For discussion
On 26 November 2001

Legislative Council
Panel on Environmental Affairs

Composite Paper on Nine Sewage Collection and Treatment Schemes

PURPOSE

This paper seeks Members' support for the Administration's proposal of submitting the following nine projects to the Public Works Subcommittee for consideration –

(a) **203DS** - North District sewerage
(b) **157DS** - Yuen Long and Kam Tin sewerage, stage 2
(c) **274DS** -Yuen Long and Kam Tin sewerage, stage 3
(d) **61DR** - Northeast New Territories village sewerage, phase 2
(e) **61DS** - Northwest New Territories development - trunk sewers, sewage pumping stations and rising mains - stage 3
(f) New item - Upgrading of Pillar Point sewage treatment works
(g) **326DS** - Central and East Kowloon sewerage, sewage treatment and disposal - advance housing related works
(h) **143DS** – Central, Western and Wan Chai West sewerage, stage 2 phase 2 works
(i) **211DS** – Outlying Islands sewerage, stage 1 phase 2

BACKGROUND

2. A sewage treatment strategy was put in place in the late eighties with the objective of safeguarding public health and protecting the ecosystem and the marine environment.

3. The key element of this strategy is to formulate a comprehensive programme for the planning and construction of new sewerage infrastructure to cope with the development needs of the territory. The programme comprises the Harbour Area Treatment Scheme (HATS), which provides for a sewage collection,

treatment and disposal system for the main urban areas on both sides of the Harbour, and 16 Sewerage Master Plans (SMPs) at the regional/district level across the territory. About $6.2 billion has already been spent on the implementation of SMP projects since 1990 and another $11 billion is planned to be spent over the next 10 years[1].

4. Within the next 12 months, the Government plans to commence seven sewerage projects under the North District, Yuen Long/Kam Tin, Tuen Mun, East Kowloon, Central/Western/Wan Chai West and Outlying Islands SMPs, as well as two sewerage projects under specific local sewerage programmes in Northeast and Northwest New Territories. Upon completion, these projects would reduce the amount of pollutants being discharged into Deep Bay, the Northwestern waters, Victoria Harbour and the Southern waters. The projects will be conducive to public health and protection of the ecosystem and the marine environment in these water bodies. The following paragraphs provide Members with an overview of the justifications for and the scope of the projects and the overall benefits which they will bring to our marine environment.

PROPOSAL AND JUSTIFICATION

Improving Water Quality of Deep Bay

North District SMP

5. At present, domestic sewage from unsewered areas in the North District is only partially treated by private treatment facilities[2] before being discharged into Deep Bay via stormwater drains and streams. The North District SMP was formulated in 1994 to extend the sewerage system to 74 unsewered villages in the North District catchment area and to upgrade the existing Shek Wu Hui Sewage Treatment Works (STW) to meet the demands of new developments.

6. The upgrading of the Shek Wu Hui STW has been substantially

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[1] Not inclusive of the investment in Stage II- IV of HATS whose way forward could only be determined upon completion of trials and studies by around end of 2003.

[2] Most of these treatment facilities are septic tanks and soakaway systems in village houses. The effectiveness of these facilities in removing pollutants depends on their size, whether they are located in areas where the ground conditions are suitable for the soakaway systems to work properly and whether there is adequate maintenance of the systems.

completed in August 2001. Taking into account local circumstances in different areas and overall development needs, the village sewerage scheme under the SMP was divided into two stages. Stage 1 covers the extension of the existing sewerage network to 38 unsewered areas in the eastern and western parts of the North District catchment while stage 2 covers the extension of sewerage to the remaining 36 unsewered areas in the southern and north-eastern parts of the catchment. The stage 1 phase 1A works, which covers trunk sewerage works in the central and western parts of North District, started in November 1999 and will be completed in March 2002.

7. We now propose to upgrade part of **203DS** "**North District sewerage"** to Category A to commission the construction works for stage 1 phases 1B and 2A, covering village sewerage works in eight unsewered areas in the central and western parts of North District and trunk sewerage works in the eastern part, in April 2002 for completion in end 2004. The scope of the proposed works comprises the following -

(a) constructing 3 km of sewers of diameters ranging from 300 mm to 675 mm along Sha Tau Kok Road from Luen Wo Hui to Man Uk Pin to serve a projected population of 28 000 by 2011;

(b) providing public sewers in eight unsewered areas to serve about 14 000 people;

(c) constructing eight pumping stations, six along Sha Tau Kok Road, one in Tsung Pak Long Tsuen and one in Hang Tau, to uplift the sewage to be collected from the unsewered areas[3] to existing public sewers. These pumping stations are required as a result of the topography of the concerned unsewered areas and the levels of the existing sewers nearby; and

(d) laying about 1 km of rising mains of diameters ranging from 100 mm to 400 mm in association with the construction of the pumping stations. Construction of about 300 m of these rising mains along Hang Tau Road will be entrusted to Highways Department in conjunction with a road widening project in order to avoid repeated road opening works.

A site plan showing the location of the proposed sewerage works is at **Enclosure A.**

8. The sewage collected under the project will be conveyed to the Shek Wu Hui STW for secondary treatment before discharge into Deep Bay. Upon completion of the proposed sewerage works, we will be able to improve the water quality of Deep Bay by giving proper treatment to about 9 900 m^3 of untreated sewage which will enter Deep Bay each day by 2011. The remaining works under this SMP will commence in phases from 2003 to 2008 for completion from 2005 to 2009.

Yuen Long and Kam Tin SMP

9. This SMP aims to improve the water quality of Deep Bay and the local watercourses by constructing public sewers and pumping stations to collect and convey sewage from unsewered areas in the Northwest New Territories to the Yuen Long STW or the San Wai STW for treatment. Stage 1 involved improvement works for about 7 km of existing sewers in Yuen Long Town and building 3 km of new sewers for diverting some of the sewage flow from the Yuen Long STW (which discharges its effluent into Deep Bay) to the San Wai STW (which discharges its effluent into Urmston Road waters), thus reducing the amount of treated effluent being discharged into Deep Bay. These works were completed in 1998.

10. We now propose to upgrade part of **157DS "Yuen Long and Kam Tin sewerage, stage 2"** and part of **274DS "Yuen Long and Kam Tin sewerage, stage 3"** under this SMP to Category A. The construction works would be commissioned in the second half of 2002 for completion in mid 2005. The scope of the proposed works comprises the following -

(a) construction of approximately 950 m of trunk sewers from 300 mm to 900 mm in diameter;

(b) construction of approximately 3 240 m of twin rising mains of 500 mm to 700 mm in diameter; and

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[3] Sewers will be provided to these unsewered areas under the various stages of 203DS.

(c) construction of two associated sewage pumping stations in Yuen Long South and Au Tau.

A site plan showing the location of the proposed sewerage works is at **Enclosure B**.

11. The project will extend the existing public sewerage network to Yuen Long South, east of Yuen Long Town and Au Tau areas to serve a population of about 87 000 by 2016. Sewage collected will be conveyed to the San Wai STW for treatment before discharge into Urmston Road waters. Upon completion of the proposed sewerage works, we will be able to improve the water quality of Deep Bay by giving proper treatment to about 25 000 m^3 of untreated sewage which will enter Deep Bay each day. The remaining works under this SMP will commence in late 2003 for completion in 2008.

Other sewerage projects to protect Deep Bay

12. In addition to the works recommended under the SMPs, other non-SMP local sewerage projects (see paragraphs 13 and 14 below) have been planned to cater for specific unsewered villages and future developments in Yuen Long and North District.

(i) Northeast New Territories village sewerage

13. In 1990, Government initiated the "Northeast New Territories Landfill leachate treatment and village sewerage" scheme to provide leachate[4] treatment facilities to the Northeast New Territories (NENT) landfill and sewer networks to the nearby villages. The leachate treatment works and phase 1 of the sewerage scheme were completed in 1995 and 1996 respectively. We now propose to upgrade **61DR "Northeast New Territories village sewerage phase 2"** to Category A to commission the phase 2 construction works in July 2002 for completion in late 2004. The scope of the proposed works, which will provide sewerage facilities to 16 unsewered areas, comprises the following -

(a) construction of seven pumping stations and associated rising mains in the vicinity of Ping Che Road and Sha Tau Kok Road for collecting

[4] Leachate is highly contaminated underflow discharged from landfill site due to decomposition of waste materials in the landfill.

and conveying sewage to the Shek Wu Hui STW for proper treatment and disposal;

(b) construction of an aqua privy, communal septic tanks and absorption fields[5] for five remote unsewered areas for on-site treatment; and

(c) provision of sewers for 16 unsewered areas (including the five remote unsewered areas) in the Northeast New Territories.

A site plan showing the location of the proposed sewerage works is at **Enclosure C**. The sewage from the five relatively remote unsewered areas will be treated by the proposed on-site facilities. They will be designed and maintained by the Government for effective removal of pollutants in sewage. Sewage collected from the other 11 unsewered areas will be conveyed to the Shek Wu Hui STW for secondary treatment[6] before discharge into Deep Bay. Upon completion, we will be able to improve the water quality of Deep Bay by giving proper treatment to about 1 700 m^3 of untreated sewage, generated by a population of 5 500, which is now entering Deep Bay each day.

(ii) Northwest New Territories development – trunk sewers, sewage pumping stations and rising mains

14. In anticipation of the increase in demand for sewage services arising from future developments around Yuen Long Town and in the Yuen Long-Tuen Mun Corridor areas, Government has planned to upgrade and expand the sewerage facilities in these areas. Works were divided into three stages. The main works of stages 1 and 2, which involved works in Hung Shui Kiu and Ha Tsuen, were completed in 1993. We now propose to upgrade project **61DS "Northwest New Territories development - trunk sewers, sewage pumping stations and rising mains - stage 3"** to Category A to construct a sewerage system to serve future developments in Areas 13 and 14 in Yuen Long South. Works will commence in the second half of 2002 for completion in mid 2005. The scope of the proposed works comprises the following -

(a) construction of approximately 3 000 m of trunk sewers from 300 mm to 750 mm in diameter;

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[5] An absorption field provides the requisite surface area for proper treatment of septic tank effluent.

[6] For secondary treatment, the sewage is purified by means of biological treatment processes after the sewage has undergone primary treatment. The organic matter in the settled sewage is decomposed by micro-organisms in the biological treatment process.

(b) construction of approximately 630 m of twin rising mains of 350 mm in diameter; and

(c) construction of an associated sewage pumping station.

A site plan showing the location of the proposed sewerage works is at **Enclosure D**. Sewage collected will be conveyed to the San Wai STW for treatment before discharge into Urmston Road waters. Upon completion, we will be able to improve the water quality of Deep Bay by preventing about 16 400 m^3 of sewage, generated by a projected population of 56 400, from entering Deep Bay each day.

Improving Water Quality of Northwestern Waters

Tuen Mun SMP

15. The Tuen Mun SMP aims to reduce pollutants being discharged into the Northwestern waters by providing adequate sewerage facilities to serve the unsewered areas and other developments in Tuen Mun. It comprises the construction of 2.2 km of trunk sewers, six pumping stations and two low-flow interceptors and extending the public sewerage system to 25 unsewered villages. The construction of Ho Pong Street sewage pumping station, Tuen Mun Road low-flow interceptor, Yuen Long – Tuen Mun Corridor trunk sewer and Siu Hong Road low-flow interceptor has been completed.

16. Owing to the increase in population and planned new developments in Tuen Mun, the Environmental Protection Department (EPD) commissioned "Review of Tuen Mun and Tsing Yi SMPs" to review the adequacy of the sewerage infrastructure in the Tuen Mun and Tsing Yi catchments and the remaining works under the Tuen Mun SMP. The review, among others, identified the need to upgrade the capacity and treatment level of the Pillar Point sewage treatment works (PPSTW) in order to cope with the additional sewage flow from anticipated developments and growing population. The scope of the upgrading project is as follows -

(a) upgrading the sewage treatment capacity from 215 000 m^3 per day to 241 000 m^3 per day;

(b) upgrading the sewage treatment level from preliminary treatment[7] to chemically enhanced primary treatment[8] with disinfection[9]; and

(c) providing ancillary facilities such as waste reception facilities, sludge handling and dewatering facilities, etc.

A site plan showing the location of the proposed works is at **Enclosure E**.

17. Owing to the lack of in-house staff resources within the Administration, we propose to upgrade part of the **new item "Upgrading of Pillar Point sewage treatment works"** to Category A for Drainage Services Department (DSD) to engage consultants to carry out the following tasks -

(a) site investigations and surveys;
(b) treatment process investigations;
(c) environmental impact assessment; and
(d) preliminary design including recommendations on project delivery option.

18. We plan to start the investigations and preliminary design consultancy in June 2002 for completion in end 2003.

Improving Water Quality of Victoria Harbour

East Kowloon SMP Review

19. The East Kowloon SMP was developed in 1989 to upgrade the sewerage system in San Po Kong, Kowloon Bay and Kwun Tong to meet the demand for sewage services arising from new developments envisaged at the time in the area up to 2016 and to improve the water quality of neighbouring waters. These sewerage works commenced in 1991 and have been substantially completed in October 2001.

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[7] Preliminary treatment includes screening and removal of grit. Solids larger than 6 mm in diameter as well as grit which consists of sands, bone pieces etc are removed from the sewage.

[8] Chemicals are added during the CEPT process to enhance the removal of suspended solids and pollutants with oxygen demand.

[9] The proposed level of treatment for PPSTW will be reviewed after an Environmental Impact Assessment is conducted to assess the impact of the discharge of treated effluent into the receiving waters.

20. In 1999, EPD commissioned the "Review of Central and East Kowloon SMPs" to assess the adequacy of existing sewerage infrastructure in meeting the additional demand arising from further developments which emerged since the formulation of the original SMPs. The review identified that the capacity of the existing sewerage network at Cha Kwo Ling Road will not be able to cope with additional sewage flows from the new housing developments at the Eastern Harbour Crossing and Cha Kwo Ling Kaolin Mine housing sites, which are expected to be completed and start to take in population in 2004.

21. We propose to upgrade **326DS "Central and East Kowloon sewerage, sewage treatment and disposal - advance housing related works"** to Category A for the provision of sewerage to cope with the additional sewage flow from these new housing developments. The scope of the works comprises the following -

(a) Section 1 – constructing 330 m of new sewer of 600 mm in diameter and another 70 m of twin pipeline of 500 mm in diameter at Cha Kwo Ling Road to serve housing developments at the Eastern Harbour Crossing site; and

(b) Section 2 – replacing a 900 m-long existing sewer of 450 to 750 mm in diameter with a new sewer of 750 to 1 350 mm in diameter along Cha Kwo Ling Road downstream of the new sewer in (a) above, to cater for housing developments at the Eastern Harbour Crossing site and the Cha Kwo Ling Kaolin Mine site.

A site plan showing the location of the proposed works is at **Enclosure F**.

22. We plan to start the works in January 2003 for completion of the Section 1 works in June 2004 and the Section 2 works in July 2006. Upon completion, we will be able to convey sewage generated by a projected population of 51 000 in the two housing developments for treatment at the Kwun Tong Preliminary Treatment Works. The effluent will then be conveyed via the deep tunnel system under Stage 1 of HATS to the Stonecutters Island STW for further treatment.

Central, Western and Wan Chai West SMP

23. The majority of the sewers in Central, Western and Wan Chai West were built 30 years ago and need replacement. The Central, Western and Wan Chai West SMP aims to improve and upgrade the sewerage system in the subject areas for meeting future development needs by constructing new pumping stations and trunk sewer, replacing the existing old sewers, and rectifying the expedient connections[10] to the sewerage system.

24. Implementation of the SMP is divided into two stages. With the progressive completion of the trunk sewer system under stage 1, we are proceeding with the stage 2 works in phases. Construction of the stage 2 phase 1 works already commenced in October 2001. We now propose to upgrade part of **143DS** "Central, Western and Wan Chai West sewerage stage 2 phase 2 works" under this SMP to Category A. The scope of the proposed works comprises the following -

(a) constructing 600 m of new sewers from 300 mm to 800 mm in diameter for connecting the existing sewers to the stage 1 trunk system;

(b) upgrading and rehabilitating about 6.4 km of older sewer from 225 mm to 900 mm in diameter which are of critical capacity and with ageing problems;

(c) rectifying the associated expedient connections in the old sewers; and

(d) decommissioning of the Wan Chai West sewerage screening plant.

A site plan showing the location of the proposed works is at **Enclosure G**.

25. The construction works would commence in June 2002 for completion in late 2005. Upon completion, the upgraded sewers will have sufficient capacity to cope with the additional sewage flows from new developments with an estimated total residential population of 27 000 and an estimated non-residential population of 60 000 by 2011 in Central, Western District

[10] Expedient connections are improper connections which divert foul sewage flows into storm drains and storm-water flows into foul sewers. Through these connections, foul sewage can flow into the storm-water drainage system and pollute environmental waters. Storm-water will also enter the sewerage system through these connections and reduce the capacity of the sewage collection and treatment system for collecting and treating sewage.

and Wan Chai West. We plan to start the construction of the remaining works under this SMP in early 2004 for completion in 2007.

Improving Water Quality of Southern Waters

Outlying Islands SMP

26. The Outlying Islands SMP aims to reduce pollutants being discharged into the Southern and Northwestern waters by providing adequate sewerage and sewage treatment facilities to serve Lantau Island, Lamma Island, Peng Chau, and Cheung Chau. The stage 1 works are divided into 2 phases. Construction of the phase 1 works began in June 1998 for completion in April 2007. Stage 1 phase 2 works include the provision of village sewerage in the central areas of Cheung Chau, Peng Chau and Yung Shue Wan, the provision of village sewerage and sewage treatment facilities in Sok Kwu Wan and the upgrading of Peng Chau STW.

27. We now propose to upgrade part of **211DS "Outlying Islands sewerage stage 1 phase 2"** to Category A to start the construction of the village sewerage works in the central areas of Cheung Chau and Peng Chau in October 2002 for completion in May 2006. The scope of the proposed works comprises the following -

(a) construction of approximately 4 300 m of sewers from 150 mm to 400 mm in diameter in Cheung Chau;

(b) construction of approximately 2 200 m of sewers from 150 mm to 600 mm in diameter in Peng Chau;

(c) construction of a new sewage pumping station to replace the existing sewage pumping station in Peng Chau; and

(d) construction of approximately 500 m of twin rising mains of diameter 250 mm to replace the existing twin rising mains of diameter 150 mm in association with the construction of the new sewage pumping station in Peng Chau.

A site plan showing the location of the proposed works is at **Enclosure H**.

28. The sewage collected in Cheung Chau and Peng Chau under the proposed sewers will be conveyed to the Cheung Chau STW and Peng Chau STW respectively for treatment before discharge into the Southern waters. Upon completion of the proposed sewerage works, we will able to improve the water quality of the Southern waters by giving proper treatment to about 3 300 m^3 of sewage, generated by a projected population of 11 700 in 2016, which will enter the Southern waters each day.

FINANCIAL IMPLICATIONS

29. We estimate the project costs[11], in money-of-the-day (MOD) prices, and the annual recurrent costs[11] of the proposed works recommended for upgrading to Category A to be -

		Project cost $ million (MOD)	**Annual recurrent cost $ million**
(a)	North District sewerage	125.1	3.5
(b)	Yuen Long and Kam Tin sewerage, stage 2	110.3	1.6
(c)	Yuen Long and Kam Tin sewerage, stage 3	65.0	1.1
(d)	Northeast New Territories village sewerage phase 2	106.0	3.0
(e)	Northwest New Territories development – trunk sewers, sewage pumping stations and rising mains - stage 3	55.6	1.2
(f)	Upgrading of Pillar Point sewage treatment works	21.0	0
(g)	Central and East Kowloon sewerage, sewage treatment and disposal - advance housing related works	44.1	0.3
(h)	Central, Western and Wan Chai West sewerage, stage 2 phase 2 works	210.0	0
(i)	Outlying Islands sewerage, stage 1 phase 2	77.0	1.1

[11] They are the latest estimates. We would finalize the project costs and include cost breakdown prior to submitting the proposals to the PWSC for consideration.

	Project cost $ million (MOD)	Annual recurrent cost $ million
Total	814.1	11.8

30. Based on the current level of expenditure on operation and maintenance of sewerage facilities, the proposed works by themselves would lead to an increase in the recurrent cost of providing sewage services by about 0.9 %, which will need to be taken into account in determining sewage charges.

31. We estimate that the projects would create some 590 new jobs, including 120 professional/technical staff and 470 labourers, during the construction of the above proposed works and the proposed consultancy.

PUBLIC CONSULTATION

203DS - North District Sewerage

32. DSD consulted the Environmental and Development Committee of the then Provisional North District Board and the North District Council on the proposed stage 1 phases 1B and 2A works in November 1998 and June 2001 respectively. They supported the implementation of the proposed works.

157DS - Yuen Long and Kam Tin Sewerage, Stage 2
274DS - Yuen Long and Kam Tin Sewerage, Stage 3

33. DSD consulted the Shap Pat Heung Rural Committee in April 1999 and the Ping Shan Rural Committee in May 1999. DSD also consulted the Environmental Improvement Committee of the then Yuen Long Provisional District Board in May 1999. All the Committees supported the implementation of the proposed sewerage works.

61DR - Northeast New Territories village sewerage phase 2

34. DSD consulted the then North District Provisional District Board on the proposed works in September 1998. The Board supported the implementation of the proposed works. DSD then consulted the rural committee and the village representatives of individual villages in 1999 and 2000. All supported the implementation of the proposed works.

61DS - Northwest New Territories Development - Trunk Sewers, Sewage Pumping Stations And Rising Mains - Stage 3

35. DSD consulted both the Shap Pat Heung Rural Committee and the then Yuen Long Provisional District Board on the proposed sewerage works in August 1997. They supported the implementation of the proposed sewerage works.

New item - Upgrading of Pillar Point sewage treatment works

36. Environmental Protection Department (EPD) presented the findings and recommendations of the study for proposed upgrading works of PPSTW to Tuen Mun District Council in September 2001. The Council supported the implementation of the project.

326DS - Central and East Kowloon Sewerage, sewage treatment and disposal - advance housing related works

37. DSD and Housing Department consulted the Traffic and Transport Committee of Kwun Tong District Council in September 2001. The Committee supported the proposed works.

143DS - Central, Western and Wan Chai West sewerage, stage 2 phase 2

38. DSD consulted the Central and Western District Council and the Wan Chai District Council in November 2000. Both Councils had no objection to the implementation of the proposed works.

211DS – Outlying Islands sewerage, stage 1 phase 2

39. DSD consulted the then Islands Provisional District Board and the Peng Chau/Discovery Bay Area Committee about the proposed village sewerage works in the central area of Peng Chau in August 1999 and September 1999 respectively. They supported the implementation of the proposed works. DSD also consulted the Islands District Council and the Cheung Chau Area Committee about the proposed village sewerage works in the central area of Cheung Chau in August 2001 and September 2001. They supported the implementation of the proposed works.

ENVIRONMENTAL IMPLICATIONS

40. Upon completion of the above proposed construction works, we would provide proper sewage services to an estimated projected population of about 280 600 and non-residential population of about 60 000, and will prevent about 97 500 m^3 of sewage from entering into the receiving waters without proper treatment each day.

41. DSD has completed the necessary Environmental Review, Preliminary Environmental Review, or Environmental Impact Assessment (EIA) study for the proposed works in accordance with EPD's requirements or the EIA Ordinance. In general, the reviews and studies concluded that all the proposed construction works will not give rise to insurmountable environmental impacts with the implementation of mitigation measures. For short term impacts during construction, DSD will control noise, dust and site run-off within established standards and guidelines through implementation of environmental mitigation measures, such as the use of temporary noise barriers and silenced construction plant to reduce noise generation, water-spraying to reduce emission of dust, and strict control on diversion of sewage flows in the works contracts. DSD will also require works contractors to submit a waste management plan (WMP) to the Engineer for approval. The WMP will include appropriate measures to reduce, reuse and recycle construction and demolition materials (C&DM). DSD will ensure that the day-to-day operations on site comply with the WMP.

42. The proposed studies/assessment for the upgrading of PPSTW will

not give rise to any environmental impacts except for a minimal amount of C&DM that will be generated by the proposed site investigation works. In any event, DSD will require the consultants to fully consider measures to minimize the generation of C&DM and to reuse/recycle them as much as possible in the construction stage.

TRAFFIC IMPLICATIONS

43. We have completed the necessary traffic impact assessments for the above construction projects and formulated feasible temporary traffic schemes during the construction works. We will consult the relevant District Councils and parties concerned again on substantial temporary traffic diversion schemes for the proposed works prior to their commencement. During the execution of works, we will maintain road access as far as possible and display notice boards on site to explain the reason of temporary traffic arrangements and the proposed completion date of the concerned section of works. In addition, telephone hotlines will be set up for the public to make enquiries or lodge complaints. Since project **143DS "Central, Western and Wan Chai West sewerage, stage 2 phase 2"** involves works on busy roads, we will adopt the trenchless method[12] to construct sewers at critical sections on these roads so as to minimize the disturbance to the public.

ADVICE SOUGHT

44. Members are invited to support the Administration in seeking Public Work Subcommittee to recommend to Finance Committee the following funding proposals -

(a) upgrade part of **203DS "North District Sewerage"** to Category A at an estimated cost of $125.1 million in MOD prices in January 2002;

(b) upgrade part of **157DS "Yuen Long and Kam Tin sewerage, stage 2"** to Category A at an estimated cost of $110.3 million in MOD prices in May 2002;

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[12] Trenchless method refers to the use of micro-tunnelling or boring techniques to construct underground sewers and drain pipes without opening up the road surface. Although the trenchless method is about four times more expensive than the conventional open cut method, the former method, if feasible, is preferred to for carrying out works at busy road sections since it will greatly reduce the need for road opening and thus minimize disruption to traffic during the construction phase.

(c) upgrade part of **274DS "Yuen Long and Kam Tin sewerage, stage 3"** to Category A at an estimated cost of $65.0 million in MOD prices in May 2002;

(d) upgrade **61DR "Northeast New Territories village sewerage phase 2"** to Category A at an estimated cost of $106.0 million in MOD prices in April 2002;

(e) upgrade "**61DS - Northwest New Territories development - trunk sewers, sewage pumping stations and rising mains - stage 3"** to Category A at an estimated cost of $55.6 million in MOD prices in May 2002;

(f) upgrade part of a new item **"Upgrading of Pillar Point sewage treatment works"** to Category A at an estimated cost of $21.0 million in MOD prices in February 2002;

(g) upgrade **326DS "Central and East Kowloon sewerage, sewage treatment and disposal - advance housing related works"** to Category A at an estimated cost of $44.1 million in MOD prices in June 2002;

(h) upgrade part of **143DS "Central, Western and Wan Chai West sewerage, stage 2 phase 2 works"** to Category A at an estimated cost of $210.0 million in MOD prices in May 2002; and

(i) upgrade part of **211DS "Outlying Islands sewerage stage 1 phase 2"** to Category A at an estimated cost of $77.0 million in MOD prices in May 2002.

Environment and Food Bureau
Drainage Services Department
November 2001