

**Relevant extract of the draft minutes of
the Environmental Impact Assessment Subcommittee meeting
held on 14 October 2024**

**EIA report on “Development of Integrated Waste Management Facilities
Phase 2 (I·PARK2)”**

Question-and-Answer Session (Open session)

Project Details

1. Members were in general supportive of the development of I·PARK2. As the Chairman of Waste Management Subcommittee (WMSC) under the ACE and the Chairman of the Hong Kong Waste Management Association, a Member expressed his support for the development of I·PARK2 and appreciated that the project could extend the lifespan of existing landfills, reduce the reliance of fossil fuel for power generation thereby cutting down carbon emissions, as well as reduce the environmental impact of land transportation of waste to the landfill.

2. A Member asked for the reasons for setting the daily and hourly target emission levels of nitrogen oxides to be lower than 60 mg/Nm³ on average. Ms Theresa Wu explained that the target emission level of I·PARK2 was set at a more stringent level as compared with other prevailing standards considering that there were facilities such as T·PARK and Black Point Power Station in the area. With the adoption of the two-stage nitrogen oxides removal technology of I·PARK2 which could minimise potential impact on the residents in the vicinity, Ms Wu considered the target feasible.

3. On a Member's enquiry about the proper and safe treatment of fly ash, Ms Theresa Wu advised that the fly ash would be treated by cement solidification or chemical stabilisation under enclosed environment. Toxicity Characteristic Leaching Procedure (TCLP) would be conducted to ensure that the treated fly ash could fully comply with the relevant control limits before proper disposal at landfill by covered trucks or containers.

4. Addressing a Member's question on the technological difference between I·PARK2 and I·PARK1, Mr Raymond Wu shared that there was no treatment facility for bottom ash in I·PARK1 while I·PARK2 would have a facility to treat the bottom ashes of both I·PARK1 and I·PARK2. In addition, the target emission levels of I·PARK2 were more stringent than those of I·PARK1.

5. In response to a Member's suggestion on maximising the energy generation capacity of I-PARK2, Ms Theresa Wu advised that although the ultra-high-pressure power generation system would generate more power as compared to the medium-pressure system, the associated maintenance and replacement frequency would be more demanding in the long term. The increased down time for maintenance and replacement was undesirable as it would adversely affect the stability and capacity for handling the municipal solid waste (MSW). Also, the skilled technicians for carrying out the maintenance or replacement works of ultra-high-pressure equipment were not available in Hong Kong, the cost for hiring them from other places would increase the overall operation cost.

Environmental Monitoring

6. A Member suggested that EPD should install real-time monitoring equipment and collect regular samples to check the compliance of the parameters with relevant environmental standards. The Chairman and two Members considered that a comprehensive set of monitoring data should be published real-time to alleviate public concern.

7. Mr Raymond Wu agreed that transparency was very important and continuous monitoring information of some chemicals such as ammonia could be made available on the website. Ms Theresa Wu supplemented that while continuous monitoring of air emissions such as nitrogen oxides and carbon dioxide would be feasible, other chemicals such as heavy metals or dioxin would need to be monitored over a longer period of time through regular sampling at surveillance stations due to their minimal concentration. A Member further suggested and Ms Wu agreed that digital twin technology could be considered for continuous emission monitoring and dissemination of the data to the public as soon as practicable.

8. With reference to the concern of some green groups, a Member asked about the monitoring and control for the release of hexavalent chromium. Ms Theresa Wu advised that TCLP would be carried out to ensure the compliance with national standards for treated incinerator bottom ash.

9. The Chairman and a Member enquired about EPD's response plan in case of mechanical failure or exceedance of environmental standards during the operational phase. Drawing reference from the experiences of other Greater Bay Area cities, Mr Raymond Wu indicated that the key was to prevent the occurrence of major problems by continuous monitoring and regular maintenance of the facilities. Ms Theresa Wu added that if exceedance of environmental standards was detected, the operator would immediately stop feeding MSW into the incinerator and wait for the completion of the incineration process of the MSW already inside the incinerator before terminating the operation of the facility. Investigation would be conducted to identify and fix the parts with abnormality where needed.

Cooling Systems

10. Noting some public comments on the adverse impact to marine seagrass when the seawater temperature increased by 0.4 Degree Celsius, a Member was worried that the seawater cooling system could potentially cause damage, however minimal, to the marine ecosystem as well as the oyster trade and fisheries trade in the vicinity. On the other hand, he was also concerned about the potential impact caused by the hot air discharged from the air cooling system. Ms Theresa Wu explained that the emitted air would be cooled down through a chiller system before discharging, hence would not cause significant rise in the ambient temperature while the spent seawater discharged from the seawater cooling system would increase the seawater temperature at the water sensitive receivers in the vicinity by no more than 2 Degree Celsius which would be in compliance with the Water Quality Objectives.

11. Based on the results of his past studies, the Chairman pointed out that the discharged spent seawater containing chlorine would kill microorganisms and marine larvae, and thus cause adverse impact on the marine ecology. He suggested that the Government should deploy air cooling system instead, which was in line with the global trend. Ms Theresa Wu indicated that the modelling result in the EIA report showed that the discharge of spent seawater with chlorine residue would not cause adverse impact on the marine ecology or sensitive species in the vicinity.

12. A Member asked whether the Government had decided the adoption of which type of cooling system in the project. Mr Raymond Wu remarked that the EIA study showed that neither of the two systems would cause adverse environmental impact and both options could be acceptable. The inclusion of both options in the EIA report was meant to provide flexibility for deployment in the future. He said that EPD would take into account the public's concern over the seawater cooling system and other factors such as cost effectiveness when deciding the system to be deployed in the next stage.

Ecological Impact

13. A Member enquired if there were mitigation measures to protect sensitive species such as bats near the project area. Mr Raymond Wu advised that the project site was mainly wasteland with limited ecological value and no adverse ecological impact on species of conservation interest was expected. With reference to the comments of green groups, the Member suggested that EPD should consider engaging ecological experts to conduct site checks to ascertain the ecology status before, during and after construction works. Mr Wu considered that it would suffice to have the site checked by ecologists before the commencement of construction works. The Chairman said that the project proponent should conduct regular site audit during construction stage in accordance with the environmental monitoring and audit (EM&A) programme of the project.

14. A Member suggested that the project proponent should take into account the potential impact on the ecology and fauna species nearby when designing I-PARK2.

For example, transparent or reflective building façades should be avoided. Another Member added that the project should deploy BEAM Plus requirements in the design and construction with a view to reducing waste generation and achieving sustainability. Ms Theresa Wu advised that it was targeted for I-PARK2 to achieve “Platinum” rating under the BEAM Plus rating system and bird-friendly building design such as non-reflective building facades would be adopted. Dr Samuel Chui remarked that the fauna species identified in the EIA study should be located within the 500-meter assessment area including the area outside the project site where construction works would be carried out.

15. A Member questioned whether transportation of MSW by sea to I-PARK2 would cause adverse impact on Chinese White Dolphins. Based on the marine mammals’ monitoring data collected by AFCD, Mr Raymond Wu indicated that there was no sighting of Chinese White Dolphins in the vicinity. He explained that transportation of MSW by sea to I-PARK2 would be similar to the prevailing scenario of MSW transported by marine vessels through similar route to the West New Territories Landfill and no adverse impact on marine ecology was expected.

16. The Chairman suggested that eco-shoreline should be deployed along the seawall by placing eco-engineered structures and oyster-shell reefs to enhance marine biodiversity which should be preferably prefabricated as part of the seawall during the design stage (rather than retrofitting them onto the seawall subsequently). Ms Theresa Wu responded that it could be feasible to explore ecological enhancement at the seawall to attract marine organisms.

Publicity and Public Education

17. Noting some members of the public considered that the residents nearby were not adequately engaged, a Member suggested and another Member echoed that EPD should strengthen public education to explain the genuine need and global trend to deploy incineration facilities to process MSW. One of the two Members added that the Government should enhance the civic awareness of the younger generation in taking responsibility and ownership in waste management. The other Member supplemented that EPD should highlight that incineration was a more sustainable and environmentally friendly way to treat MSW as toxic chemicals generated during incineration such as dioxin could be removed with modern technology. In response to the Chairman’s question, Mr Raymond Wu confirmed that EPD had engaged residents of Ha Pak Nai and Lung Kwu Tan on the project.

18. A Member shared the views of two other Members on the importance of public education. One of the above Members and another Member stressed that EPD should strengthen public education on the importance of waste reduction and recycling, especially starting from children and students, notwithstanding the establishment of the new incineration facilities.

19. Noting the importance of publicity and public education, Mr Raymond Wu said that EPD had launched a round of publicity campaign in June 2024 and another

round through major publicity channels such as newspapers and online social media channels had been planned for end-2024. Mr Wu agreed that waste reduction and recycling were necessary despite the establishment of waste-to-energy facilities. He indicated that EPD had been strengthening various waste reduction and recycling efforts including the expansion of community recycling network and food waste collection points to incentivise the public to practise recycling. He said that EPD would strengthen the above messages in publicity campaigns.

20. In response to a Member's suggestion on promoting the benefits of I-PARK2 to the public, Mr Raymond Wu shared with Members a supplementary note which highlighted the benefits of the facility. In particular, he highlighted that the potential odour nuisance caused by landfilling of MSW to the nearby residents could be reduced after the commissioning of I-PARK2. Dr Samuel Chui clarified that in considering the approval of an EIA project, the considerations should be whether the project had fulfilled the stipulated requirements under the EIA Ordinance and its Technical Memorandum. EEB/EPD would keep the ACE updated of the Government's public education and publicity plans on waste reduction and recycling efforts at other meetings of the ACE and its WMSC.

*(Post-meeting notes: A copy of the supplementary note was attached at **Appendix**.)*

Carbon Emissions

21. In response to a Member's questions, Mr Raymond Wu advised that while I-PARK2 project would not include any carbon capture element at the moment, the Government would keep in view the technological development of carbon capture and explore the possibility of deploying carbon offsetting when the relevant technologies were mature and cost effective. He remarked that by moving away from the reliance on landfills and deploying incineration facilities for treating MSW, greenhouse gases emissions from landfills could be significantly reduced.

22. With a view to minimising carbon footprint, a Member suggested that low-carbon marine vessels using clean fuel should be deployed to transport MSW to I-PARK2. Mr Raymond Wu explained that the existing five marine-based refuse transfer stations are gradually replacing their existing diesel vessels. In the end, among the ten vessels involved for the transportation of MSW from refuse transfer stations, six of them would be hybrid vessels while the remaining four would be electric vessels.

Communal Facilities

23. Quoting CopenHill in Copenhagen as an example, a Member suggested and the Chairman echoed that the project proponent should incorporate communal elements in the design of I-PARK2, such as green roof or ski slope, which could attract tourists and provide public enjoyment. The Chairman furthered that the project should bring positive enhancement to the ecosystem and biodiversity. Native tree species or appropriate plantings which could provide a friendly habitat for birds, bats

and other wildlife species should be used. The Member added that a minimum greening ratio should be stipulated.

24. Mr Raymond Wu replied that EPD would enhance greening as far as practicable. He indicated that EPD would gather the views of stakeholders in deciding the use of the community facilities of I-PARK2 that would allow members of the public to benefit.

25. There being no further questions from Members, the Chairman thanked the project proponent team for their detailed presentation and clarification.

(Two Members, Dr Samuel Chui and the project proponent team left the meeting at this juncture.)

Internal Discussion Session (Closed-door Session)

26. The Chairman advised Members that the EIASC could make one of the following recommendations to the ACE on the EIA report –

- (i) endorse the EIA report without condition; or
- (ii) endorse the EIA report with condition(s) and/or recommendation(s); or
- (iii) reject the EIA report and inform the project proponent of the right to go to the full Council.

If the EIASC cannot reach a consensus during the meeting, it may –

- (i) ask for a 2nd submission to the EIASC; or
- (ii) defer the decision to the full Council and highlight issues or reasons for not reaching a consensus for the full Council's deliberation.

27. The Chairman proposed and Members agreed to endorse the EIA report with conditions and recommendations.

Conditions and Recommendations

28. In the light of the discussions made in the Open Session, the Chairman summarised the following conditions and recommendations to be proposed and sought Members' views –

(a) Conditions

The Project Proponent should –

- (i) submit an equipment installation report before the commencement of operation of the project to verify the completion of installation of the air pollution control system;

- (ii) set up community liaison group(s) comprising representatives from the concerned and affected parties to facilitate communication and enquiries handlings on all environmental issues related to the Project;
- (iii) update the Environmental Monitoring and Audit Manual (EM&A Manual) to include monitoring of physiochemical parameters of water quality on sensitive site(s) and to enhance the air quality monitoring frequency.

(b) Recommendations

The Project Proponent was recommended to –

- (i) consider air-cooled system as a preferred option that could avoid potential environmental impact due to the spent cooling water discharge;
- (ii) explore further ecological enhancement design feature at the seawall such as eco-shoreline within the Project boundary;
- (iii) consider suitable greening enhancement including planting of native tree species or tree planting to improve its appearance and enhance the potential urban biodiversity;
- (iv) explore possible way(s) to reduce carbon emission in the construction and operational phases insofar as technically and economically feasible and practicable, such as the use of photovoltaic panel at the roof and green roof etc.;
- (v) formulate plans on developing suitable communal facilities, with considerations on the potential to allow public to benefit, by using the project gainfully; and
- (vi) recycle and reuse bottom ash generated by the waste incineration process as far as technically and economically feasible with a view to maximising its beneficial use before disposal to the landfills.

Real-time Data

29. To alleviate public concern, a Member suggested that real-time odour monitoring equipment should be installed and the data should be promulgated for public information. Mr Gary Tam replied that there was a set of analytical parameters and methodology to control stack emission and on-line continuous monitoring according to the EM&A Manual. The Member opined that it was exactly the reason why EPD should demonstrate with scientific data that there was no odour emission from I-PARK2. Another Member added that wind vane should be installed to facilitate the understanding of the odour emission sources.

30. With reference to a Member's earlier suggestion of deploying a digital twin platform for enhancing data transparency, the Chairman suggested that the project proponent should publish real-time environmental data to the public to enhance public confidence. Mr Gary Tam considered it technically feasible to be included as a condition. The Chairman suggested and Members agreed that a fourth condition should be imposed for the project proponent to propose a web-based platform to disseminate continuous air quality monitoring information to the public.

Greening

31. On recommendation (iii), a Member considered that a minimum greening ratio of 30% should be stipulated, which should be feasible taking into account the spaces of all vertical facades and the building roof. She added that the plantations would improve the air quality of the area as well as enhance biodiversity.

32. The Chairman further suggested and Members agreed that the project proponent should also be recommended to target for achieving the "Platinum" rating under the BEAM Plus rating system for the building(s) of I·PARK2.

Carbon Emissions

33. As the project site was next to the sea, a Member suggested that the project proponent should be recommended to enhance the climate resilience in the design.

34. On recommendation (iv), the Chairman enquired whether it could be possible to incorporate two Members' earlier suggestion for deploying carbon capture or carbon offset technology. Mr Gary Tam was of the view that carbon capture was a new technology under pilot testings in overseas countries. Having considered the economical and technical feasibility to deploy such technology in the near future, it would be premature to put it as a recommendation for the time being. While the meeting agreed not to include carbon capture technology in the recommendation, the Chairman remarked that the project proponent should explore the possibility of the latest carbon reduction or carbon capture technology as far as economically and technically feasible.

Green Marine Vessels

35. With reference to a Member's suggestion in the Open Session, the Chairman suggested and the meeting agreed to add a recommendation for the project proponent to optimise the use of environmentally friendly and low carbon vessels, such as electric, hybrid or new energy vessels, for the daily transportation of MSW to I·PARK2.

36. There being no other comments from Members, the meeting agreed that the EIA report could be endorsed by the ACE with four conditions and eight

recommendations. The project proponent team would be invited to attend the subsequent ACE meeting to present and explain the project details to the full Council.

(Post-meeting notes: The draft conditions and recommendations was circulated to Members for comment on 17 October 2024. Members' comments had been incorporated in ACE Paper 14/2024 which would be discussed at the ACE meeting on 4 November 2024.)

**EIA Subcommittee Secretariat
October 2024**

**Development of Modern Waste-to-Energy Incinerator
Integrated Waste Management Facilities Phase 2 (I·PARK2)
Information for Reference**

Purpose

This paper provides information on the benefits to be brought about by the development of the modern waste-to-energy (WtE) incinerator, I·PARK2, to the overall sustainable development of the environment and the community for Members' reference. For comparison between modern WtE incinerators and landfills, please refer to the **Attachment**.

Background

2. At present, an average of about 11 100 tonnes of municipal solid waste (MSW) are disposed of at landfills in Hong Kong per day. In the Waste Blueprint for Hong Kong 2035, the Government sets out the vision to move away from the reliance on landfills for direct disposal of MSW by around 2035. The Government's strategy has two main directions. The first is to mobilise the entire community to practise waste reduction and waste separation for recycling in the upstream to reduce the overall waste disposal amount. The second is to proactively drive the development of downstream WtE facilities for sustainable disposal of the remaining MSW. The major benefits to be brought about by the development of I·PARK2 to the overall sustainable development of the environment and the community are as follows:

Benefits to be brought about by I·PARK2 to the overall sustainable development of the environment and the community

(I) Handling MSW in a more advanced and sustainable way

3. Currently, the MSW in Hong Kong are disposed of by landfilling, which takes up a considerable amount of valuable land resources while causing potential nuisances such as odour arising from waste decomposition and dust emissions. Developing modern WtE incinerators is the global trend. When compared with the advanced cities nearby, the

per capita MSW handling capacity by WtE incineration in Hong Kong is merely about 0.40 kg per day even if I-PARK1, which is expected to commence operation in 2025, is taken into account. We are lagging far behind our neighbours (see **Table 1**). **As such, there is a pressing need to expedite the development of I-PARK2 to handle MSW in a sustainable way.**

Table 1 – Comparing the population and the scale of modern WtE incinerators with neighbouring cities

City	No. of incinerators in operation and under construction	Handling capacity of the facilities (tonnes/day)	Population at present	Per capita handling capacity (kg/day)
Guangzhou	12	33 140	18 827 000	1.76
Shenzhen	7	23 875 ^(Note 1)	17 790 100	1.34
Shanghai	16	29 000 ^(Note 1)	24 874 500	1.17
Tokyo	22	12 900	14 187 176	0.91
Hong Kong	1	3 000 ^(Note 1)	7 531 800	0.40 [will rise to 1.2 if I-PARK2 is included]

Note 1: Projected figure by 2025

4. With a treatment capacity of about 6 000 tonnes of MSW per day, the moving grate incineration adopted by I-PARK2 is the mainstream technology commonly adopted by other major cities around the world in the treatment of MSW. **The waste volume will be reduced significantly by about 90% during the incineration process.** The project also includes a bottom ash treatment facility to treat the bottom ash generated from both I-PARK1 and I-PARK2 for recycling into low-carbon green construction materials. **The I-PARK2 project can substantially reduce the disposal of MSW by landfilling.**

5. **Upon commissioning of the I-PARK2, the North East New Territories Landfill will completely cease receiving MSW and will be transformed to receive construction waste only, which does not decay and is odourless, thus eliminating the odour problem arising from MSW reception.**

(II) Converting waste to energy, reducing greenhouse gas (GHG) emissions and promoting carbon neutrality

6. Being the third major source of GHG emissions in Hong Kong, waste sector accounted for about 8% of the total GHG emissions in 2022. Of which, over 90% were from the decomposition of waste in landfills. The decomposition process of MSW in landfills will generate GHGs including methane. The greenhouse effect of methane is 28 times that of carbon dioxide. The development of I·PARK2 will significantly reduce GHG emissions in landfills while reducing carbon emissions from electricity generation by fossil fuel at power plants.

7. The heat energy recovered from the waste treatment process at I·PARK2 will be used to generate electricity for on-site use, with surplus electricity to be exported to the power grid. According to the experience from I·PARK1, **I·PARK2 is expected to export up to about 960 million kWh of surplus electricity to the power grid annually, which is equivalent to the electricity consumption of about 200 000 households.**

8. Should there be sufficient WtE and waste-to-resources facilities in place in Hong Kong by around 2035, we will no longer need to rely on landfills for direct disposal of MSW. By 2050, most of the landfilled waste will have been decomposed, which will significantly reduce GHG emissions, thus **helping us achieve the target of carbon neutrality before 2050.**

(III) Integrating with community facilities to promote development of the area for the benefits of the local economy and tourism

9. Drawing on the experience of the existing sludge treatment facility T·PARK, **I·PARK2 will provide community facilities that combine environmental education, leisure and recreation elements, with a view to achieving the vision of “single site, multiple use” for synergy.** The spa pools at T·PARK heated by the heat energy recovered from sludge incineration are well received by the public. In addition to setting up an environmental education centre in I·PARK2, the Environmental Protection Department is exploring the possibility to include recreational venues different from those in T·PARK to offer the public with a novel recreational

experience. Besides, **being in close proximity to the scenic spots of Lung Kwu Tan and Pak Nai, I-PARK2 can promote development of the area to create a synergy effect that benefits the local economy and tourism, thereby bringing in more people for the economic viability of the community.**

Environmental Protection Department
October 2024

Attachment Comparison between modern WtE incinerators and landfills

	Modern WtE incinerators	Landfills
(I) Handling MSW in a more advanced and sustainable way	<p>The waste volume will be reduced significantly by about 90% during the incineration process which can substantially reduce the disposal of MSW by landfilling.</p> <p>Upon commissioning of the I·PARK2, the North East New Territories Landfill will completely cease receiving MSW and will be transformed to receive construction waste only, which does not decay and is odourless, thus eliminating the odour problem arising from MSW reception.</p>	<p>The disposal of MSW by landfilling takes up a considerable amount of valuable land resources while causing potential nuisances such as odour arising from waste decomposition and dust emissions.</p>
(II) Converting waste to energy, reducing GHG emissions and promoting carbon neutrality	<p>The development of I·PARK2 will significantly reduce GHG emissions in landfills while reducing carbon emissions from electricity generation by fossil fuel at power plants.</p> <p>The heat energy recovered from the waste treatment process will be used to generate electricity for on-site use, with surplus electricity to be exported to the power grid. According to the experience from I·PARK1, I·PARK2 is expected to export up to about 960 million kWh of surplus electricity to the power</p>	<p>Being the third major source of GHG emissions in Hong Kong, waste sector accounted for about 8% of the total GHG emissions in 2022. Of which, over 90% were from the decomposition of waste in landfills. The decomposition process of MSW in landfills will generate GHGs including methane. The greenhouse effect of methane is 28 times that of carbon dioxide.</p>

	Modern WtE incinerators	Landfills
	<p>grid annually, which is equivalent to the electricity consumption of about 200 000 households.</p> <p>Should there be sufficient WtE and waste-to-resources facilities in place in Hong Kong by around 2035, we will no longer need to rely on landfills for direct disposal of MSW. By 2050, most of the landfilled waste will have been decomposed, which will significantly reduce GHG emissions, thus helping us achieve the target of carbon neutrality before 2050.</p>	
(III) Integrating with community facilities to promote development of the area for the benefits of the local economy and tourism	<p>I-PARK2 will provide community facilities that combine environmental education, leisure and recreation elements, with a view to achieving the vision of “single site, multiple use” for synergy and offering the public with a novel recreational experience.</p> <p>Being in close proximity to the scenic spots of Lung Kwu Tan and Pak Nai, I-PARK2 can promote development of the area to create a synergy effect that benefits the local economy and tourism, thereby bringing in more people for the economic viability of the community.</p>	<p>Due to the high traffic flow of heavy vehicles during operation, landfills are not open to the public for other uses.</p>