

**Confirmed Minutes of the 138<sup>th</sup> Meeting of  
the Environmental Impact Assessment Subcommittee  
on 20 February 2017 at 2:00 pm**

**Present:**

Professor TAM Fung-ye, Nora, B.B.S., J.P. (Chairperson)

Dr HUNG Wing-tat, M.H. (Deputy Chairman)

Ir Cary CHAN

Dr Billy HAU

Ms Julia LAU

Dr Michael LAU

Professor Albert LEE

Professor Kenneth LEUNG

Ir Professor Irene LO

Ir MA Lee-tak, S.B.S.

Professor John NG

Dr Eric TSANG

Mr Simon WONG, J.P.

Mr Luther WONG, J.P.

Professor WONG Sze-chun, B.B.S., J.P.

Ms Becky LAM (Secretary)

**Absent with Apologies:**

Mr Andrew LEE

Ir Michelle TANG

**In Attendance:**

Mr K F TANG

Assistant Director (Environmental Assessment),  
Environmental Protection Department (EPD)

Mr Simon CHAN

Assistant Director (Conservation), Agriculture,  
Fisheries and Conservation Department (AFCD)

Mr Louis CHAN

Principal Environmental Protection Officer (Regional  
Assessment), EPD

Mr Simon HO

Senior Environmental Protection Officer (Regional  
Assessment) 5, EPD

Ms HO Ching-ye

Senior Nature Conservation Officer (South) , AFCD

Ms NG Ka-yan, Connie

Nature Conservation Officer (Lantau), AFCD

Miss Dora CHU

Executive Officer (CBD) 1, EPD

Miss Apple LEUNG

Executive Officer (CBD) 2, EPD

**In Attendance for Item 2:**

Mr Philip YIP

Environmental Protection Officer(Regional Assessment) 52, EPD

Project Proponent Team

*Drainage Services Department*

Mr KWOK Ping-keung, Chief Engineer / Consultants Management  
Mr CHEN Lan, Senior Engineer / Consultants Management 1  
Mr OR Yan-kin, Engineer / Consultants Management 3

*Black & Veatch Hong Kong Limited*

Mr Summer CHOW, Technical Director  
Ms Amy CHEUNG, Technical Director  
Mr Barton LEUNG, Engineer  
Mr Brian TONG, Assistant Engineer

*ERM-Hong Kong, Limited*

Mr Terence FONG, Partner

**In Attendance for Item 3:**

Mr T S SO

Environmental Protection Officer(Regional Assessment)51, EPD

Project Proponent Team

*Drainage Services Department*

Mr KWOK Ping-keung, Chief Engineer / Consultants Management  
Mr CHEN Lan, Senior Engineer / Consultants Management 1  
Mr CHAN Chi-kwong, Engineer / Consultants Management 6

*Atkins China Limited*

Ms Ying XIAO, Project Manager  
Ms Wing WONG, Associate Director  
Mr Gilbert CHOW, Project Engineer  
Mr Keith CHAU, Senior Environmental Consultant  
Mr Simon TANG, Water Quality Consultant

*Ecosystems Limited*

Mr Vincent LAI, Managing Director  
Dr Hon-kai KWOK, Senior Ecologist

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Action

The Chairperson welcomed Ms Julia Lau, Prof Kenneth Leung, Mr Simon Wong and Prof Wong Sze-chun who had been newly appointed as ACE members and joined the EIA Subcommittee (EIASC) in the new term, and that

apologies of absence had been received from Mr Andrew Lee and Ir Michelle Tang. The Chairperson informed Members that Dr Hung Wing-tat would continue to serve the Subcommittee as the Deputy Chairman.

**Item 1: Matters arising**

2. The Chairperson informed Members that the EIASC last met on 21 November 2016 to discuss the EIA reports on “Expansion of Sha Tau Kok Sewage Treatment Works” and “Port Shelter Sewerage Stage 3 - Sewerage Works at Po Toi O”. The minutes of the meeting had been confirmed by circulation and uploaded onto the website of ACE, and the information on the approval of the EIA reports with conditions on “Hung Shui Kiu New Development Area”, “Kai Tak Multi-purpose Sports Complex”, “Proposed Low-rise and Low-density Residential Development at Various Lots and their Adjoining Government Land in D.D. 104, East of Kam Pok Road, Mai Po, Yuen Long. N.T.” and “Port Shelter Sewerage, Stage3 - Sewerage Works at Po Toi O” was circulated to all ACE Members.

**Item 2 : Discussion on the EIA report on “Outlying Islands Sewerage Stage 2 – South Lantau Sewerage Works”**

*(ACE-EIA Paper 1/2017)*

3. The Chairperson advised that the meeting would discuss the EIA report on “Outlying Islands Sewerage Stage 2 – South Lantau Sewerage Works”. The public inspection period of the report was from 18 November to 17 December 2016. A total of four public comments had been received by EPD and the gist of major issues/concerns had been circulated to Members before the meeting.

4. The Chairperson informed that the discussion would be divided into the Presentation and Question-and-Answer Session which would be open to the public while the Internal Discussion Session would remain closed.

5. The Chairperson invited declaration of interest from Members. A Member, being a member of WWF, advised that the renewal programme of facilitates at Mai Po had engaged Thomas Chow Architects and various consultants including AECOM Asia Company Ltd., Ove Arup & Partners Hong Kong Ltd., SMEC Asia Ltd., PlanArch Consultants Ltd., Allied Environmental Consultants Ltd. and Arcadis Design & Engineering Ltd. He also advised that WWF had submitted comments to EPD on the EIA reports to be discussed. A Member declared that she was engaged in a consultancy project with the Black &

Veatch Hong Kong Ltd. which had no relevancy with the EIA reports to be discussed. A Member also declared that he was commissioned to a research contract by the Drainage Services Department (DSD) to review the potential of all DSD facilities in promoting urban biodiversity. The research had no direct relationship with the two EIA reports to be discussed. The meeting agreed that the Members could stay on and continue participating in the discussion.

6. The Chairperson reminded Members to keep confidentiality of the discussion on the EIA reports to be discussed.

*[The project proponent team joined the meeting at this juncture.]*

### **Presentation Session (Open Session)**

7. Mr Kwok Ping-keung gave an opening remark and with the aid of a powerpoint presentation, Mr Summer Chow and Mr Terence Fong followed to brief Members on the background, needs and benefits of the project, key findings of the environmental impact assessment (EIA) and public concerns raised during public inspection period.

### **Question-and-Answer Session (Open Session)**

#### ***Water quality impacts***

8. Given the close proximity to Pui O Bay and the need to overcome large topographical difference, a Member asked the project proponent to justify the choice of location for constructing the San Shek Wan Sewage Treatment Works (STW). Mr Kwok Ping-keung explained that the project site was currently occupied by the China Light and Power Company (CLP) as a depot under a short term tenancy contract, and thus no land resumption would be required for the construction of the sewage treatment plant. While alternative sites had been explored, the proposed site was considered to be associated with the least potential environmental impacts.

9. Addressing a Member's concern regarding the impact of the project on the water quality of Pui O Bay and Pui O Beach, Mr Kwok said that the treated effluent of the San Shek Wan STW would be discharged via a 1.1 km long submarine outfall into the outer bay of Pui O. Membrane Bioreactor (MBR) was proposed as the sewage treatment technology for the STW to maintain superior effluent quality. With reference to the modeling results, Mr Terence Fong advised

that the effect of the treated effluent on water quality have no adverse impact on the beaches.

10. In reply to a Member's enquiry on whether there was any contingency plan for storage of sewage in case of power or equipment failure at the San Shek Wan STW and/or the sewage pumping stations (SPSs), Mr Terence Fong advised that an emergency storage of 6-hour average dry weather flow (ADWF) would be provided to allow time to restore the facilities. He mentioned that under the worst case scenario where the STW and all SPSs were broken down, a maximum 8 hours would be required to restore all the facilities. While there would be a risk of raw sewage discharge for 2 hours into the adjacent streams, he said that the SPSs were mainly located at lower sections of the streams and away from water quality sensitive receivers, and the water quality after the emergency discharge event was predicted to be rapidly restored to the background level within one or two days. Mr Kwok Ping-keung anticipated that emergency discharge would only happen in the very extreme emergency scenario which was highly unlikely to occur. Nevertheless, he assured Members that dual power supply and standby equipment would be provided for the STW and SPSs to minimize the potential of unplanned events and emergency discharge of untreated sewage. According to past experience, he advised that the emergency team would arrive within two hours to restore any broken-down facilities.

11. With the concern that the discharge of raw sewage would impact on environmentally sensitive streams, a Member suggested that the capacity of emergency storage be expanded to 8-hour ADWF. Mr Summer Chow advised that emergency discharge would only occur if all SPSs fail at the same time during a power outage. With dual power supply, standby pumps and emergency storage, he considered that emergency discharge was highly unlikely to happen in reality. Mr Kwok Ping-keung supplemented that the capacity of emergency storage had already been increased from the initial proposal of 4-hour to 6-hour ADWF to reduce the risk of emergency discharge. He pointed out that further increasing the capacity of the emergency storage would require expanding the project area and in turn increasing the environmental footprint of the project. Mr Terence Fong advised that in cases where only one or two SPSs broke down, the facilities could be restored within two hours.

12. Considering the importance of timely restoration of facilities when unexpected events occur, a Member enquired about the deployment of the emergency team and the operations of the monitoring system. He suggested that DSD should look into the arrangements for collecting and discharging rainwater at

the SPSs during the detailed design stage to reduce flood risks.

13. Mr Kwok Ping-keung explained that a maintenance crew would station in San Shek Wan STW to conduct inspection and maintenance. Through a remote control and monitoring system, the maintenance crew would be immediately alerted of any irregularities at the SPSs. During non-office hours, an existing mobile team from Mui Wo STW would back up the maintenance crew in San Shek Wan STW. Besides, an emergency team and duty officers of the electrical and mechanical branch of DSD would standby to handle any emergencies during non-office hours. He thanked the Member's suggestion and advised that necessary adjustments to the design or mitigation measures would be deployed based on the findings of the drainage impact assessment which would be conducted for all SPSs to evaluate flood risks.

14. In reply to a Member's enquiry regarding the possibility of extending the length of the submarine outfall with a view of further reducing the water quality impact of the treated discharge on Pui O Bay, Mr Terence Fong explained that by means of computational modelling, the effects of effluent discharged from the proposed submarine outfall on water quality was assessed. The results showed that the water quality impact would not result in adverse impact on the beaches. He added that further lengthening the submarine outfall might encroach into the area with submarine cables of the Integrated Waste Management Facilities. Mr Kwok Ping-keung supplemented that given no adverse impacts on the water quality was expected, it might not be necessary and cost-effective to lengthen the proposed submarine outfall to beyond 1.1 km.

15. As the STW and SPSs were located near to a bathing beach and ecologically sensitive streams, a Member suggested that DSD should make reference to its other project, i.e. "Port Shelter Sewerage Stage 3 - Sewerage Works at Po Toi O", which was committed to deploying tankers for transporting of sewage away to other sewage treatment plants for treatment in cases of power or equipment failure. Mr Kwok Ping-keung agreed to consider the possibility of including the measure in the contingency plan to further enhance the buffer capacity for emergency storage.

16. A Member asked and Mr Summer Chow replied in the affirmative that alternative methods and designs for sewage treatment at South Lantau had been considered. One of which was centralized sewage treatment in Mui Wo STW to cater for the sewage treatment needs of South Lantau, and the other proposal was to provide decentralized treatment at San Shek Wan and Tong Fuk Village. After

extensive studies and reviews, a STW at San Shek Wan was recommended as it was considered to have less environmental impacts and a smaller physical footprint.

17. A Member pointed out that the treated discharge could still contain drug residues such as antibiotics and hormonal drugs. Given the proximity of the outfall to Pui O Beach, he was concerned that the pollutants would lead to acute and/or chronic response in swimmers. He sought information on the size of the mixing zone in both dry and wet seasons, and the far field and near field modelling results in terms of the concentration of various parameters, including *E. coli*, ammonia and total inorganic nitrogen (TIN).

18. Mr Kwok Ping-keung mentioned that the San Shek Wan STW mainly treated domestic sewage. With the adoption of the MBR technology, the quality of the treated effluent would exceed the requirement for secondary treatment and the discharge was expected to have an insignificant impact on the water quality. Under heavy rain conditions, it was expected that the concentrations of suspended solids would increase, and the other parameters would become more diluted. Mr Terence Fong advised that the extent of the mixing zone was estimated at around 400 metres.

19. The Chairperson and a Member pointed out that the current legislation had no control over the domestic disposal of pharmaceutical and personal care products (PPCP), and the treatment standards did not account for the concentrations of such pollutants. Considering the potential impact of PPCP on the water body and the ecology, the Member opined that the inclusion of such materials for treatment in the STW should be considered. Mr Kwok Ping-keung explained that the design of the STW had to comply with the current legislation. The determination of the sewage treatment level for individual STWs would take into consideration the geographical conditions and resilience of the receiving water bodies. The requirements of effluent discharge were stipulated in discharge licenses issued by EPD. In view that the impact of PPCPs was receiving increasing amounts of international attention, the Member suggested that there should be sufficient room reserved for expansion to cater for future policy changes in enhancing the treatment standards.

20. With reference to the hydrology, a Member said that lengthening the submarine outfall to beyond 3 km into a zone of stronger water current could help reduce the size of the mixing zone. He suggested that DSD should obtain modelling results on the water quality impact when lengthening the submarine

outfall from 1.1 km to 3 km.

21. Given that the sewage could be dispersed effectively when discharged via a 1.1 km long submarine outfall, Mr Kwok Ping-keung considered that it might not be cost-effective to lengthen the proposed submarine outfall. Mr Terence Fong advised that the current proposal could comply with the statutory requirements. Mr Summer Chow further supplemented that the submarine outfall would be constructed using the horizontal directional drilling (HDD) method. There could be technical constraints to lengthening the submarine outfall.

22. Considering that the reports of many studies showed that chlorine disinfection could give rise to carcinogenic disinfection by-products, a Member enquired about the reason of choosing chlorine disinfection instead of ultraviolet disinfection for San Shek Wan STW. Mr Kwok Ping-keung explained that ultraviolet disinfection required the construction of long channels and involved a higher maintenance cost. Due to physical constraints at the project site, the project team had opted for chlorine disinfection.

### ***Energy consumption and efficiency***

23. A Member enquired about possible measures for reducing the energy required for overcoming the topographical difference when pumping sewage from SPSs at low-lying areas to the STW at an elevated position. Mr Kwok Ping-keung mentioned that 9 SPSs were proposed initially, having accounted for the high energy consumption, the deep sewer option had been considered to cutting down the total number of proposed SPSs to 6. With a view to saving energy, the SPSs would shut down automatically under low flow conditions.

24. While acknowledging that there could be constraints in relation to land supply, a Member enquired whether it would be possible to construct more than one STW at South Lantau to reduce the energy required to pump sewage from the SPSs to the San Shek Wan STW. Mr Kwok Ping-keung explained that the installation of packaged plants in individual villages had been considered. However, such plants were insufficient to cater for the sewage treatment needs of villages with higher population, and there were concerns associated with the discharge of the treated sewage to sensitive areas such as the Cheung Sha Beach. It was considered that a centralized plant with a single discharge outfall would be less environmentally disruptive and could facilitate better resource allocation.

25. Mr Kwok Ping-keung advised in reply to a Member's enquiry that no

estimation on the carbon footprint had been made for this project. With a view to minimizing the carbon footprint, another Member asked whether DSD had considered using sewage sludge as fuel for on-site power generation. Mr Kwok said that there was insufficient room for the construction of on-site waste-to-energy facilities, and given that San Shek Wan STW had a design capacity of only 5,800 m<sup>3</sup> per day, the amount of sludge generated would be small.

26. A Member questioned the reason for neglecting the need to estimate the carbon footprint for this project. Mr Kwok Ping-keung explained that the consultancy study for the project had commenced in year 2012, and the prevailing guidelines at the time had not required projects to make estimations of the carbon footprint. He agreed to consider commencing carbon footprint monitoring for this project and also other new projects.

27. A Member opined that the STW should be located at the lowest elevation at Cheung Sha so as to facilitate more gravity flow and reduce the energy required for pumping the sewage to the STW. While public feedback had been invited and collected for constructing the STW at alternative sites, Mr Kwok Ping-keung said that a consensus had been reached with the local community to construct the STW at the currently proposed location. He advised that land resumption had been avoided as far as practicable to avoid disturbance to the local community.

28. A Member enquired the reason for installing photovoltaic (PV) panels only on one-third of the roof of San Shek Wan STW. Mr Kwok Ping-keung advised that the rest of the roof would be used for greening purposes in order to meet the greening standard set by the Vetting Committee on Aesthetic Design of Pumping Station Buildings (VCAB) of DSD for sewage treatment plants. The power generated by the PV panels would be used to support the operation of the STW. As requested by the Member, Mr Kwok agreed to provide the percentage DSD requirement on green coverage to Members after the meeting.

*[Post-meeting notes: The requirement on green coverage is stipulated in Development Bureau Technical Circular (Works) No. 3/2012 – Site Coverage of Greenery for Government Building Projects. The circular was provided to Members for reference on 3 March 2017.]*

### ***Landscape and visual impacts***

29. A Member enquired whether the feasibility of developing the STW in caverns was explored, which could help release land for other purposes and reduce

visual impacts. Mr Summer Chow advised that there were no suitable sites in South Lantau for developing the STW in rock caverns. While alternative sites had been explored, it was considered that the proposed site would require less site formation works.

30. A Member opined that the design of the structures could be softened, for example by greening and vertical greening, so that the structures could harmonize with the surrounding natural environment. Mr Kwok Ping-keung said that the VCAB was set up to oversee the design of sewage treatment facilities. The Committee consisted of experts including landscaping architect and greening and landscaping design of STWs had to be endorsed by the committee. While the committee would decide whether or not to apply for certification for individual projects, Mr Kwok said that DSD endeavoured to adopt the principles of BEAM Plus at the Gold or above rating in the design and construction of the project.

31. A Member opined that it was important to provide sufficient screening effect for the structures unless these structures had a visually-appealing design. With reference to the photomontages, the Member observed that the buffer areas for planting, especially at the Tong Fuk and Cheung Sha SPSs, were too small to support sustainable vertical greening and provide sufficient screening effect for the structures. He suggested that DSD should review the size of the planting area and deploy planters of substantial widths to provide screening effect for the perimeter fence so as to improve the aesthetics. For the structures to blend in with the surrounding environment, he suggested that earthy tones should be used. On top of mitigating the visual impacts, he remarked that the project proponent should also strive to enhance the landscape and visual quality of the project area.

32. Mr Kwok Ping-keung advised that vertical greening would be supported by planters and climbers as far as possible, instead of inserting plants into the walls of the structures. He agreed with the Member's suggestions and said that the suggestions would be considered by DSD and VCAB when devising the detailed landscaping plan. Noting the Member's concern on the insufficient buffer areas for planting, he said that subject to the land supply constraints, DSD would endeavour to implement greening within the project site as far as practicable.

### ***Handling of construction and demolition (C&D) materials***

33. A Member suggested and Mr Kwok Ping-keung confirmed that the construction and demolition (C&D) materials would be re-used in-situ as far as possible, such as for landscaping purposes. Mr Kwok advised that about 68,000

m<sup>3</sup> of surplus excavated materials, equivalent to 30% of the total excavated materials, would be disposed off-site at public fill reception facilities. A trip-ticket system would be established in accordance with the relevant guidelines to monitor the re-use and disposal of construction waste.

34. A Member sought information on the location of the nearest public fill reception facility and the mode of transport of the surplus C&D materials. Mr Terence Fong replied that the surplus C&D materials would be transported by trucks to Mui Wo Ferry Pier, and then to the fill bank at Tuen Mun by water transport.

35. A Member remarked that the fill banks in Hong Kong were near saturation and echoed another Member's suggestion that DSD should re-use C&D materials in-situ as far as possible. Mr Kwok Ping-keung said that the project team would keep in view of concurrent projects for the re-use of surplus C&D materials. In reply to a Member's enquiry regarding the operation of the trip ticket system, Mr Kwok said that the contractor would be required to obtain a trip ticket from the supervisory staff before departure of the truck, and return to the project site a stamped ticket after disposal of the C&D waste at the designated disposal grounds. An online system was maintained by the Civil Engineering and Development Department (CEDD) which allowed the site supervisors to check closely the disposal records. He added that the supervisory staff of the construction site would conduct daily and surprise checks to prevent fly-tipping activities. Contractors who failed to comply with the requirements would be penalised.

36. A Member expressed doubts towards the effectiveness of the trip ticket system given the serious problem of fly-tipping in the New Territories. With reference to the 2017 Policy Address, he acknowledged that the Government was preparing to mandate the use of a Global Positioning System (GPS) on construction waste collection vehicles to combat fly-tipping, and asked whether the relevant contractual terms would be included in the tender invitation documents at this stage to facilitate the implementation of the new requirement.

37. Mr Kwok Ping-keung advised that it was necessary for the Government to conduct feasibility studies and liaise and reach consensus with the stakeholders regarding the proposed arrangements. Including the relevant contractual terms at such an early stage might result in objections and refusal by the operators to submit tender proposals and in turn cause delay to the construction works.

38. Considering that there would only be 3 m<sup>3</sup> of dewatered sludge generated

from the treatment process per day, a Member enquired about the frequency for transporting away the dewatered sludge. In consideration of the cost-effectiveness for transporting away the sludge, he suggested that DSD should consider using the sludge as fertilizer or further reducing its water content and combusting the dewatered sludge for power generation. Mr Kwok Ping-keung said that the sludge generated by the MBR process was relatively less than that generated by other conventional sewage treatment processes. He said that the dewatered sludge would be transported away daily along with that generated in the Mui Wo STW.

### ***Re-use of treated effluent***

39. In reply to the Chairperson's enquiry on the percentage of treated effluent to re-use on-site, Mr Kwok Ping-keung said that only a small amount of treated effluent would be re-used for purposes including cleansing and diluting chemicals. He remarked that the amount of discharge was small and extending the use of treated effluent outside the project site would require further liaison and coordination with the Water Supplies Department (WSD).

### ***Ecological impact assessment***

40. A Member was concerned about the adequacy of the ecological baseline survey, in particular there was a lack of survey effort on wintering birds in Pui O. He added that the number of bird species recorded in the baseline study was low and comprised only common species. As regards the habitat map, he mentioned that the area near the southern part of Ham Tin Kau Tsuen was intertidal and seawater influx rendered the growth of most plants but mangroves and seashore shrubs not possible. He questioned whether it was appropriate to map the area as "shrubland-grassland".

41. Mr Terence Fong said that as the EIA Study Brief required the project proponent to conduct baseline ecological surveys over a duration of 6 months covering the wet season, the survey efforts had focused mainly on the wet season. He explained that baseline information would be gathered from literature review, and supplemented by baseline ecological surveys should there be any information gaps. It was considered that the information gathered was sufficient to support the assessment of the ecological resources and meet statutory requirements. He stressed that no impact was expected on the marshes within the study area. Regarding habitat mapping, he said that it was not appropriate to map out all habitats in very fine scale. Rather, habitats were mapped based on the general ecological characteristics and grouped in reasonable scale.

42. The Chairperson enquired whether the difference in habitat interpretation between the EIA report and the public comment would give rise to different assessment and conclusion. Mr Terence Fong replied in the negative and said that the area was beyond the influence of the project footprint. He added that the assessment of the ecological value was based on the resources within the habitat, regardless of the habitat type. A Member remarked that the correct identification of the habitat type was important and should be done objectively. Mr Fong said that with reference to the vegetation composition and ecological structural complexity at the area, it would be more appropriate to map the area as shrubland-grassland rather than mudflat. The Member opined that it was unusual to map an area as shrubland-grassland if it was subject to tidal influence.

43. With reference to Figures 5.9a, a Member pointed out that apart from the STW, all the six SPSs were located in the countryside. He suggested and another Member concurred that landscaping works, including rooftop greening, should take into consideration the ecological value on top of the aesthetics. The Member further suggested that only *Aquilaria sinensis* with 1 to 2 metres of height should be translocated. Compensation planting should be considered instead for mature trees as it would not be cost-effective for their translocation. He opined that *Celtis sinensis* was not a suitable species for compensation planting, and from the perspective of arboriculture, there were risks associated with the planting of *Celtis sinensis*. He suggested that DSD should consider planting *Aquilaria sinensis* instead in the compensation planting area which were confined in the plant and had a certain degree of security from illegal exploitation.

### ***Other issues***

44. In reply to a Member's concern on whether there were any incentives to encourage the nearby villages to connect their septic tanks to the public sewerage network, Mr Kwok Ping-keung advised that once public sewers had been laid, village house owners would be required by legislation to connect to the public sewers within a certain period of time. He anticipated that the connection rates of village houses would be high.

45. A Member expressed support for the project, and asked whether the Tong Fuk Correctional Institution would also be connected to the public sewers. Mr Kwok Ping-keung advised that while the Tong Fuk Correctional Institution currently had its own sewage treatment facilities, it could be connected to the public sewers upon the commission of the San Shek Wan STW.

46. There being no further questions from Members, the Chairperson thanked the project proponent team for their presentation and clarification on the project.

*[The project proponent team left the meeting at this juncture.]*

### **Internal Discussion Session**

47. The Chairperson advised that the EIA Subcommittee could make recommendations to ACE on the EIA report with the following approach:

- (i) endorse the EIA report without condition; or
- (ii) endorse the EIA report with conditions and details of the proposed conditions; or
- (iii) defer the decision to the full Council for further consideration – highlight issues or reasons for not reaching a consensus or issues to be further considered by the full Council; or
- (iv) reject the EIA report and inform the project proponent of the right to go to the full Council.

48. The Chairperson proposed and Members agreed to endorse the EIA report with conditions and details of the proposed conditions.

### ***Water quality impacts***

49. With the understanding that the project was able to meet statutory requirements regarding water quality impacts, a Member sought advice from Mr K F Tang on whether DSD could be further required to extend the discharge point away from Pui O Beach. Mr Tang explained that the proposed outfall would comply with the Water Pollution Control Ordinance, which required a buffer distance of 100 metres from sensitive uses, such as beaches. To determine whether there was a need to extend further the submarine outfall, he suggested that DSD should be required to provide more information on the water quality impacts during the initial dilution and the far-field mixing zone with a view to demonstrating whether there would be water quality impact to nearby beaches for Members' consideration before the full Council meeting. If DSD could demonstrate that the project met statutory requirements, Mr Tang advised that it would be more appropriate to include the suggestion as a recommendation rather than a condition, if still deemed necessary. He drew Members' attention to the possibility that extending the submarine outfall could result in impacts on other water quality sensitive receivers, and there were other considerations involved

such as technical feasibility and waste generation.

50. The Chairperson pointed out that with secondary treatment and chlorination disinfection, the level of *E. coli* and other parameters should in fact be able to meet the standard. She agreed with Mr K F Tang that DSD should be required to provide more information on the water quality impact arising from the discharge of the outfall diffuser. Given that Pui O Beach was a sensitive area, she suggested and Members supported to recommend DSD to consider extending the discharge point away from Pui O Beach as far as practicable.

51. A Member suggested that DSD should provide to Members the modelling results on the water impact quality when extending the discharge point away from the Pui O Beach.

52. A Member suggested and Members supported that a condition should be included to require DSD to deploy tankers for transporting of the sewage away to other sewage treatment plants for treatment to ensure a sufficient buffer for emergency storage, in cases where the broken-down plant could not be recovered in time to prevent the outflow of raw sewage.

53. Mr K F Tang said that as South Lantau was a sensitive location, emergency discharge scenarios should be minimized. With a 6-hour ADWF emergency storage, he said that the chance of occurrence of emergency discharge was extremely low. He however agreed that tankers could be deployed for transporting of the sewage away to other sewage treatment plants for treatment as far as practicable should the need arose.

54. A Member shared that the broke down of duty and spare pumps at a sewage treatment plant operated by ATAL Environmental Engineering had led to the discharge of raw sewage. She opined that although the risk of breakdown of all operating and spare parts was low, sufficient precautions had to be made to prevent emergency discharge.

### ***Handling of C&D materials***

55. Given that it was not difficult to equip dump trucks with GPS, a Member opined that the agreement from the operators was not necessary for including this requirement as a contractual term. Mr K F Tang explained that EPD had liaised with DSD regarding this matter and understood that DSD had considerations on the cost implications. Understanding that Members had doubts about the

effectiveness of the trip-ticket system in preventing fly-tipping, and the South Lantau was a very sensitive area that was susceptible to fly-tipping, he suggested and the Chairperson agreed that DSD could be recommended to consider equipping all dump trucks with GPS or equivalent automatic system for real time tracking and monitoring to prohibit illegal dumping and landfilling of C&D materials. Mr Tang further mentioned that financial incentives could be provided for contractors who were able to meet the criteria via the Pay for Environment Scheme.

### ***Ecological impact assessment***

56. While expressing support for the project, a Member was concerned about the adequacy of the ecological baseline survey although the ecological impact of the project was considered to be limited. He pointed out that the number of bird species recorded in the baseline study was not only smaller than that recorded in other studies, but consisted of mainly common species. Given that Pui O was an important habitat for wintering birds, he considered that it was necessary for the project proponent to conduct additional dry season survey on wintering birds.

57. Considering that the habitat types within the study area were not diverse and the key habitats of concern were mainly wetlands, Mr Simon Chan advised that according to the relevant EIA guidance note, the project proponent was required to conduct baseline study for 6 months covering the wet season. The ecological baseline study had complied with the requirements set out in the EIA Study Brief, and the study period which lasted till November had covered part of the dry season. Given that the scale of the project was small and the development footprint did not encroach into ecologically sensitive areas, he asked Members to consider the objective and the cost-effectiveness for conducting additional surveys. He added that as the project would not affect the wetland habitats, the disturbance to wintering birds would not be anticipated. Mr Chan further advised that as the figure of over 180 bird species sighted at Pui O was a cumulative record, comparing it directly with the data obtained from the baseline study might not be meaningful.

58. A Member pointed out that the baseline data would form a basis for carrying out the Environmental Monitoring and Audit (EM&A) Programme, hence it would be important to obtain the necessary baseline data before commencement of the construction of the project.

59. A Member enquired on the project timeframe with the concern that the

need for further surveys might delay the construction of the project and the associated environmental benefits to South Lantau. Mr K F Tang elaborated that DSD would have to go through the necessary procedures to obtain funding and the actual timeframe for the commencement of construction was unknown. Another Member pointed out that time would also be required for tendering and drawing up detailed designs, and opined with the agreement of the Chairperson that the need for including a condition and/or recommendation should not be affected by the timeframe of the project. The Chairperson supplemented that objectives of the conditions and recommendations should be for the enhancement of environmental protection.

60. A Member agreed with Mr Simon Chan that additional surveys would not be necessary. Rather, he noted that the baseline information of birds gathered from the literature cited in the EIA report had not been provided. Another Member concurred and suggested that the project proponent should be required to supplement to Members the baseline information of birds within the study area gathered from the literature cited in the EIA report.

61. With reference to Table 5.1 of the EIA report, Ms Ho Ching-yee confirmed that the project proponent had conducted literature review of past EIA studies and the database of the Agriculture and Fisheries Conservation Department (AFCD). She reported that only one of the past EIA studies had a study area at Pui O that overlapped with the current project, and the concerned EIA study had already been conducted more than 10 years ago. She added that the cumulative record of over 180 bird species stated in the public comments was only a list compiled by the Hong Kong Bird Watching Society (HKBWS) that comprised its own survey records and public sightings and there was no location specific information. It would not be appropriate to compare the list directly with the data obtained from the baseline study. Ms Ho advised that the number of bird species recorded in Pui O under AFCD's years of biodiversity survey was also a lot fewer than that recorded in the list kept by HKBWS.

62. Given that the number of bird species cited in the public comments was only a record of casual sightings, a Member was of the view that the project proponent should not be required to conduct further surveys due to the fact that the number of bird species recorded in the ecological baseline study was smaller. Another Member opined that the project proponent should verify the data from the literature review. He pointed out that the EIA report only consisted information on the 44 bird species recorded in the baseline ecological survey, and made no mention of the findings of literature review.

63. A Member suggested that a condition could be included to require DSD to conduct a baseline survey covering the winter season before the construction of the project, such that there would be sufficient data for future monitoring under the EM&A programme. The Chairperson said that similar conditions had been proposed for a number of projects in the past.

64. A Member opined that DSD should consider the feasibility of conducting a dry season survey on birds. Another Member pointed out and the Chairperson concurred that as Pui O was only a small area, conducting additional surveys would not involve much costs and time.

65. While Pui O was an important habitat for birds, a Member pointed out that the footprint of the project would not encroach into the habitats. He opined and Mr Simon Chan agreed that further surveys would not be required if DSD could provide the findings of literature review.

66. With a view to addressing public concerns, DSD should provide supplementary information on the findings of literature review. As there had been diverse views amongst Members and other parties regarding the survey period of ecological surveys of various projects discussed in the past year, Mr K F Tang considered that it would be important to review and improve the EIA Guidance Notes. A consultancy study would be commissioned which would take into account overseas experience and discussions of past EIASC meetings. Members would be invited to provide further views based on the findings of the consultancy study. DSD

67. A Member said that on top of the bird list compiled by HKBWS, DSD should also take note of the report produced by the Green Lantau Association on the biodiversity of Lantau.

### ***Mitigating landscape and visual impacts***

68. Given the natural view of the coastline of South Lantau, a Member suggested that DSD should be requested to provide sufficient buffer area for planting trees with a view to harmonizing the plant structures with the surrounding natural environment. He commented that the photomontages provided in the EIA report were incomprehensive and overstated the effect of vertical greening in the narrow strips of buffer areas. He also mentioned that the quality of the photomontages were low in that there was little difference between the photomontages at day 1 and year 10. With reference to Annex 18 of the Technical

Memorandum, he mentioned that mitigation was not only concerned with damage reduction but also include consideration of potential landscape visual enhancement. He opined that the structures should be visually appealing, and if not, should be screened by sufficient tree planting.

69. Concurring with the Member's views, the Chairperson proposed and Members supported to recommend DSD to reduce the landscape and visual impact and consider potential visual enhancement with a view to harmonizing the plant structures with the surrounding natural environment. Sufficient buffer area should be allowed for tree planting and landscaping works should take into consideration the ecological value on top of the aesthetics.

#### ***Energy consumption and efficiency***

70. A Member proposed and Members agreed to recommend DSD to determine the carbon footprint of the project and explore measures to minimize it.

#### ***Adoption of BEAM Plus principles***

71. The Chairperson suggested with the support of Members that the project proponent would be recommended to achieve “Gold or above” rating under BEAM Plus (New Buildings) in the project design to ensure the sustainability of the development.

72. The Chairperson invited the Secretariat to draw up a list of supplementary information requested by Members in the meeting to the project proponent for a written response. The meeting agreed that the project proponent team would not be required to attend the full Council meeting scheduled on 13 March 2017 for the report.

Secretariat

*[Post-meeting note: The list of proposed conditions and recommendations was circulated to Members for comments on 24 February 2017. The supplementary information provided by the project proponent was sent to Members for reference on 3 March 2017.]*

### **Item 3: EIA Report on “Outlying Islands Sewerage Stage 2 - Upgrading of Tai O Sewage Collection, Treatment and Disposal Facilities”** ***(ACE-EIA Paper 2/2017)***

*[The project proponent team joined the meeting at this juncture.]*

**Presentation Session (Open Session)**

73. With the aid of a powerpoint presentation, Ms Wing Wong briefed Members on the background, justifications and environmental considerations of the project, and findings of the environmental impact assessment (EIA) on water quality, noise impact, air quality and ecological impact.

**Question-and-Answer Session (Open Session)**

***Odour impact***

74. Noting that the identified odour sources within the Tai O Sewage Treatment Works (STW) would be enclosed, a Member enquired on the other measures to mitigate odour impact. Mr Kwok Ping-keung explained that the proposed project would cover an installation of deodourising facility which would direct all the odour emissions from the enclosed sources to a deodourizing unit with a view to achieving an odour removal efficiency between 99.5% to 99.8%. He advised that the level of odour removal efficiency was comparable to other STWs projects.

75. Given that Tai O was a tourist spot, a Member was concerned about the potential odour sources identified in the STW. He sought clarification from the project proponent on the model adopted in the EIA report and the relevant data and information to demonstrate the efficiency of the proposed odour removing measures as stipulated in the Technical Memorandum-EIAO.

76. Mr Kwok Ping-keung explained that the odour measurement was also conducted at other sewage treatment facilities which adopted the MBR system and was similar in sewage condition to the proposed upgrading of Tai O STW. The odour emission had been closely monitored by professionals from the Hong Kong Polytechnic University, and the facilities were well equipped to regularly measure the concerned missions of hydrogen sulphide (H<sub>2</sub>S) and sulphur dioxide (SO<sub>2</sub>) to within an acceptable level.

***Visual impact***

77. Making reference to the photomontages, a Member opined that the proposed construction of Tai O STW which comprised three structures might potentially result in the blocking of views towards the existing landscape features. He doubted whether the narrow path between the STW and the seawall could

facilitate tree planting to conceal the visually obstructive structures. In response, Mr Kwok Ping-keung recognized the importance of tree planting to enhance the landscape character, and advised that they would consult the VCAB within Department with the relevant landscape architects to ensure the STW would be aesthetically pleasing.

### ***Water quality***

78. A Member enquired on the improvement of the water quality parameters of the project, and whether the project proponent would have any plan to connect the stilted house areas at Tai O to the sewerage network. In response, Mr Kwok Ping-keung explained that with the expansion of the Tai O STW and upgrading of its existing level of sewage treatment to secondary treatment level, the water quality would be improved. The effluent standard in terms of BOD<sub>5</sub> would be reduced from 150 mg/L to 20 mg/L and suspended solid from 100 mg/L to 30 mg/L respectively. As regards sewer connection with the stilted house areas, approximately 50% of stilted house areas would be connected to the sewerage network. The connecting works for the remaining 50% had yet to be made available mainly due to land resumption issues. Mr Kwok added that they would continue discussions and consultations with the local stakeholders with a view to reaching consensus before commencing the village sewerage projects.

### ***Design of the sewage submarine outfall***

79. A Member sought clarification on the proposed construction of a 130 m long submarine outfall over the existing design of 260 m in discharging treated effluent to the sea.

80. A Member explained that the existing STW which comprised a twin 225mm diameter, 260m long submarine outfall was built in the 1980's and the conditions were deteriorating, particularly for the submarine outfall where leakages at the joints were identified. As such, the Tai O STW would be upgraded to a capacity of 2,750m<sup>3</sup>/day with secondary treatment level. The main reason for the proposed design of a 130 m long submarine outfall was due to the fact that 130 m was sufficient to meet the effluent discharge standard for secondary sewage treatment level. He clarified that the outfall was designed with a minimum length of 130m in order to minimize the negative environmental impacts associated with dredging activities.

*Ecology*

81. Noting that the proposed project might have an impact on existing rocky shore, a Member suggested that the project proponent could make reference to the Tung Chung New Town Extension (East) project in establishing an eco-shoreline to enhance biodiversity and conserve local fishery resources for the project on Tai O STW.

82. Mr Vincent Lai explained that the reclamation for the proposed Tai O STW would cause merely a loss of 86 m of rocky shore. The length of rock shore lost was considered minimal. He explained that since that the ecological value of the affected rocky shore was ranked as low to moderate in the EIA and there had been no record of species of special conservation value, they had not included the construction of an eco-shoreline as a mitigation measure in the report. They would explore the feasibility of constructing an eco-shoreline of the seawall where appropriate.

*Conservation of cultural heritage*

83. A Member sought clarification on the sufficiency of the mitigation measures provided in protecting heritage resources including a number of shrines and temples identified in close proximity to the proposed construction works area. Mr Kwok Ping-keung explained that the project proponent had engaged in other STW construction works in villages. He recognized that the temple or shrine were usually located at the entrance of the village which was in close proximity to the construction works. Therefore, they would minimize the use of heavy mechanical digging equipment in those areas and adopt other methods such as the use of manual methods for excavation works where necessary to ensure that safe levels of vibration would not be exceeded. He added that the sewers ranging from 100mm to 300mm diameter in size would normally be constructed at a depth of approximately 1 m or less in the village areas. Given the small size of the proposed sewers and the proposed excavation depth, the adverse impacts to cultural heritage sites would be kept to the minimum.

*Need for reclamation*

84. Noting that the MBR system would be adopted for the project which would result in a smaller footprint, the Chairperson sought clarification on the need for reclamation. Mr Kwok Ping-keung explained that the existing Tai O STW was a primary sewage treatment works with design capacity of only

1,220m<sup>3</sup>/day. The existing level of sewage treatment of Tai O STW would be expanded and upgraded to provide secondary treatment with a design capacity of 2,750m<sup>3</sup>/day. Therefore, additional land was required because the existing footprint of 0.08ha was insufficient for the required upgrading works. Mr Kwok added that having consulted the local community, it was recommended that the expansion and upgrading of Tai O STW, which included 0.26 hectare site formation by reclamation, to be conducted at the original site given that the project site was located remotely with no access by public transport.

85. The Chairperson suggested constructing a two-storey STW facility to minimize the footprint. Mr Kwok Ping-keung explained that a compact arrangement of STW had been adopted by introducing a two-storey superstructure buildings arrangement which included structures located underground to reduce the extent of reclamation. Additionally, apart from constructing a vertical seawall, rip rap would be used in seawall construction which provided a habitat for marine species.

86. A Member sought clarification from the project proponent on whether the headland area on the right of the existing STW (Figure 2.2) shown on the EIA Report could be considered as a location for the proposed expansion of Tai O STW as well as an option to reduce the extent of reclamation. Ms Ying Xiao clarified that the area consisted of a flat rock. Mr Kwok Ping-keung supplemented that reclamation for site formation would likewise be required under this option, and would be highly visible to users of the coastal footpath.

*[Post-meeting note: DSD supplemented that according to earlier investigation, the formation of the flat rock might be due to rock sliding from nearby cliff. The stability of the flat rock is unknown. In addition, the location of flat rock is currently zoned Coastal Protection Area (CPA) which forms a constraint to the development of the area.]*

87. There being no further questions from Members, the Chairperson thanked the project proponent team for their presentation and clarification on the project.

*[The project proponent team left the meeting at this juncture.]*

### **Internal Discussion Session**

88. The Chairperson advised that the EIA Subcommittee might make recommendations to ACE on the EIA report with the following consideration:

- (i) endorse the EIA report without condition; or
- (ii) endorse the EIA report with conditions and details of the proposed

- conditions; or
- (iii) defer the decision to the full Council for further consideration – highlight issues or reasons for not reaching a consensus or issues to be further considered by the full Council; or
  - (iv) reject the EIA report and inform the project proponent of the right to go to the full Council.

89. The Chairperson proposed and Members agreed to endorse the EIA report with conditions and recommendations.

### *Odour impact*

90. A Member considered that the odour impact in relation to the Tai O STW would be significant if unmitigated. As such, he suggested that the project proponent should demonstrate how the 97% odour removal efficiency could be achieved. The Member proposed and Members agreed that a condition should be imposed on the project proponent to install deodorization units with an odour removal efficiency of not less than 97% to treat the odorous gas arising from the upgraded Tai O STW.

### *Construction of an Eco-shoreline*

91. A Member proposed and another Member concurred that the project proponent should explore additional measures such as constructing an eco-shoreline to enhance the ecological functions for marine habitats, given reclamation works was involved in the project. Members agreed to impose a condition on the project proponent to submit a detailed Eco-shoreline Implementation Plan (the Plan) to the Director of Environmental Protection (DEP) for approval before commencement of construction of the seawall of the upgraded Tai O STW. The Plan shall include a robust and innovative eco-shoreline design with a view to enhancing the ecological values of the seawall.

### *Visual impact*

92. A Member considered that the proposed design of the upgraded Tai O STW might have a high visual impact on the coastline. As regards whether a condition or recommendation should be proposed, another Member suggested imposing a condition to enhance the landscape character of the seawall and the visual compatibility of the STW with the surroundings. The Member concurred and suggested that either adequate space should be allowed for tree planting or

aesthetic design should be adopted with a view to harmonizing the structures of the STW with the surrounding natural environment.

93. Noting that Members had proposed at the meeting earlier a recommendation related to visual impact on the EIA report on the South Lantau Sewerage Works, a Member suggested imposing a similar recommendation on the present EIA report. Members opined that the visual impact of the Tai O STW was more significant than that of the South Lantau STW, and concluded that a condition be imposed on the project proponent to devise a landscape plan and a detailed plan on the aesthetic design and façade treatment of the upgraded Tai O STW with a view to harmonizing the buildings with the surrounding natural environment. The detailed plans should be submitted to the DEP for approval before commencement of the construction and landscape works of the STW.

94. The meeting agreed that the project proponent team would not be required to attend the full Council meeting scheduled on 13 March 2017 for the report.

*[Post-meeting note: The Chairperson suggested adding a standard recommendation to “ensure the sustainability of the development by achieving “Gold or above” rating under BEAM Plus (New Buildings) in the project design”. The list of proposed conditions and recommendations was circulated to Members for comments on 24 February 2017.]*

#### **Item 4 : Any other business**

95. There was no other business for discussion at the meeting.

#### **Item 5 : Date of next meeting**

96. The Chairperson advised Members that the EIASC meeting on 20 March 2017 would be cancelled as there was no EIA report submitted for discussion. Members would be advised on the date of the next meeting and the agenda in due course.

**EIA Subcommittee Secretariat  
March 2017**