

**For discussion on
22 January 2024**

**LEGISLATIVE COUNCIL
PANEL ON ENVIRONMENTAL AFFAIRS**

5173DR – Organic Resources Recovery Centre Phase 2

PURPOSE

This paper aims to report on the progress and latest development of the construction of Organic Resources Recovery Centre Phase 2 (“O-PARK2”) by the Environmental Protection Department (“EPD”), and seek Members’ views on the proposed increase in the approved project estimate (“APE”) of **5173DR** by \$130.7 million from \$2,453.0 million to \$2,583.7 million in money-of-the-day (“MOD”) prices.

PROJECT SCOPE

2. In June 2019, the Finance Committee (“FC”) of the Legislative Council approved the upgrading of **5173DR** to Category A at an estimated cost of \$2,453.0 million in MOD prices. The approved scope of works of **5173DR** includes –

- (a) design and construction of O-PARK2 with a capacity of 300 tonnes per day;
- (b) design and construction of associated architectural, building, civil and landscaping works;
- (c) design and construction of heat recovery, power generation and surplus renewable energy export facilities; and
- (d) provision of pollution control and environmental monitoring facilities.

The location plan of O·PARK2 is at **Enclosure 1**.

PROJECT PROGRESS AND LATEST DEVELOPMENT

3. The project is being implemented under a Design-Build-Operate contract with a contractual period of 15 years. When the contractor commenced the design and construction works in September 2019, O·PARK2 was anticipated to be commissioned in 2022. Due to works variations and other unforeseeable reasons (see paragraphs 7 to 11 for details), there is an increase in the construction cost. The contractor has taken a number of remedial measures to expedite the progress of works. As at mid-November 2023, the architectural, building and civil construction works of O·PARK2 were substantially completed. Testing and commissioning are underway with operation expected to commence in March 2024.

4. The contractor of O·PARK2 has applied low-carbon construction technology at its own cost during construction, such as the use of low-carbon building materials with recycled content, including low-carbon cement, 100% recycled steel reinforcement and carbon-captured concrete blocks, etc., to reduce carbon emissions for achieving carbon neutrality during construction. The project has received numerous awards for its construction design, including Institution of Civil Engineers Award 2023 – Brunel Medal in recognition of its accomplishment in carbon reduction, and Winner of the United Nations Industrial Development Organization Global Call 2022.

5. In addition, to support one of the EPD's measures to enhance the operation of the North East New Territories ("NENT") Landfill, we are preparing to adopt the anaerobic digestion technology for pig waste treatment, which is used for treating food waste or sewage sludge from sewage treatment works, thereby phasing out the disposal of pig waste at the NENT Landfill. Upon commissioning, O·PARK2 will gradually receive and treat pig waste with anaerobic digestion technology.

JUSTIFICATIONS FOR APPLICATION FOR THE INCREASE IN APPROVED PROJECT ESTIMATE

6. As at 31 October 2023, the actual expenditure of **5173DR** is \$2,061.91 million. After a detailed review of the financial position of the relevant items, we consider it necessary to increase the APE of **5173DR** by \$130.7 million from \$2,453.0 million to \$2,583.7 million (in MOD prices). Details are set out in paragraphs 7 to 11 below.

Works variations

7. With almost one year of experience in the actual operation of O·PARK1 since its commissioning in July 2018, we identified some room for further improvement in the design of certain facilities. For instance, the use of central food waste reception bunker was prone to causing odour problems; knife-type crushers rendered it difficult to carry out regular repair and maintenance; and the conventional ammonia stripping tower in wastewater treatment system had high energy consumption. Therefore, when we started the design and construction works for O·PARK2 in the second half of 2019, we explored ways to improve the operational efficiency and reliability of O·PARK2 and strengthen its odour control. To this end, works variations have been made to enhance the food waste pre-treatment system and the wastewater treatment system of O·PARK2 (“works variations (enhancements)”). These include modification of the waste reception system from a voluminous central bunker with a total storage capacity of 1 200 cubic metres of food waste to four smaller and shallower movable bunkers that can be covered, and an extra hammer mill unit to maintain the same storage capacity while enhancing the operational flexibility and maintainability, as well as improving the operational flow. These would achieve “first-in-first-out” for avoidance of odour and operational problems arising from food waste accumulation in the bunkers and enhance the operational reliability and stability in the next 15 years. A more advanced sewage treatment technology “ANAMMOX” has also been adopted to reduce the energy consumption of using ammonia stripping towers and enhance the operational efficiency in support of the target of carbon reduction.

8. The total cost of works variations is \$150.3 million¹.

Increase in payment due to unforeseeable reasons

9. The design and construction works of O·PARK2 commenced in September 2019. Due to the outbreaks of the COVID-19 pandemic between 2020 and 2022, there was a significant drop in manpower in the construction and logistics sectors. International and cross-boundary travel was seriously disrupted by customs restrictions. Cross-boundary freight by sea, land and air almost came to a standstill. There was even a critical shortage of electronic chips around the world, which caused problems of tightened or delayed supply of various mechanical components and automated systems, etc. As a result, the construction of O·PARK2 has been further delayed. Since a majority of the building components and food waste treatment systems of O·PARK2 were imported from the Mainland or overseas, the import and export control measures enforced in various places resulted in an extremely tight supply of materials, causing delays in the construction process. In addition, the headquarters of the company responsible for the design of O·PARK2 is located in the United Kingdom. The United Kingdom experienced a number of nationwide/citywide lockdowns between 2020 and 2021, which stopped their design, construction and engineering staff from travelling to Hong Kong to give on-site guidance, undermining the project progress.

10. It was not until the first quarter of 2023 that Hong Kong gradually resumed normal travel with the Mainland and other parts of the world. Therefore, the anticipated commissioning of O·PARK2 has been delayed from June 2022 to March 2024. To catch up with the works progress, the contractor of O·PARK2 has taken a number of remedial measures including deployment of additional resources and manpower, enhancements and adjustments to construction procedures, and making use of prefabricated units, etc. Moreover, priorities have been given to completion of works for crucial systems, such as the food waste reception system, pre-treatment system, anaerobic digestion system and sewage treatment system, etc. for subsequent testing and commissioning. Works related to other ancillary facilities and fittings, such as external walls and landscaping works, etc. would be completed at a later stage to facilitate pooling of manpower

¹ The total cost of works variations comprises (i) \$149.17 million for works variations (enhancements); and (ii) \$1.13 million for other works variations in respect of actual works requirements (such as temporary diversion of on-site power cables).

and resources for earlier completion of the main works items to tie in with the testing schedule. Having adopted the aforementioned remedial measures, the O·PARK2 is expected to commission in March 2024.

11. With the delays due to the unforeseeable reasons mentioned in paragraph 9, the peaks of construction period of O·PARK2 were deferred to 2021 and 2022. Payment for the main works items was therefore postponed to the financial years of 2021 – 22 and 2022 – 23, during which the pandemic and the Russo-Ukrainian war disrupted the supply chain and pushed up the prices of diesel and certain construction materials significantly. Based on the latest forecast on the cash flow calculation, we estimate that the payments will increase by \$236.0 million due to the above unforeseeable reasons.

Payment by drawdown from the remaining provisions for contingencies, engineering design, construction, consultants' fees and remuneration of resident site staff

12. As the works of the O·PARK2 project are close to completion, based on the actual expenditure and estimated remaining costs for (i) engineering design and construction; and (ii) consultants' fees and remuneration of resident site staff, we estimate that the remaining provisions for these two items will be \$70.4 million and \$15.5 million respectively as compared with the original estimates. Moreover, we originally earmarked \$245.3 million for project contingencies. On account of the payment requirement of \$75.6 million to meet other costs incurred during construction (such as payments to the contractor for additional wages and other expenses due to extended works schedule), the remaining provision will be \$169.7 million. The total savings of \$255.6 million under contingencies, engineering design and construction, consultants' fees and remuneration of resident site staff can be used to partially offset the increase of \$ 386.3 million in works payment due to reasons as stated in paragraphs 7 to 11, with a shortfall of \$130.7 million still remains.

FINANCIAL IMPLICATIONS

13. Subject to approval of the FC, we will phase the expenditure as follows:

Year	\$ million (in MOD prices)
As at 31 October 2023	2,061.9
2023 – 2024	351.4
2024 – 2025	170.4
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	2,583.7
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14. The proposed increase in the APE will not give rise to any additional recurrent expenditure.

ADVICE SOUGHT

15. Upon receiving the support from the Panel, we plan to seek the support of the Public Works Subcommittee and funding approval from the FC for the increase in the APE of **5173DR** in early 2024. Members are invited to comment on the progress and latest development of O·PARK2, and the proposed increase in the APE of **5173DR**.

Environment and Ecology Bureau
Environmental Protection Department
January 2024

