

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

HEAD 704 – DRAINAGE

Environmental Protection – Sewerage and sewage treatment

399DS – Relocation of Sha Tin sewage treatment works to caverns

Members are invited to recommend to the Finance Committee –

- (a) the upgrading of part of **399DS**, entitled “Relocation of Sha Tin sewage treatment works to caverns – consultants’ fees and investigation”, to Category A at an estimated cost of \$637.7 million in money-of-the-day prices; and
- (b) the retention of the remainder of **399DS** in Category B.

PROBLEM

We need to conduct an investigation and design (I&D) study for the relocation of Sha Tin sewage treatment works (STSTW) to caverns (the relocation project) in order to release the existing site for housing and other uses.

/PROPOSAL

PROPOSAL

2. The Director of Drainage Services, with the support of the Secretary for Development, proposes to upgrade part of **399DS** to Category A at an estimated cost of \$637.7 million in money-of-the-day (MOD) prices for carrying out an I&D study and the associated site investigation works for the relocation project.

PROJECT SCOPE AND NATURE

3. We propose to upgrade part of **399DS** to Category A, comprising –

- (a) preliminary and detailed design of the works described in paragraph 5(a) to (d) below;
- (b) detailed impact assessments on environment, traffic, geotechnical, sewerage, drainage, waterworks, utilities, blasting vibration and other relevant aspects;
- (c) public engagement (PE) and consultation exercises with relevant stakeholders;
- (d) associated site investigation works and supervision; and
- (e) preparation of tender documents and assessment of tenders for the associated site investigation works and the future construction works for the relocation project.

_____ A plan showing the preliminary location of the relocated STSTW is at Enclosure 1.

4. Subject to funding approval of the Finance Committee (FC), we plan to commence the proposed I&D study and the associated site investigation works in August 2014. In the detailed design, we will review the programme including the feasibility of shortening the construction period of the relocation project. The I&D study will be completed in stages by end 2022.

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5. We will retain the remainder of **399DS** in Category B, and will seek funding for these works to dovetail with the implementation programme of the relocation project. The scope of the remainder mainly covers –

- (a) construction works for relocating STSTW to caverns, including the construction of caverns, portals, tunnels, sewage treatment facilities, ventilation shafts, ancillary buildings and associated facilities;
- (b) modification, improvement and reprovisioning of the existing sewerage facilities upstream of the STSTW and the Tolo Harbour Effluent Export Scheme system (an existing effluent disposal system) in relation to relocation of the STSTW to caverns;
- (c) rehabilitation, modification and improvement of the existing emergency submarine outfall and construction of a new outfall for connecting with the relocated STSTW;
- (d) all necessary works, including environmental mitigation works, traffic diversion, utilities diversion, etc. that are incidental to paragraph 5(a), (b) and (c); and
- (e) commissioning of the relocated STSTW and demolition of the existing STSTW.

JUSTIFICATION

6. There is a pressing need to increase land supply for various uses by sustainable and innovative approaches to support social and economic development. One practicable approach is rock cavern development.

7. According to the findings of the study on “Enhanced Use of Underground Space in Hong Kong” completed by the Civil Engineering and Development Department in 2011, about two-third of the land in Hong Kong is suitable for cavern development from topographical and geological perspectives. The study has also broadly demonstrated that a cavern scheme could be implemented to house the STSTW, the largest secondary sewage treatment works in Hong Kong with a designed sewage treatment capacity of 340 000 cubic metres per day, thereby releasing about 28 hectares (ha) of land occupied by the existing STSTW for more beneficial and compatible land uses.

8. The 2011-12 Policy Address announced that the Government would explore the use of rock cavern development as an innovative method to expand Hong Kong's land resources. To take forward the initiative, the Drainage Services Department commenced a detailed feasibility study on the relocation of the STSTW to caverns (FSR) in May 2012. The FSR included relevant preliminary technical and impact assessments, a preliminary planning review for the future land use of the existing STSTW site for the purpose of establishing a business case for the relocation project, and a two-staged PE exercise. The main tasks of the FSR were completed in end 2013. The results confirmed that relocating the STSTW to the proposed cavern site at Nui Po Shan of A Kung Kok is technically feasible and financially viable.

9. The FSR has identified that the relocation project will give rise to the following social and environmental benefits –

- (a) releasing about 28 ha of land close to the centre of Sha Tin New Town with sea frontage and pleasant environment in the neighbourhood for :
 - (i) residential development to meet the housing need of our society;
 - (ii) commercial development thereby creating job opportunities; and
 - (iii) government, institution and community facilities and public open space to meet the community needs and aspirations;
- (b) improving the living environment of the surrounding area upon relocation of the existing STSTW to caverns and creating a green and vibrant waterfront living environment with ample open space, continuous promenade and recreational facilities such as cycle tracks, other leisure purposes such as outdoor retail and food and beverage businesses, as well as water sports facilities along Shing Mun River;
- (c) enhancing odour management of the STSTW housed in caverns with rock as natural barrier, and taking the opportunity to review if more advanced technologies can be adopted for the sewage and sludge treatment facilities; and

/(d)

- (d) enhancing the development opportunities of the surrounding area adjacent to the existing STSTW site after completion of the project and enhancing the accessibility of the area by improving transport infrastructure.

10. According to the results of the PE exercise, relocating government facilities to caverns and releasing such sites for housing and other uses is generally supported by the public.

11. We hence propose to carry out the proposed I&D study and the associated site investigation works for the relocation project as soon as possible.

FINANCIAL IMPLICATIONS

12. We estimate the cost of the proposed I&D study and associated site investigation works to be \$637.7 million in MOD prices (please see paragraph 13 below), broken down as follows –

| | \$ million |
|--|-------------------|
| (a) Consultants' fees for | 194.2 |
| (i) preliminary and detailed design | 135.0 |
| (ii) detailed impact assessments on environment, traffic, geotechnical, sewerage, drainage, waterworks, utilities, blasting vibration and other relevant aspects | 38.6 |
| (iii) PE and consultation exercises with relevant stakeholders | 10.2 |
| (iv) preparation of tender documents and assessment of tenders for the associated site investigation works and the future construction works | 9.5 |
| (v) management of resident site staff for site investigation works | 0.9 |

/(b)

| | | \$ million | |
|-----|--|-------------------|----------------------------|
| (b) | Remuneration of resident site staff for site investigation works | 17.8 | |
| (c) | Site investigation works | 248.0 | |
| (d) | Contingencies | <u>46.0</u> | |
| | Sub-total | 506.0 | (in September 2013 prices) |
| (e) | Provision for price adjustment | 131.7 | |
| | Total | <u>637.7</u> | (in MOD prices) |

Due to inadequate in-house resources, we propose to engage consultants to conduct the I&D study and supervise the associated site investigation works. A breakdown of the estimates for the consultants' fees and resident site staff costs by man-months is at Enclosure 2.

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

| Year | \$ million (Sept 2013) | Price adjustment factor | \$ million (MOD) |
|-------------|---------------------------|-------------------------------|---------------------|
| 2014 – 2015 | 8.0 | 1.05450 | 8.4 |
| 2015 – 2016 | 80.0 | 1.11777 | 89.4 |
| 2016 – 2017 | 123.0 | 1.18484 | 145.7 |
| 2017 – 2018 | 120.0 | 1.25593 | 150.7 |
| 2018 – 2019 | 80.0 | 1.33128 | 106.5 |
| 2019 – 2020 | 60.0 | 1.40117 | 84.1 |
| 2020 – 2021 | 20.0 | 1.47123 | 29.4 |
| 2021 – 2022 | 10.0 | 1.54479 | 15.4 |
| 2022 – 2023 | 5.0 | 1.61624 | 8.1 |
| | <u>506.0</u> | | <u>637.7</u> |

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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 for the period from 2014 to 2023. We will engage consultants to undertake the proposed I&D study on a lump sum basis with provision for price adjustments. We will tender the proposed site investigation works under a standard re-measurement contract because the quantity of works involved may vary depending on actual ground conditions. The contract for site investigation works will provide for price adjustments.

15. The proposed I&D study and associated site investigation works will not give rise to any recurrent consequences.

PUBLIC CONSULTATION

16. We have conducted a two-stage PE exercise under the FSR to seek the views of the public and stakeholders with a view to building consensus on the relocation project. The Stage 1 PE was conducted from November 2012 to March 2013 to share the overseas experience of cavern sewage treatment works and collect public opinion on the relocation project, while the Stage 2 PE was conducted from July to October 2013 to further consult the public on the results and recommendations of the preliminary technical assessments. During the PE exercise, we carried out a wide range of activities, including a media briefing, roving exhibitions, visits to Stanley sewage treatment works (an existing sewage treatment works in caverns), three focus group meetings with professional and environmental organisations, three community group meetings mainly for Sha Tin residents and a public forum. According to the results of the PE, it was generally agreed that the relocation project could benefit the community and enhance the environment in Sha Tin as a whole, especially on the aspects of odour and visual impacts. The reports of the Stage 1 and 2 PE were released in July 2013 and March 2014 respectively and uploaded to the project website.

17. During the PE exercise, some residents near the proposed relocation site expressed concerns about possible odour and traffic impacts caused by the new sewage treatment works in the cavern site and the effect of blasting vibration on buildings and structures during construction. We have addressed these issues in the preliminary impact assessments of the FSR, which showed that better odour management would be achieved with the relocated STSTW fully enclosed in rock caverns. Moreover, by adopting suitable control and mitigation measures, potential impacts such as those on traffic and caused by blasting will be reduced to acceptable levels in compliance with the relevant standards. These aspects will also be further reviewed during the proposed I&D study.

18. We consulted the Health and Environment Committee (H&EC) of the Sha Tin District Council (STDC) on the findings and recommendations of the FSR on 7 November 2013. H&EC of STDC generally supported the proposal to proceed further with the proposed I&D study and the associated site investigation works.

19. We consulted the Legislative Council Panel on Development on 25 March 2014. Members generally supported submitting the funding proposal of the proposed I&D study and the associated site investigation works to the Public Works Subcommittee.

ENVIRONMENTAL IMPLICATIONS

20. The proposed I&D study and the associated site investigation works are not designated projects under the Environmental Impact Assessment (EIA) Ordinance (Chapter 499) and will not cause any long-term environmental impact. We have included in the project estimate the cost of implementing suitable mitigation measures to control the short-term environmental impacts arising from the site investigation works.

21. The proposed site investigation works will only generate very little construction waste. We will require the consultants to comprehensively examine measures to minimise the generation of construction waste and to reuse/recycle construction waste as much as possible for implementation in the construction stage of the relocation project in future.

22. The relocation project comprises designated projects under Schedule 2 of the EIA Ordinance and environmental permits are required for their construction and operation. We will conduct EIA studies to address the environmental impacts and prepare EIA reports to meet the requirements under the EIA Ordinance, and propose mitigation measures if necessary. We will submit the EIA reports to the Director of Environmental Protection for approval under the EIA Ordinance. We will follow the statutory procedures, including provision of the EIA reports for inspection and comment by the public and the Advisory Council on the Environment.

/HERITAGE

HERITAGE IMPLICATIONS

23. The proposed I&D study and the associated site investigation 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

24. The proposed I&D study and the associated site investigation works will not require any land acquisition.

BACKGROUND INFORMATION

25. On 11 May 2012, FC approved upgrading **379DS** “Feasibility study on relocation of STSTW to caverns” to Category A with an approved project estimate of \$57.9 million in MOD prices for carrying out the FSR. The FSR commenced in May 2012 for completion in May 2014. The main tasks under the FSR were completed in end 2013.

26. We upgraded **399DS** to Category B in September 2013.

27. The proposed I&D study and the associated site investigation works will not directly involve any tree removal or planting proposals. We will require the consultants to take into consideration the need for tree preservation during the proposed I&D study. We will also incorporate tree planting proposals in the construction stage in future.

28. We estimate that the proposed I&D study and the associated site investigation works will create about 75 jobs (50 for labourers and another 25 for professional/technical staff) providing a total employment of 3 170 man-months.

Enclosure 2 to PWSC(2014-15)2

399DS – Relocation of Sha Tin sewage treatment works to caverns

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

| Consultants' staff costs | | Estimated man-months | Average MPS* salary point | Multiplier (Note 1) | Estimated fees (\$ million) |
|--|--------------|-------------------------|------------------------------------|------------------------|-----------------------------------|
| (a) Consultants' staff costs (Note 2) – | | | | | |
| (i) preliminary and detailed design | Professional | 724 | 38 | 2.0 | 97.6 |
| | Technical | 803 | 14 | 2.0 | 37.4 |
| (ii) detailed impact assessments on environment, traffic, geotechnical, sewerage, drainage, waterworks, utilities, blasting vibration and other relevant aspects | Professional | 207 | 38 | 2.0 | 27.9 |
| | Technical | 230 | 14 | 2.0 | 10.7 |
| (iii) PE and consultation exercises with relevant stakeholders | Professional | 46 | 38 | 2.0 | 6.2 |
| | Technical | 86 | 14 | 2.0 | 4.0 |
| (iv) preparation of tender documents and assessment of tenders for the associated site investigation works and the future construction works | Professional | 41 | 38 | 2.0 | 5.5 |
| | Technical | 86 | 14 | 2.0 | 4.0 |
| | | | | Sub-total | 193.3 |
| (b) Resident site staff (RSS) costs (Note 3) | Professional | 103 | 38 | 1.6 | 11.1 |
| | Technical | 205 | 14 | 1.6 | 7.6 |
| | | | | Sub-total | 18.7 |
| Comprising – | | | | | |
| (i) Consultants' fees for management of RSS for site investigation works | | | | 0.9 | |
| (ii) Remuneration of RSS responsible for site investigation works | | | | 17.8 | |
| | | | | Total | 212.0 |

* MPS = Master Pay Scale

Notes

1. A multiplier of 2.0 is applied to the average MPS point to estimate 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 salary point to estimate the cost of RSS 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 fees will only be known when we have selected the consultants through the usual competitive bidding system.
3. The actual man-months and fees will only be known after completion of the site investigation works.