

## **ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE**

### **HEAD 705 – CIVIL ENGINEERING**

#### **Environmental Protection – Refuse disposal**

#### **180DR – Development of waste electrical and electronic equipment treatment and recycling facility**

Members are invited to recommend to the Finance Committee the upgrading of **180DR** to Category A at an estimated cost of \$536.1 million in money-of-the-day prices for the development of waste electrical and electronic equipment treatment and recycling facility.

### **PROBLEM**

There is insufficient capacity for the treatment and recycling of waste electrical and electronic equipment (WEEE) in Hong Kong.

### **PROPOSAL**

2. The Director of Environmental Protection, with the support of the Secretary for the Environment, proposes to upgrade **180DR** to Category A at an estimated cost of \$536.1 million in money-of-the-day (MOD) prices for the development of waste electrical and electronic equipment treatment and recycling facility (WEEETRF).

**/PROJECT .....**

## PROJECT SCOPE AND NATURE

3. The proposed WEEETRF will be developed at a three-hectare site at the EcoPark in Tuen Mun. The proposed scope of works under **180DR** includes –

- (a) design and construction of the WEEETRF to treat and recycle 30 000 tonnes of WEEE per annum;
- (b) provision of treatment and recycling equipment and machinery; and
- (c) provision of architectural and landscaping works for the WEEETRF.

A site plan showing the location of the proposed WEEETRF and a conceptual layout plan showing the proposed works are at Enclosures 1 and 2 respectively.

4. We invited tenders from the prequalified tenderers for the Design-Build-and-Operate (DBO) contract of the WEEETRF in September 2013 and have completed the tender assessment. Subject to funding approval of the Finance Committee, we plan to award the contract in the second half of 2014 with a view to commissioning the WEEETRF in late 2016/early 2017.

## JUSTIFICATION

5. About 70 000 tonnes of WEEE are generated in Hong Kong annually, most of which are exported for reuse or recovery of valuable materials. The reliance on export however may not be sustainable in the long run because demand for second-hand products overseas will decline over time with progressive economic development and tightening of import control over WEEE in the developing countries. The development of a WEEE treatment facility in Hong Kong will contribute towards the proper management of our WEEE locally.

6. As committed under “*Hong Kong: Blueprint for Sustainable Use of Resources 2013-2022*” issued in May 2013, we will progressively implement mandatory producer responsibility schemes (PRSs) based on the “polluter pays” principle. Further to the extension of the Environmental Levy Scheme on Plastic Shopping Bags, mandatory PRS on WEEE is our next target. We aim to introduce legislative proposals on mandatory PRS on WEEE to the Legislative Council (LegCo) for scrutiny later this year. The proposed WEEETRF is an essential infrastructure for the launch of the mandatory PRS on WEEE.

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7. International experience has shown that similar PRSs need to be backed up by local WEEE treatment facilities with adequate capacity and appropriate technology. At present, there are a few private WEEE recyclers whose businesses mainly focus on computer products or “off-specification” equipment<sup>1</sup> from commercial or industrial sources. However, their overall treatment capacity cannot meet the demand of WEEE generated in Hong Kong. Based on the results of the public consultation completed in 2010 and the review of current market situation, we need to invest in a WEEE treatment facility such that the territory-wide mandatory PRS on WEEE can be implemented successfully.

8. The proposed mandatory PRS will regulate five types of products, namely (i) washing machines, (ii) refrigerators, (iii) air conditioners, (iv) television sets and (v) computer products viz. computers, printers, scanners and monitors. These five types of regulated products account for about 85% of WEEE generated locally. The rest is largely consumer electronics which are often marketable in the second-hand market, or other miscellaneous household appliances. The proposed WEEETRF will have a capacity of handling 30 000 tonnes of WEEE annually, which can be increased to 57 000 tonnes annually by arranging an additional shift in the operation of the facility on a need basis.

9. The future WEEETRF operator will need to proactively source and collect regulated WEEE for treatment at the proposed WEEETRF. Upon request by sellers of regulated products, the operator will also provide take-back services to collect old equipment from consumers’ premises while the full costs for collection, treatment and administration will be recovered from the recycling fee to be stipulated under the PRS on WEEE.

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<sup>1</sup> Off-specification equipment refers to equipment that cannot meet the specifications or standards as required by law or regulations or other requirements of the manufacturer.

10. Subject to legislative amendments to be introduced, the future WEEETRF operator will need to be licensed<sup>2</sup> under the Waste Disposal Ordinance (Cap. 354) (WDO). The operations of the proposed WEEETRF (including dismantling and detoxification) must be environmentally sound which can turn WEEE into reusable materials (e.g. metal) and deliver to proper outlets for reuse as far as practicable. Import/export permit control will also be introduced under the legislative amendments to guard against dumping of regulated WEEE to Hong Kong from other jurisdictions and ensure regulated WEEE locally generated is properly treated in Hong Kong.

11. In line with the “polluter pays” principle, a recycling fee will be imposed to finance the mandatory PRS on WEEE. We will prescribe the specific recycling fees to be determined at full cost recovery basis taking into account the development and operation costs for the WEEETRF after awarding the contract. We will submit the proposal as subsidiary legislation to LegCo for approval in due course.

## FINANCIAL IMPLICATIONS

12. We estimate the capital cost of the proposed works to be \$536.1 million in MOD prices (please see paragraph 13 below), broken down as follows –

	<b>\$ million</b>
(a) Site formation	2.8
(b) Design and construction of the WEEETRF	234.7
(i) civil engineering and building works	161.5
(ii) waste reception and weighing systems	7.1
(iii) electrical works and building services	66.1
(c) WEEE processing machinery	107.1
(d) Ancillary works	51.6
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<sup>2</sup> Under our legislative proposals, a recycler of regulated WEEE (including the future WEEETRF operator) will have to obtain licences for storage, treatment, reprocessing and recycling of regulated WEEE under the Waste Disposal Ordinance, and comply with the terms and conditions to be imposed under the licences.

		\$ million	
(e)	Architectural and landscaping works	18.5	
(f)	Consultants' fee for	12.0	
	(i) contract administration	10.0	
	(ii) management of resident site staff	2.0	
(g)	Remuneration of resident site staff	13.0	
(h)	Contingencies	<u>28.3</u>	
	Sub-total	468.0	(in September 2013 prices)
(i)	Provision for price adjustment	<u>68.1</u>	
	Total	<u>536.1</u>	(in MOD prices)

We propose to engage consultants to undertake contract administration and site supervision of the proposed works. A detailed breakdown of the estimates for the consultants' fees and resident site staff costs by man-months is at Enclosure 3.

13. Subject to funding approval, we will phase the expenditure as follows –

Year	\$ million (Sept 2013)	Price adjustment factor	\$ million (MOD)
2014 – 2015	53.4	1.05450	56.3
2015 – 2016	170.7	1.11777	190.8
2016 – 2017	<u>243.9</u>	1.18484	<u>289.0</u>
	<u>468.0</u>		<u>536.1</u>

14. We have derived the MOD estimates on the basis of the Government's latest set of assumptions on the trend rate of change in the prices of public sector building and construction output from 2014 to 2017. We plan to implement the proposed works and the subsequent operation of the WEEETRF under a DBO contract arrangement. The capital cost of \$536.1 million will cover the design and build elements while the operation will be funded under the General Revenue Account. The contractual operation period will be 10 years. The DBO contract will provide for price adjustment for the entire contract period including the operation period.

15. We estimate the annual recurrent expenditure arising from this project to be about \$200 million, mainly for the costs of collecting and treating WEEE.

16. The capital and recurrent costs arising from the project will be taken into consideration when we determine the recycling fees to be imposed on the electrical equipment for the implementation of mandatory PRS on WEEE in accordance with the "polluter pays" principle on full cost recovery basis.

## **PUBLIC CONSULTATION**

17. In 2010, we completed a public consultation exercise and the community was generally supportive of introducing legislation for a mandatory PRS on WEEE in Hong Kong. We also received a strong call that the Government needs to demonstrate a firm commitment in kick-starting the PRS through providing assistance in the development of a local treatment facility.

18. The Environment, Hygiene and District Development Committee of the Tuen Mun District Council was briefed on the latest development of the EcoPark and the WEEETRF project at its meeting on 21 March 2014. Members were supportive of the project.

19. We reported the way forward of the proposed PRS to the LegCo Panel on Environmental Affairs on 28 November 2011, including our plan to support the development of the WEEETRF. Members generally supported the PRS on WEEE in principle but were concerned about the implementation details of the scheme. We have taken these issues into consideration and provided updates of the proposed WEEETRF project and the proposed PRS on WEEE to the Panel on 28 April 2014. The Panel in general supported the submission of the funding proposal of the proposed WEEETRF to the Public Works Subcommittee. At the request of the Panel, we separately provided supplementary information regarding the current position of WEEE recycling in Hong Kong to the Panel on 26 May 2014.

## ENVIRONMENTAL IMPLICATIONS

20. The proposed WEEETRF will be located within the EcoPark. In 2005, the Environmental Impact Assessment (EIA) report for the EcoPark was approved with conditions under the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO) and an environmental permit was issued. The EIA report concluded that the environmental impact of the EcoPark can be controlled to within the criteria under the EIAO and the Technical Memorandum on EIA Process. In July 2013, we completed an environmental review for the inclusion of the proposed WEEETRF in the EcoPark, which concluded that the proposed WEEETRF would comply with the established standards and requirements stipulated under the EIAO and the relevant environmental legislation, standards and guidelines.

21. At the design stage, we will require the contractor to take measures such as adopting foundation design with minimum excavation to reduce the generation of construction waste where possible. In addition, we will require the contractor to reuse inert construction waste (e.g. excavated soil) on site or in other suitable construction sites as far as practicable in order to minimise the disposal of inert construction waste at public fill reception facilities (PFRF)<sup>3</sup>. We will encourage the contractor to maximize the use of recycled/recyclable inert construction waste, and the use of non-timber formwork to further reduce the generation of construction waste.

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<sup>3</sup> Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation. Disposal of inert construction waste in public fill reception facilities requires a license issued by the Director of Civil Engineering and Development.

22. At the construction stage, we will also require the contractor to submit for approval a plan setting out the waste management measures, which will include appropriate mitigation means to avoid, reduce, reuse and recycle inert construction waste. We will ensure that the day-to-day operations on site comply with the approved plan. We will require the contractor to separate the inert portion from non-inert construction waste on site for disposal at appropriate facilities. We will control the disposal of inert and non-inert construction waste at PFRF and landfills respectively through a trip-ticket system.

23. During the construction period, we will control noise, dust and site run-off to levels within established standards and guidelines through implementation of environmental mitigation measures, such as the use of silenced construction equipment to reduce noise generation, water-spraying to reduce dust emission, and proper pre-treatment of site run-off. We will also carry out regular site inspections to ensure that these recommended mitigation measures and good site practices are properly implemented.

24. We estimate that the project will generate in total about 9 000 tonnes of construction waste. Of these, we will reuse about 900 tonnes (10%) of inert construction waste on site and deliver 6 300 tonnes (70%) of inert construction waste to designated PFRF for subsequent reuse. In addition, we will dispose of the remaining 1 800 tonnes (20%) of non-inert construction waste at landfills. The total cost of accommodating construction waste at PFRF and landfills is estimated to be about \$0.4 million for this project (based on a unit charge rate of \$27 per tonne for disposal at PFRF and \$125 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation).

## **HERITAGE IMPLICATIONS**

25. The proposed works will not affect any heritage site, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interest and Government historic sites identified by the Antiquities and Monuments Office.

## **LAND ACQUISITION**

26. The proposed works do not require any land acquisition.

**/BACKGROUND .....**



**BACKGROUND INFORMATION**

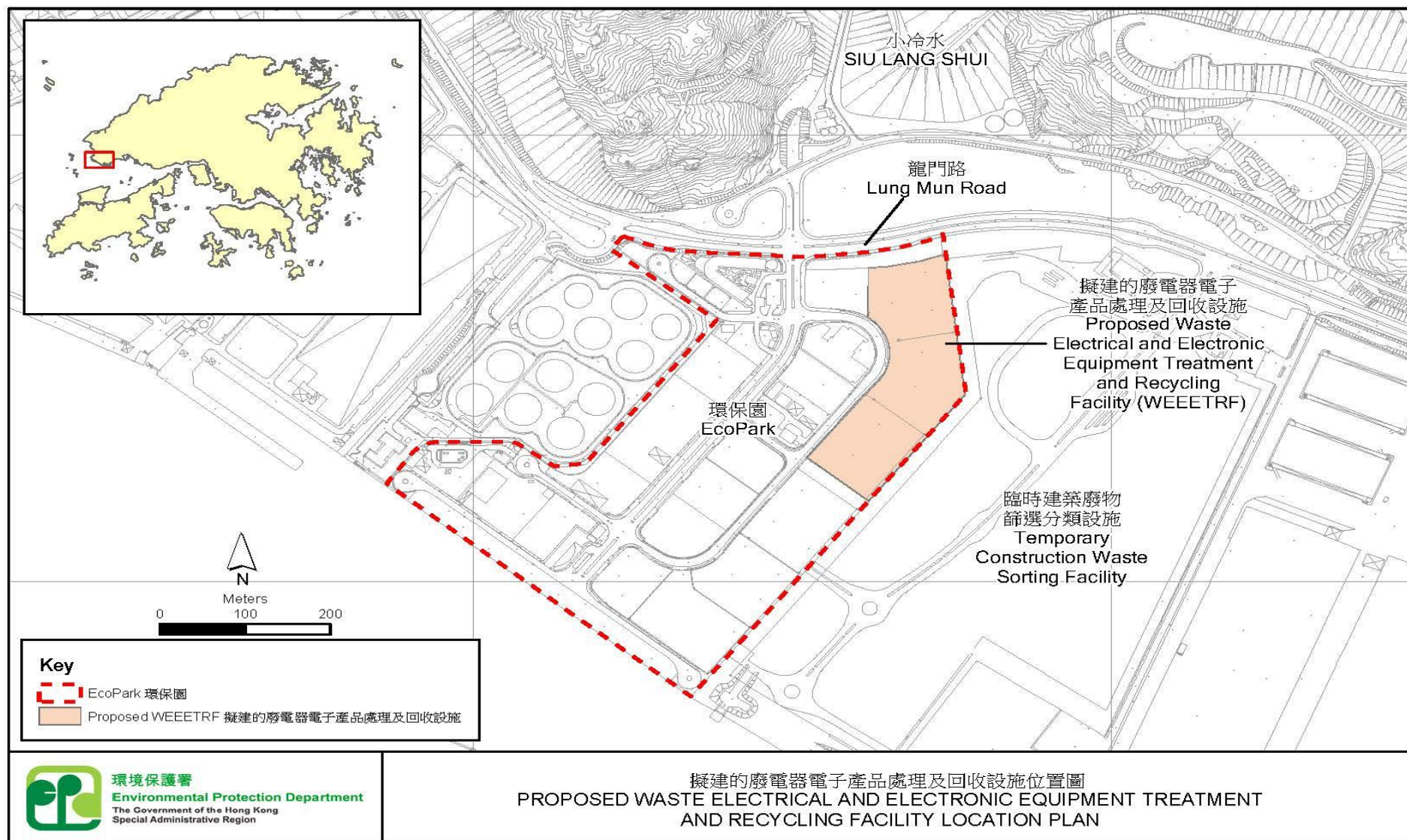
27. We upgraded **180DR** to Category B in September 2011. In April 2012, we engaged consultants to carry out feasibility study and tendering exercise for the project. The total estimated cost is \$5.77 million. We charged this amount to block allocation **Subhead 5101DX** “Environmental works, studies and investigations for items in Category D of the Public Works Programme”. We obtained the approval of the Secretary for the Environment in November 2012 to initiate parallel tendering before funding was secured for the project.

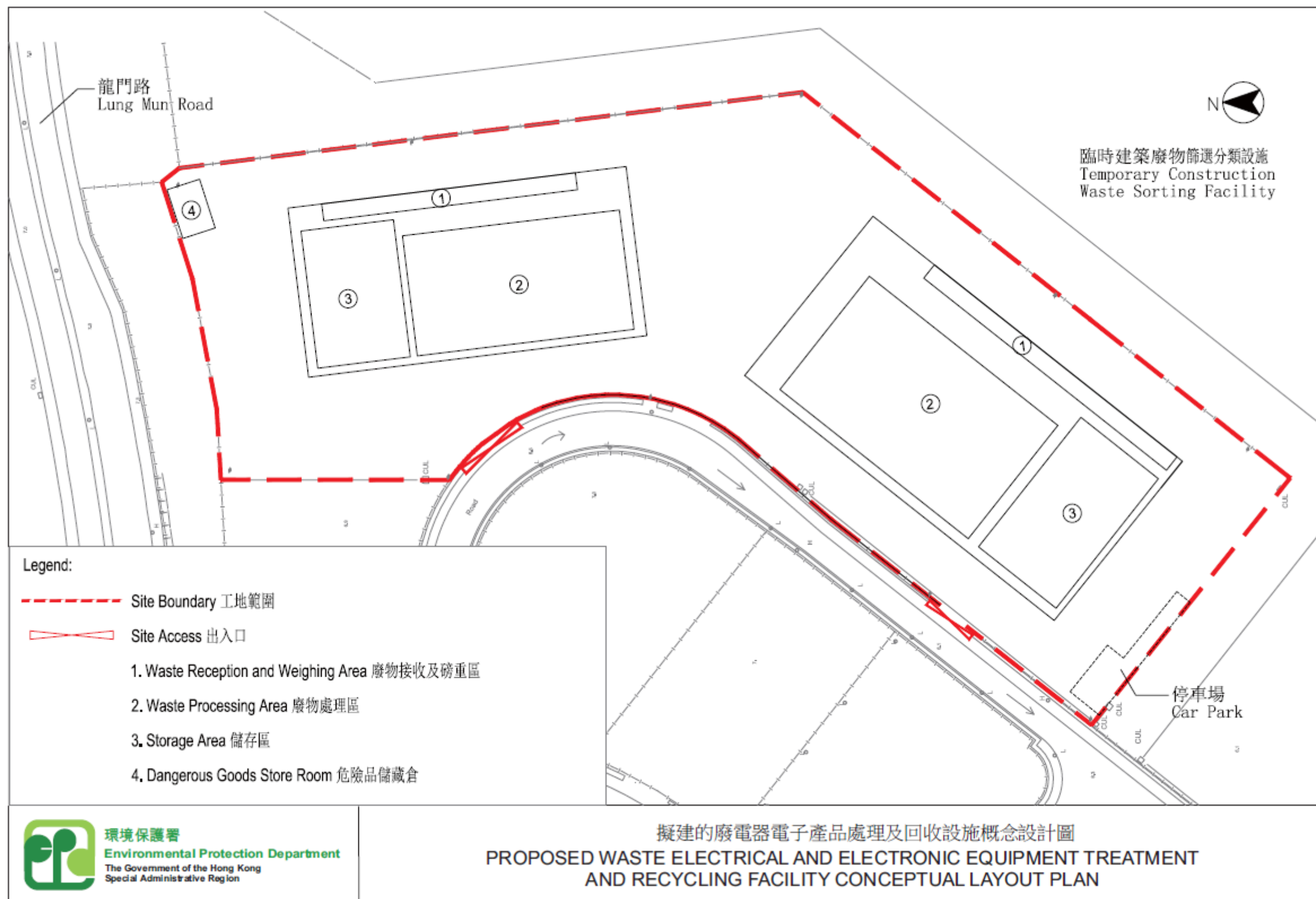
28. The proposed project will not involve any tree removal or planting proposals.

29. We estimate that the proposed works will create 291 jobs (251 labourers and another 40 for professional/technical staff), providing a total employment of 4 340 man-months.

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Environment Bureau  
May 2014





**180DR – Development of waste electrical and  
electronic equipment treatment and recycling facility**

**Breakdown of the estimates for consultants' fees and resident site staff costs  
(in September 2013 prices)**

			<b>Estimated man- months</b>	<b>Average MPS* salary point</b>	<b>Multiplier (Note 1)</b>	<b>Estimated fee (\$ million)</b>
a)	Consultants' fees for contract administration <sup>(Note 2)</sup>	Professional	59	38	2.0	7.9
		Technical	45	14	2.0	2.1
					Sub-total	<hr/> 10.0
b)	Resident site staff costs <sup>(Note 3)</sup>	Professional	101	38	1.6	10.9
		Technical	109	14	1.6	4.1
					Sub-total	<hr/> 15.0
Comprising –						
	(i) Consultants' fees for management of resident site staff					2.0
	(ii) Remuneration of resident site staff					13.0
					<b>Total</b>	<hr/> <b>25.0</b>

\* MPS = Master Pay Scale

**Notes**

1. A multiplier of 2.0 is applied to the average MPS point to arrive at the full staff costs, including the consultants' overheads and profit, as the staff will be employed in the consultants' offices. A multiplier of 1.6 is applied to the average MPS point to estimate the cost of resident site staff supplied by the consultants. (As at now, MPS point 38 = \$67,370 per month and MPS point 14 = \$23,285 per month.)
2. The actual man-months and actual fees will only be known after the selection of consultants through the usual competitive lump sum fee bidding system.
3. The actual man-months and actual costs will only be known after completion of the construction works.