

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

### **HEAD 704 - DRAINAGE**

#### **Environmental Protection – Sewerage and sewage treatment**

#### **237DS - Tai Po Tai Wo Road sewage pumping station and rising mains**

Members are invited to recommend to Finance Committee the upgrading of **237DS** to Category A at an estimated cost of \$153.0 million in money-of-the-day prices for the construction of sewerage and sewage pumping facilities in Tai Po.

### **PROBLEM**

There are no public sewerage facilities in the Lam Tsuen Valley area, Tai Po, thus causing hygiene problem and contributing to water pollution in Lam Tsuen River and Tolo Harbour.

### **PROPOSAL**

2. The Director of Drainage Services, with the support of the Secretary for the Environment, proposes to upgrade **237DS** to Category A at an estimated cost of \$153.0 million in money-of-the-day (MOD) prices for the construction of trunk sewers and sewage pumping facilities to provide a proper public sewerage network in Lam Tsuen Valley area, Tai Po.

**/PROJECT .....**

## PROJECT SCOPE AND NATURE

3. The scope of project **237DS** comprises –
- (a) construction of a new sewage pumping station near Tai Po Tau Shui Wai;
  - (b) construction of about 3 kilometres (km) of twin rising mains from Tai Po Tau Shui Wai to the Tai Po Industrial Estate;
  - (c) construction of about 400 metres (m) of gravity sewers near Tai Po Tau Shui Wai; and
  - (d) ancillary works including provision of landscaping works, vehicular access, boundary wall etc. within the pumping station compound.

———— A site plan showing the locations of the proposed works is at Enclosure 1. We plan to start construction in June 2008 for completion in December 2011.

## JUSTIFICATION

4. At present, sewage from village houses in Lam Tsuen Valley is discharged into nearby water bodies after treatment by private treatment facilities, such as septic tanks and soakaway systems<sup>1</sup>. These private treatment facilities in general are not effective in removing pollutants due to their close proximity to watercourses and inadequate maintenance<sup>2</sup>. Their discharge is a source of pollution to the nearby Lam Tsuen River and the receiving water in Tolo Harbour.

5. To improve the situation and to meet the projected demand for public sewerage in Lam Tsuen Valley and the nearby areas, we propose sewerage works under **237DS** which will serve a total projected population of about 30 000

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<sup>1</sup> Soakaway systems operate by allowing the effluent to percolate through the soil so that pollutants would be removed in a natural manner. However, if a system is located in an area where the underground water table is high such as an area in close proximity to watercourses, it cannot function properly.

<sup>2</sup> Inadequate maintenance of septic tanks or soakaway systems would affect their pollutant removal efficiency and may even lead to overflow of effluent.

including the existing and planned developments in the Lam Tsuen Valley and the nearby areas. The facilities will convey the sewage to the Tai Po Sewage Treatment Works for treatment, thereby mitigating water pollution in the Lam Tsuen River and Tolo Harbour in the vicinity and improving the living environment.

## FINANCIAL IMPLICATIONS

6. We estimate the capital cost of the proposed works to be \$153.0 million in MOD prices (see paragraph 7 below), made up as follows –

|                                       | <b>\$ million</b> |                            |
|---------------------------------------|-------------------|----------------------------|
| (a) Sewage pumping Station            | 44.0              |                            |
| (i) civil works                       | 26.0              |                            |
| (ii) electrical and mechanical works  | 18.0              |                            |
| (b) Rising mains and sewers           | 79.0              |                            |
| (c) Ancillary works                   | 3.0               |                            |
| (d) Environmental mitigation measures | 8.0               |                            |
| (e) Contingencies                     | 13.0              |                            |
|                                       | -----             |                            |
| Sub-total                             | 147.0             | (in September 2007 prices) |
| (f) Provision for price adjustment    | 6.0               |                            |
|                                       | -----             |                            |
| Total                                 | 153.0             | (in MOD prices)            |
|                                       | -----             |                            |

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

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| Year        | \$ million<br>(Sept 2007) | Price<br>adjustment<br>factor | \$ million<br>(MOD) |
|-------------|---------------------------|-------------------------------|---------------------|
| 2008 – 2009 | 10.0                      | 1.00750                       | 10.1                |
| 2009 – 2010 | 24.0                      | 1.01758                       | 24.4                |
| 2010 – 2011 | 29.0                      | 1.02775                       | 29.8                |
| 2011 – 2012 | 31.0                      | 1.03803                       | 32.2                |
| 2012 – 2013 | 28.0                      | 1.05619                       | 29.6                |
| 2013 – 2014 | 25.0                      | 1.07732                       | 26.9                |
|             | 147.0                     |                               | 153.0               |

8. We have derived the MOD estimate on the basis of the Government's latest forecast of the trend rate of change in the prices of the public sector building and construction output for the period from 2008 to 2014. We will implement the works under two contracts: a civil works contract and an electrical and mechanical (E&M) works contract. We will tender the civil works on a re-measurement basis because of the uncertain underground conditions that may affect the profile of the rising mains and sewers as well as the foundation of the pumping station. The civil works contract will provide for price adjustments because the contract period will exceed 21 months. We will tender the E&M works contract for the supply and installation of E&M equipment on a lump-sum basis without price adjustment given the clearly defined scope.

9. We estimate the annual recurrent expenditure arising from the proposed works to be about \$2.1 million.

10. Based on the current level of expenditure on operation and day-to-day maintenance of sewerage facilities, the proposed works will lead to an increase in the recurrent cost of providing sewage services by 0.12%. This has been taken into account in determining future sewage charges.

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## PUBLIC CONSULTATION

11. On 16 March 2007, we consulted the Environment, Housing and Works Committee of Tai Po District Council on the project and obtained their support for implementing the proposed works. We also consulted the Tai Po Rural Committee on 26 July 2007 and they expressed no objection to the project. Furthermore, we consulted the local community including the Village Representatives and villagers of Tai Po Tau Shui Wai about the proposed works in November 2006. They initially expressed reservation on the location of the proposed pumping station, which is a regional pumping station for the Lam Tsuen area, in the vicinity of Tai Po Tau Shui Wai. After further explanations and adjustments to the pumping station location, the villagers agreed to the proposed works at a meeting on 20 September 2007. We also consulted the residential and industrial premises along the route of the proposed sewer<sup>3</sup>, and they had no objection to the project.

12. We consulted the Legislative Council Panel on Environmental Affairs on 8 January 2008 on the proposed works under **237DS**. Members raised no objection to our plan to submit the funding proposal to the Public Works Subcommittee (PWSC). Meanwhile, some Members requested the Administration to include in the PWSC paper the outcome of consultation on the proposed pumping station near Tai Po Tau Shui Wai with the villagers and the efforts made to address their concerns. We consulted the Village Representatives and villagers of Tai Po Tau Shui Wai again on 28 January 2008 and they reconfirmed their support to the construction of the proposed pumping station. Members also requested supplementary information on the progress of related sewerage works for the unsewered villages in the vicinity of Tai Wo Road in Lam Tsuen areas, which is set out in Enclosure 2.

## ENVIRONMENTAL IMPLICATIONS

13. Among the proposed works, only the proposed pumping station near Tai Po Tau Shui Wai is a designated project under the Environmental Impact Assessment Ordinance (EIAO). We have assessed its potential environmental impacts and concluded that it will not cause long-term adverse environmental impact. We have applied for the environmental permit from the Environmental Protection Department (EPD). We shall implement the mitigation measures set out in the project profile and as required by the Director of Environmental Protection.

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<sup>3</sup> Residential and industrial premises consulted included Serenity Park, Fu Shin Estate, Tai Ping Industrial Centre and Tai Po Industrial Estate.

14. For short term impacts caused by the works during the course of construction, we will control noise, dust and site runoff to levels within established standards and guidelines through the implementation of mitigation measures, such as the use of quiet construction equipment and noise barrier to reduce noise, water-spraying to reduce dust generation, and proper treatment of site run-off before discharge. We will also carry out close site inspection to ensure that these recommended mitigation measures and good site practice are properly implemented on site. We have included in paragraph 6(d) above a sum of \$8.0 million (in September 2007 prices) in the project estimate for implementation of the environmental mitigation measures.

15. We have considered in the planning and design stages ways, such as minimising the excavation for structures, to reduce the generation of construction waste where possible. We will require the contractor to reuse inert construction waste, e.g. excavated soil and demolished concrete on site as far as possible, in order to minimise the disposal of inert construction waste to the public fill reception facilities. We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimise the generation of construction waste.

16. We will also require the contractor to submit for approval a plan setting out waste management measures, which will include appropriate mitigation means to avoid, 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 construction waste and non-inert construction waste to public fill reception facilities<sup>3</sup> and landfills respectively through a trip-ticket system.

17. We estimate that the project will generate in total about 38 500 tonnes of construction waste. Of these, we will reuse about 21 500 tonnes (56%) of inert construction waste on site, and deliver 16 300 tonnes (42%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of 700 tonnes (2%) of non-inert construction waste at landfills. The total cost for accommodating the construction waste at public fill reception facilities and

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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 licence issued by the Director of Civil Engineering and Development.

landfill sites is estimated to be about \$0.5 million for this project (based on a unit cost of \$27/tonne for disposal at public fill reception facilities and \$125/tonne<sup>4</sup> at landfills).

## **TRAFFIC IMPLICATIONS**

18. We have completed a traffic impact assessment and worked out measures to alleviate potential disruptions to the traffic during construction of the sewers. To minimise disturbance and inconvenience to the public, we will carry out the pipe laying works in sections and institute appropriate traffic management measures to temporarily divert traffic and pedestrian so as to maintain all existing vehicular and pedestrian accesses. To ensure good works progress without affecting the busy traffic at important road junctions, we will also employ the trenchless method to construct the sections of rising mains across major road junctions along Ting Kok Road.

## **HERITAGE IMPLICATIONS**

19. This project 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**

20. The project does not require any land resumption.

## **BACKGROUND INFORMATION**

21. In November 2002, EPD completed the study “Review of North District and Tolo Harbour Sewerage Master Plan” which assessed the adequacy of the existing sewerage system in Tai Po to meet future demands as well as to establish a long-term sewerage improvement plan for the Tai Po area.

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<sup>4</sup> This estimate has taken into account the cost for developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at \$90/m<sup>3</sup>), nor the cost to provide new landfills, (which is likely to be more expensive) when the existing ones are filled.

22. Based on the recommendations of the study, we upgraded **237DS** to Category B in November 2005.

23. In June 2007, we engaged consultants to carry out investigations for **237DS**. We funded this consultancy at a sum of \$2.1 million under block allocation **Subhead 4100DX** “Drainage works, studies and investigations for items in Category D of the Public Works Programme”. The design for **237DS** has been completed using in-house resources.

24. Of the 22 trees within the boundary of the proposed pumping station, 17 will be preserved. The proposed works will involve the removal of 5 trees to be transplanted within the project site. The trees to be removed are not important trees<sup>5</sup>. We will include proposals of planting and a green roof as part of the project, comprising about 70 trees, 3 000 shrubs and 25 m<sup>2</sup> of turf. Furthermore, a solar panel system will be installed in the pumping station as a source of renewable energy.

25. We estimate that the proposed works will create about 100 jobs (87 for labourers and 13 for professional/technical staff) providing a total employment of about 3 312 man-months.

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Environment Bureau  
February 2008

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<sup>5</sup> “Important trees” refer to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria –

- trees over 100 years old;
- trees of cultural, historical or memorable significance e.g. Fung Shui trees, trees as landmark of monastery or heritage monument, and trees in memory of important persons or event;
- trees of precious or rare species;
- trees of outstanding form (taking account of overall tree sizes, shape and any special features) e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or
- trees with trunk diameter equal or exceeding 1.0 m (measured at 1.3 m above ground level), or with height/canopy spread equal or exceeding 25 m.





**237DS - Tai Po Tai Wo Road sewage pumping station and rising mains**

**Progress of related sewerage works for the unsewered villages in the vicinity of Tai Wo Road in Lam Tsuen areas**

To bring about improvement to the water quality of Lam Tsuen River and downstream Tolo Harbour, the Administration proposes to extend the existing trunk sewerage system to the unsewered areas of Lam Tsuen Valley. The sewage will then be transferred to the Tai Po Sewage Treatment Works for treatment.

2. The proposed sewerage system extension consists of the current proposed project **237DS** and two other projects under planning which will –
  - (a) provide sewerage to a total of 27 villages in Lam Tsuen Valley. We target to commence construction in end 2008 for completion in end 2013.
  - (b) connect the residential development Hong Lok Yuen to the public sewerage system. Its target commencement and completion dates are early 2009 and end 2011 respectively.