP7**: Outdoor sporting facility of the proposed Stadium Complex;

(ix) **DP8**: Kwun Tong transportation link;

(x) **DP9**: 400kV electricity substation and transmission line;

(xi) **DP10**: Trunk Road T2 [including the associated dredging works and reconstruction of submarine sewage outfall from Kwun Tong Primary Treatment Works];

(xii) **DP11**: Central Kowloon Route;

(xiii) **DP12**: Shatin to Central Link;

(xiv) **DP13a**: Environment-friendly Transport System [if the selected transport system is rail type];

(xv) **DP13b**: Maintenance depot for Environment-friendly Transport System [if the selected type of transport system requires a depot];

(xvi) **DP14**: Submarine gas pipeline relocation;

(xvii) **DP15**: Pumping station of the Dry Weather Flow Interception Compound for Jordan Valley Box Culvert; and

(xviii) **DP16**: Upgrading of Kwun Tong Sewage Preliminary Treatment Works.

6. The above Schedule 2 DPs will require Environmental Permits for their decommissioning or their construction and operation. This EIA has been prepared to adequately address the environmental impacts of DP1, DP2 and DP3a without the need of further Schedule 2 EIA studies at a later stage, in addition to being a Schedule 3 EIA. Separate EIA reports have been completed for DP4, DP5 and DP6 and were approved under the EIAO. EIAs for the other DPs will be conducted in accordance with the project's development programme.

VIEWS OF THE SUBCOMMITTEE

7. Members noted that the public inspection period of the EIA report was

from 9 December 2008 to 7 January 2009. Public comments received by the EPD were circulated to Members for reference before the meeting. The response of the project proponent to some Members' questions and comments was circulated to Members for information before the meeting.

8. A summary of the issues discussed by Members is at **Annex A**.

RECOMMENDATION OF THE SUBCOMMITTEE

9. Members noted that the EIA report is a Schedule 3 EIA which includes three Schedule 2 DPs. Separate EIA reports on individual Schedule 2 DPs not yet approved under the KTD would be submitted to the Council for further examination. Since the major issues discussed concern the Schedule 3 EIA which would not involve the issue of an Environmental Permit, the Subcommittee agreed that it would be more appropriate to give some advice rather than specific conditions on the project. Having regard to the findings and recommendations of the EIA report and information provided by the project proponent, the Subcommittee agreed to recommend to the full Council that the current EIA report could be endorsed with the following proposed advice for the project proponent –

(a) to evaluate the effectiveness of the following package of odour mitigation measures on a regular basis by conducting detailed assessments having regard to changing circumstances, such as current flow, water circulation and flushing effect –

  (i) in-situ bioremediation sediment treatment by injecting liquid calcium nitrate solution into the upper sediment layers of the entire Kai Tak Approach Channel (KTAC) and KTTS;

  (ii) localized dredging within KTAC and KTTS;

  (iii) creation of a 600 m opening at the northern part of the former Kai Tak Runway to improve water circulation in KTAC and KTTS; and

  (iv) interception of polluted discharges in the hinterland of the project.

(b) to adopt energy-efficient and resource-saving measures to reduce the carbon footprint in order to achieve the objective of a low carbon environment and environment-friendly city in the KTD project.

Sludge Treatment Facilities
(ACE-EIA Paper 2/2009)

Need for the project

10. The proposed Sludge Treatment Facilities (STF) are to provide an alternative disposal means to replace the current practice of disposing sludge from sewage treatment works at landfills. The project would help save up the precious space of the existing landfills which are anticipated to reach their maximum capacities in early to mid-2010.

Description of the project

11. The STF is to be located in the Eastern Ash Lagoon at Tsang Tsui near Nim Wan of Tuen Mun as shown at **Figure 2**. Incineration technology will be adopted for the disposal of dewatered sewage sludge together with the residues from grease trap waste treatment facilities. The STF will be designed to treat about 2,000 tonnes of sludge per day at a 30% solids content from the Stonecutters Island Sewage Treatment Works and 10 other regional sewage treatment works.

12. As the STF will be located in the existing East Lagoon at Tsang Tsui, the project also includes the decommissioning of a part of the lagoon being used for disposal of pulverized fuel ash.

13. The project constitutes a DP by virtue of the following items in Schedule 2 of the EIAO –

(i) Item G.3, Part I – An incinerator with an installed capacity of more than 50 tonnes per day; and

(ii) Item 8, Part II – The decommissioning of a waste disposal facility for pulverized fuel ash, furnace bottom ash or gypsum.

Consideration of alternative options

14. The project proponent has identified a number of potential sites for the STF, including Lamma Island Quarry Site, Shek Kwu Chau, Ha Pak Nai, Tuen Mun

Port, Stonecutters Island, West Lamma Island, Siu Ho Wan, Tit Cham Chau and Nim Wan. The proposed site in Nim Wan is considered the most suitable for the STF because of its remoteness from residential areas and its location within an industrial setting with the Black Point Power Station and the West New Territories Landfill in the vicinity.

15. The EIA study has also evaluated the latest sludge treatment technologies, including incineration and heat drying. The study indicates that incineration is the most preferable option, mainly in view of the large reduction in volume of end products to be disposed to landfill sites.

VIEWS OF THE SUBCOMMITTEE

16. Members noted that the public inspection period of the EIA report was from 17 December 2008 to 15 January 2009. Public comments received by the EPD were circulated to Members for reference before the meeting. The response of the project proponent to some Members' questions and comments was circulated to Members for information before the meeting. Having considered the written response, the Subcommittee agreed that there was no need to invite the project proponent to attend the meeting.

17. A summary of the issues discussed by Members is at **Annex B**.

RECOMMENDATION OF THE SUBCOMMITTEE

18. Having regard to the findings and recommendations of the EIA report and information provided by the project proponent, the Subcommittee agreed to recommend to the full Council that the EIA report could be endorsed with the proposed condition that the project proponent should submit to the Director of Planning and the Director of Environmental Protection a landscape plan, including detailed mitigation measures, for any change in the landscape and visual design of the STF for agreement prior to the commencement of the operation phase of the project.

Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate
(ACE-EIA Paper 3/2009)

Need for the project

19. The project would offer a recycling outlet for waste cooking oil (WCO) and grease trap waste (GTW) by converting the oil and grease recovered into useful products including biodiesel, fertilizer and bioheating oil.

Description of the project

20. The project is located within the Tseung Kwan O Industrial Estate as shown at **Figure 3**. It has a capacity of 100,000 tonnes per annum. In addition to WCO and GTW, it would use other feedstock like Palm Fatty Acid Distillate (PFAD) and animal fats to produce biodiesel and three usable by-products, namely glycerine, fertilizer and bioheating oil. The project also includes the following components –

(i) a GTW pre-treatment facility (with a designed treatment capacity of 200,000 tonnes per annum) to recover oil and grease from GTW;

(ii) a wastewater treatment plant (with a designed treatment capacity of 170,000 m^3 per annum) for the treatment of wastewaters generated from the GTW pre-treatment facility and the biodiesel production process; and

(iii) storage and process tanks for the following materials: GTW, WCO, PFAD, animal fat, methanol, sulfuric acid, phosphoric acid, additives, biodiesel, glycerine, fertilizer, bioheating oil, gas oil and nitrogen.

21. The project constitutes a DP by virtue of the following items in Schedule 2 of the EIAO –

(i) item K.6, Part I – A chemical or biochemical plant with a storage capacity of more than 500 tonnes and in which substances are processed or produced;

(ii) item K.13, Part I – A dangerous goods godown with a storage capacity exceeding 500 tonnes; and

(iii) item L.4, Part I – A storage, transfer and trans-shipment of oil facility with a storage capacity of not less than 1,000 tonnes.

Consideration of alternative options

22. The EIA study considered various construction methods and operation arrangements (including materials for biodiesel processes, air abatement technology, wastewater management, materials transfer and on-site storage) for the project and adopted those suitable with a view to avoiding or minimizing adverse environmental impacts.

VIEWS OF THE SUBCOMMITTEE

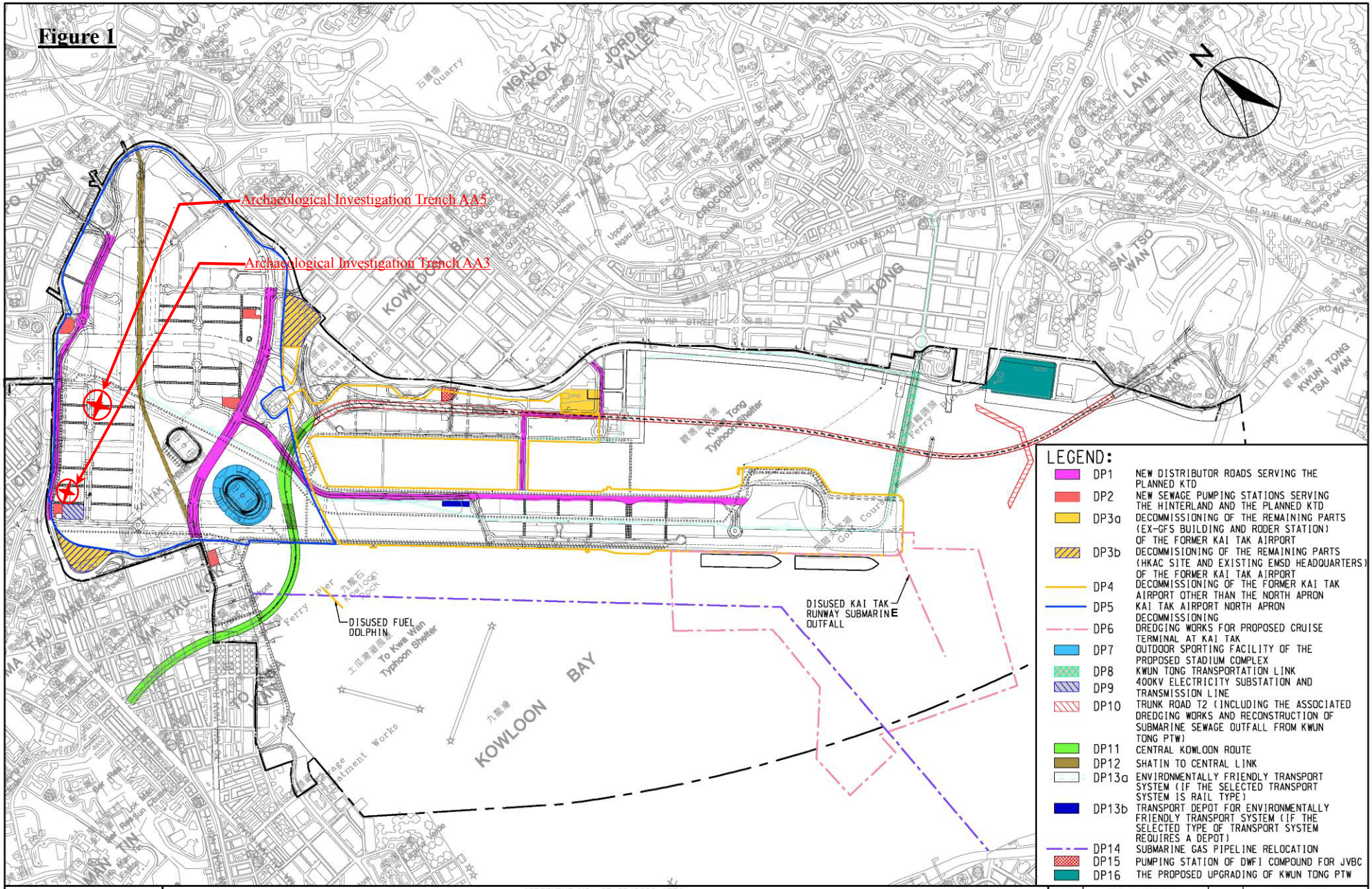
23. Members noted that the public inspection period of the EIA report was from 17 December 2008 to 15 January 2009. The public comment received by the EPD was circulated to Members for reference before the meeting. The response of the project proponent to some Members' questions and comments was circulated to Members for information before the meeting. Having considered the written response, the Subcommittee agreed that there was no need to invite the project proponent to attend the meeting.

RECOMMENDATION OF THE SUBCOMMITTEE

24. Having regard to the findings and recommendations of the EIA report and information provided by the project proponent, the Subcommittee agreed to recommend to the full Council that the EIA report could be endorsed without condition.

EIA Subcommittee Secretariat
January 2009

Figure 1



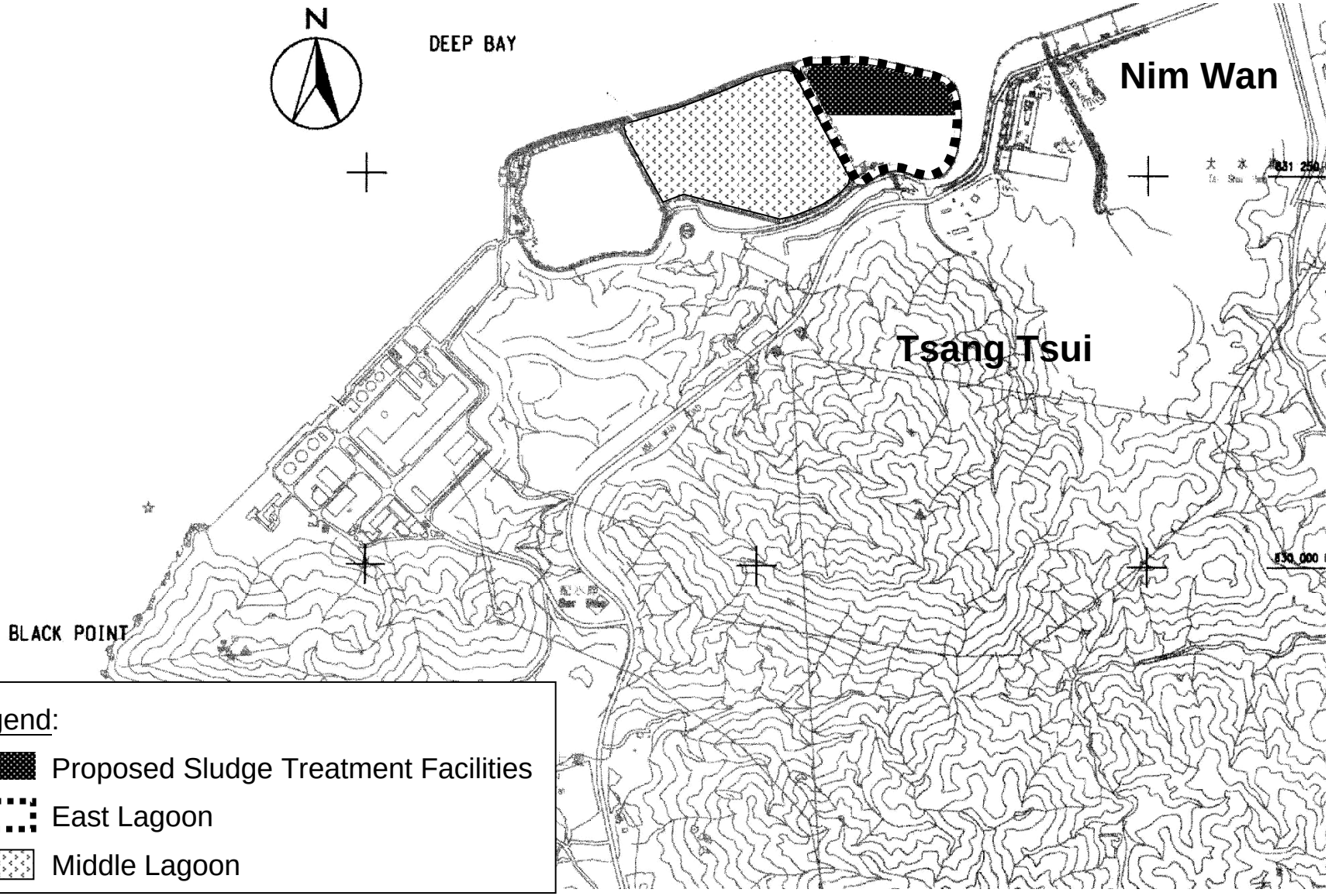
MAUNSELL | AECOM
Maunsell Consultants Asia Ltd

Figure 1

AGREEMENT NO. CE 35/2006 (CE)
KAI TAK DEVELOPMENT ENGINEERING STUDY CUM DESIGN AND CONSTRUCTION OF ADVANCE WORKS-INVESTIGATION, DESIGN AND CONSTRUCTION

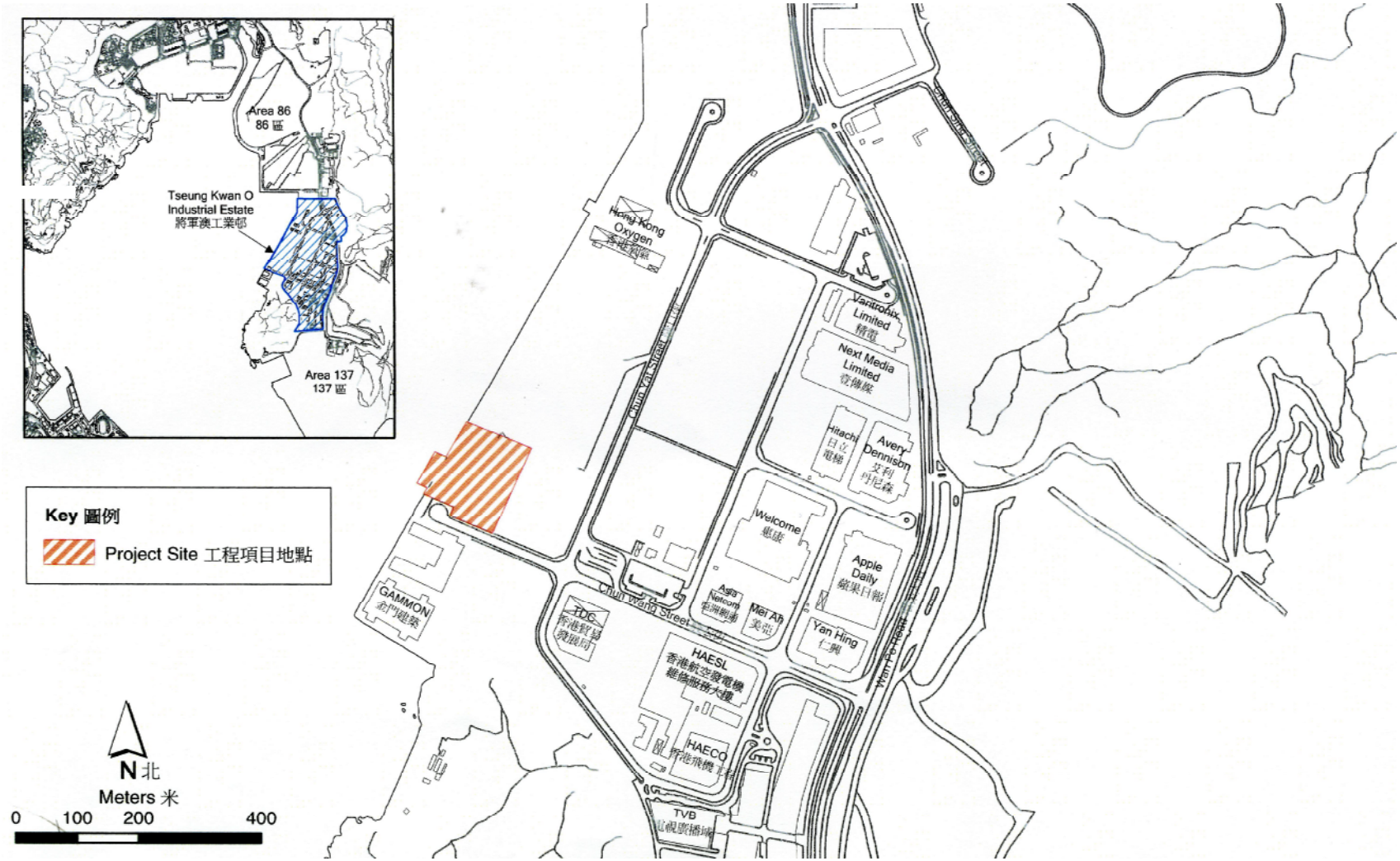
DESIGNATED PROJECTS

SCALE	A3 1:15000	DATE	OCT.2007
CHECK	–	DRAWN	LDF
JOB No.	60022503	DRAWING No.	1.2
		REV	–



Project Title : **Sludge Treatment Facilities**

Figure 2: **General Layout Plan** **(Reproduced from Figure 1 of the Executive Summary of the EIA Report)**



Project Title: **Development of a Biodiesel Plant at Tseung Kwan O Industrial Estate**

Figure 3: **Location Plan** (Reproduced from Figure 2.2a of the EIA Report)

Annex A

EIA report on Kai Tak Development
A Summary of Issues Discussed by the EIA Subcommittee
at the EIA Subcommittee Meeting on 21 January 2009

The Environmental Impact Assessment (EIA) Subcommittee discussed the EIA report on "Kai Tak Development" (KTD) at its meeting on 21 January 2009. The issues discussed are summarized below.

2. Members noted that the report was a Schedule 3 EIA which had identified 18 Schedule 2 designated projects (DP) within the study area. Among the 18 Schedule 2 DPs, three of them had been approved under the EIA Ordinance (EIAO) at an earlier stage, the EIAs of another three DPs were presented in the current EIA report and the EIAs for the other 12 DPs would be conducted in accordance with the development programme and submitted to the Council for further examination.

Odour emission impacts

3. Concerning the in-situ bioremediation treatment, the project proponent team explained that it was a process of injecting liquid calcium nitrate solution into the upper layer of the underlying sediment on the seabed of the entire Kai Tak Approach Channel (KTAC) and Kwun Tong Typhoon Shelter (KTTS). Similar technology had been adopted to address the odour problem at Shing Mun River Channel and Sam Ka Tsuen Typhoon Shelter. While Shing Mun River Channel was an inland water channel subject to comparatively less tidal mixing, KTAC was largely open marine water subject to tidal effects with flushing from discharges of Kai Tak Nullah and other drainage outfalls. Drawing on the practical experience from these previous bioremediation treatment projects, field trials were specifically conducted in KTAC to ascertain the effectiveness of the sediment treatment approach. The trial results proved that in-situ bioremediation treatment could successfully reduce odour emission from the sediment at KTAC and KTTS. The full-scale application would take about two to three years to complete. Coupling with other measures, such as creating a 600 m gap opening at the ex-runway, to be adopted as a package of odour mitigation measures, the assessment showed that the odour intensity at adjoining land of KTAC and KTTS could be significantly reduced. Nevertheless, further treatment would be anticipated at localized spots of KTAC such as areas adjacent to major drainage outfalls. The actual performance of these mitigation measures would be closely monitored under the Environmental Monitoring and Audit (EM&A) programme and the need for further application of the in-situ bioremediation would be subject to review. It was noted from the bioremediation treatment conducted for Shing Mun River Channel that the odour

condition remained satisfactory yet the works had been completed for over four years.

4. Regarding the effect of the calcium nitrate on the bottom sediment, which had been anaerobic for a long period of time, the project proponent team explained that based on sediment samples taken on site, the odorous part of the sediment was mostly confined to the top layer and the bottom sediment, which had been largely degraded, was less a concern. Indications from the field trials at KTAC were that treatment of the top 500 mm layer would suffice in reducing the surface odour emission.

5. As regards the implications of water current and flushing on the effectiveness of the bioremediation sediment treatment after opening of the 600 m gap at the runway, the project proponent team clarified that the opening would be constructed in phases and planned for completion after successful application of the in-situ bioremediation treatment at KTAC. It was anticipated that about 70% of the calcium nitrate would be consumed shortly after the injection and the residual nitrate in the sediment would serve as a capping layer to prevent odour emission. After opening of the gap at the ex-runway, the odour emission would also be alleviated by means of increased dissolved oxygen levels in water resulting from the enhancement of water circulation in KTAC and KTTS.

6. Concerning the environmental impacts arising from leakage of calcium nitrate into the water, the project proponent team explained that the liquid calcium nitrate would be injected into the sediment through nozzles of the injection line to ensure the calcium nitrate would not be released into the water. The field trials showed that the loss of calcium nitrate into the water was minimal.

7. On the public acceptability of the residual odour level of about 32 odour unit (OU)/m^3, the project proponent team explained that the predicted residual odour level was based on the worst-case scenario, such as very hot season and low tide period, thus the impacts would be intermittent. Reference was also made to some odour levels recently recorded at sensitive receivers along Shing Mun River Channel (i.e. after mitigation) at about 37 OU/m^3 over an averaging time of several minutes rather than seconds, which did not attract any complaints from the public. A comparison of the predicted residual odour level with equivalent hydrogen sulphide concentration was presented in the EIA report. Indications were that the predicted residual odour level of 32 OU/m^3 would be thousands times below the threshold of hydrogen sulphide content that would cause any health impacts. In the light of the above, it was concluded that the residual odour impact would be acceptable.

8. Some Members considered that acceptance of the odour level at Shing Mun River Channel would probably be due to the fact that the residents had already got used to the odour. The situation of this project might be different as residents were to move into KTD. The project proponent team explained that the proposed residential development would be at a distance from areas with predicted highest residual odour

level, such as the culvert outfalls and upper part of KTAC, which were planned for roads and part of Metropolitan Park on the deck above the 600 m gap.

9. On the question of any contingency plans in the event the odour level was found not acceptable, the project proponent team indicated that an odour monitoring programme would be put in place under the EM&A programme to ascertain the effectiveness of the proposed mitigation measures after implementation. While there might be opportunity that some odour exceedances might occur at culvert outfalls and near channel embankment, localized dredging would be an option where necessary to address these localized issues. Furthermore, silt traps and additional intercepting facilities could be considered to facilitate regular maintenance and minimize the continuous inflow of polluted discharges into the channel.

10. Regarding the availability of field trial results of the bioremediation treatment, the project proponent team confirmed that the key findings were included in the EIA report, which had been available in the EIAO register.

Air quality impacts

11. On the control of air emissions such as sulphur dioxide from vessels in the cruise terminal to be located at the runway tip, the project proponent team explained that the assessment of air quality impacts from cruise vessels based on the current international standard of fuel quality under MARPOL Annex VI was considered as the worst-case scenario. With continuous efforts to improve and tighten control on the fuel quality, the air emissions from cruise vessels were expected to be improved. Moreover, there would be provision for the installation of onshore power supply facilities at the cruise terminal in future to minimize emissions from vessels. While there were not many ocean-going vessels currently equipped with the necessary facilities onboard to make use of the onshore power supply, it was a long-term objective in the cruise industry that vessels had to install such facilities. Some exceedances of air quality standards were predicted at the commercial developments within the proposed Tourism Node adjacent to the cruise terminal. It was recommended in the EIA report to locate the fresh air intakes of the central air-conditioning systems of these buildings to lower levels to avoid direct impingement of emissions from cruise vessels.

Marine ecology

12. As to the translocation of coral being directly affected by the project, the project proponent team advised that reference would be made to the successful experience of translocating coral colonies in other projects. The coral translocation approach was the same as that adopted in the EIA report for the cruise terminal dredging

works which had already been endorsed by the Council.

Waste management

13. On the disposal of construction and demolition (C&D) materials, the project proponent team explained that the 600 m gap opening at the runway which was about 600 m by length and 250 m by width in plan, was a major source of C&D materials. Of the estimated amount of 5.95 million m^3 of C&D materials generated, about 2.73 million m^3 would be reused. The remaining 3.22 million m^3 might be reused at other project sites and/or disposed of at public fills.

14. On the disposal site of the C&D materials, the project proponent team advised that the C&D materials, which could not be reused, would be disposed of at public fills to be allocated by the relevant authority and in-principle agreement on possible receiving sites had been sought.

Carbon footprint

15. On the application of the low carbon economy concept in the design of facilities in KTD, the project proponent team explained that the EIA study had been conducted in accordance with the EIA Study Brief. There was no established guideline on the assessment of the new low carbon economy initiatives and thus assessment on carbon footprint was not made. Nonetheless, one of the key planning themes of KTD was a green and environment-friendly community with low carbon footprint. Thus, a number of environment-friendly facilities had been incorporated in the project, including the provision of 90 ha of greenery open space out of the project site of about 320 ha, district cooling system, environment-friendly transportation system, Kai Tak River at the north apron, stepped height profiles to enhance ventilation at hinterland, improvement of air circulation by aligning the building orientation along the prevailing wind direction and elimination of obstructive high-rise podiums and avoidance of the use of noise barriers.

16. Some Members considered that it was a good opportunity to implement some green and environment-friendly initiatives such as using more renewable energy and planting more trees in KTD, as it was a major infrastructural project in Hong Kong. The project proponent team advised that the use of energy efficient features and renewable energy technologies would be considered in the design of government projects on "Government, Institution, and Community" sites according to the prevailing guidelines. Given the Government's initiatives and the development time-frame of about 20 years for the project, the low carbon initiatives would be taken forward as far as practicable.

17. The project proponent team further explained that a district cooling system would be implemented to centralize the supply of chilled seawater to developments for cooling purposes. Although the cost of developing the system would take a relatively long pay back period, the Government considered that the proposal should be pursued for environmental sake. On the impacts of residual chlorine discharged from the proposed district cooling system, a feasibility study was being undertaken separately by the Electrical and Mechanical Services Department. The EIA study had also assessed the possible impacts due to the discharge of residual chlorine from the system. The result concluded that the impacts would be localized and acceptable.

18. On the type of proposed environment-friendly transportation system, the project proponent team advised that the exact mode of transportation system had yet to be determined. One of the possible options would be the monorail system.

Annex B

EIA report on Sludge Treatment Facilities
A Summary of Issues Discussed by the EIA Subcommittee
at the EIA Subcommittee Meeting on 21 January 2009

The Environmental Impact Assessment (EIA) Subcommittee discussed the EIA report on "Sludge Treatment Facilities" (STF) at its meeting on 21 January 2009. The issues discussed are summarized below.

Capacity of the Sludge Treatment Facilities

2. Some Members noted that the quantity of dewatered sewage sludge generated from the major treatment works would significantly increase from over 800 wet tonnes/day currently to about 1,430 wet tonnes/day in 2014 after the commissioning of the Harbour Area Treatment Scheme Stage (HATS) 2A and the upgrading works of the Pillar Point Sewage Treatment Works. The sludge quantity would further increase to about 2,185 wet tonnes/day in 2020 after the commissioning of the HATS Stage 2B. The design capacity of the STF was about 2,000 wet tonnes/day. On whether the capacity of the STF could be increased to reach 2,200 wet tonnes/day to meet the projection of 2,185 wet tonnes/day in 2020, the Environmental Protection Department (EPD) advised that the project proponent had confirmed that the proposed STF was designed to handle 2,000 wet tonnes/day by 2016. The STF site allowed some room for future expansion. Should circumstances arose which rendered the projection of a significantly higher throughput beyond the current design capacity of the STF and subject to the then sludge disposal strategy and findings of future EIA study, the STF could be further expanded to cope with higher sludge throughput.

Landscape and visual impacts

3. On the visual impacts of the STF, EPD advised that the current preliminary landscape and visual design for the development was considered acceptable by the Planning Department. If there was any change to the design of the STF, the consent of the Planning Department on the landscape and visual impacts would be necessary.

Ecological impacts

4. Regarding the impacts of the construction on the potential breeding ground of Little Grebe in the East Lagoon, the Agriculture, Fisheries and

Conservation Department advised that the East Lagoon was a dried up watercourse with low ecological value. It was not the main foraging and breeding ground for Little Grebe and thus compensation was not required. The EIA report confirmed that an alternative habitat in the adjacent Middle Lagoon would be available for the Little Grebe and an enhanced pond habitat for the Little Grebe would also be created within the proposed STF site.