

**For discussion
on 24 April 2006**

Legislative Council Panel on Environmental Affairs

61DR – Northeast New Territories village sewerage, phase 2

PURPOSE

This paper seeks Members' views on the Administration's proposal to make a submission concerning **61DR** to the Public Works Subcommittee with a view to seeking the Finance Committee's approval to increase the approved project estimate (APE) of **61DR** from \$107.0 million by \$38.0 million to \$145.0 million in money-of-the-day (MOD) prices.

BACKGROUND

2. In April 2002, we upgraded **61DR** to Category A at an estimated cost of \$107 million in MOD prices for implementing the Northeast New Territories (NENT) village sewerage phase 2 works. The approved scope of works under **61DR** comprises the construction of –

- (a) about 13 kilometers (km) of sewers, including house connection works, for 16 unsewered areas in the Northeast New Territories (NENT), namely Heung Yuen Wai, Ha Heung Yuen, Tsung Yuen Ha, Chuk Yuen North, Chuk Yuen South, Kaw Liu, Ta Kwu Ling, Kan Tau Wai, Tong Fong, Ping Yeung, Tai Po Tin, Ping Che, Pak Hok Shan, Tai Tong Wu, Leng Tsai and Hung Leng;
- (b) seven sewage pumping stations with associated rising mains (three in Ping Yeung, and one each in Chuk Yuen North, Hung Leng, Leng Tsai and Tai Tong Wu);
- (c) five communal septic tanks and absorption fields¹ (one set each in Heung Yuen Wai, Ha Heung Yuen, Tsung Yuen Ha, Chuk Yuen North and Chuk Yuen South); and
- (d) an aqua-privy with associated septic tank and absorption field in Fung Wong Wu.

A layout plan of the project is at Enclosure 1.

¹ An absorption field provides the requisite surface area for proper treatment of septic tank effluent.

3. We started the construction works in January 2003 and planned to complete the works in February 2006. Owing to the time taken for carrying out the additional works arising from house connection works and addressing villagers' concerns in various aspects, the works are now expected to complete in early 2007.

PROPOSAL AND JUSTIFICATION

4. We propose to increase the APE of **61DR** by \$38.0 million to cover the cost due to additional works arising from house connection works, disruption to the progress of works due to local villagers' concerns and requests during construction, higher-than-expected tendered price, and inflation over the past few years. An account of these main reasons for the need for additional funds is provided in paragraphs 5 to 14 below, and an item-by-item breakdown is provided in Enclosure 2.

Additional Works Arising from House Connection Works

5. The NENT Landfill was developed in the late 1980s. The development plan included construction of a trunk sewer which would convey pre-treated leachate from the NENT Landfill to the Shek Wu Hui Sewage Treatment Works, and which would also serve nearby villages. During the consultation on implementation of the NENT Landfill project and the sewerage system, the Government agreed to complete the house connection works (i.e. installing sewer pipes to connect individual village houses to the public sewers) for those houses that already existed before the operation of the landfill in mid 1995 and the owners of which could be contacted. The house owners in return would be required to give consent to the Government contractor to carry out the house connection works within their premises and take up the subsequent maintenance of the completed works.

6. During the planning and design stage, we carried out a survey and issued letters to the villagers requesting them to give the consent described in paragraph 5 above, if they wished the Government to complete the house connection works for them. Based on the feedback from the villagers and further discussions with the village representatives, we estimated that there were 880 village houses the house connections of which would be carried out by the Government. However, during the course of construction, some local villagers who had not given consent for the Government to do the works during the survey requested such house connection, and provided information to substantiate that their village houses had existed before mid 1995. After reviewing our records and the information provided, we considered that there were about 270 additional

village houses for which the Government should carry out the house connection for them. As a result, the number of houses that required house connection works under this project increased from about 880 by 270 to about 1,150. Connections to these additional houses had not been allowed for in the original estimate. However since these houses meet the basic criterion of having been in existence at the time the landfill came into operation in mid 1995, we do not consider it reasonable or equitable to refuse to provide connections for them just because the requests from the owners have come late. Furthermore, it would be environmentally unacceptable to allow the sewage generated from these houses to continue to pollute the environment for an unduly long period of time without the necessary house connections.

7. A second factor contributing significantly to the increase in the latest project estimate is the fact that during the course of construction we found many of the houses to be connected are equipped with multiple wastewater outlets. As a result, more pits and longer sewers than expected were required to suit the internal drainage layout of the individual houses.

Variations to Address Villagers' Concerns and Requests During Construction

8. We consulted the relevant District Council, Rural Committee and Village Representatives on the implementation of the village sewerage works under this project before formal gazettal of the works under the Water Pollution Control (Sewerage) Regulation. We then gazetted the sewerage works in 1999 and 2001 and subsequently obtained authorization of the works without receiving any objections. However, since the commencement of works in January 2003, there have been many occasions when local people have objected to various aspects, for various reasons. The major objections concerned the proposed sewage pumping stations in Tai Tong Wu and Ping Yeung. The objectors strongly resisted the presence of these sewage facilities in the vicinity of their houses because of their perception of possible adverse effects on "Fung Shui" and hygiene arising from these facilities. Others worried about the integrity of their houses being adversely affected during the construction of the sewers along the narrow alleys and requested sewer realignment.

9. To resolve the many objections from various parties, we had to revise the location and design of the pumping stations and amend the sewer layout. These variations resulted in a number of site problems and hence additional construction time and costs. For instance, we had to construct a pumping station adjacent to a slope resulting in additional costly slope works. We also relocated a section of sewer to run along the heavily trafficked Sha Tau Kok Road and constructed it by the expensive trenchless method so as to minimize traffic impact.

10. In many cases, our working sequence and construction method had to be revised to meet the demands of individual villagers, such as those required to avoid affecting the access to their houses, and work had to be done in small sections and in a piecemeal manner. This was further complicated by the presence of uncharted utilities because a longer time is required and space is often limited for utility diversion in those narrow alleys between village houses.

11. The above-mentioned additional works and variations delayed the completion of the proposed sewerage works under **61DR** by about a year. As the contractor for **61DR** was not responsible for the delay, the prolongation costs have to be borne by the Government under the terms of the contract.

Additional Site Supervision and Liaison

12. The proposed house connection works involve the design and construction of sewer connections to all existing sewage and sullage outlets from the village houses. Since each village house has its own internal sewage pipe arrangement, we have had to tailor the arrangement of house connection works for each of the village houses separately, through extensive liaison with the house owners.

13. Although no objection was received when the sewerage works were gazetted in 1999 and 2001, we encountered objections from local villagers on land resumption arrangements just before we invited tenders. Taking into account the likelihood of further objections and the considerable efforts in liaising with local villagers on acceptable house connection arrangements with least disruption to them, we decided to enhance the site supervisory team to deal with such time-consuming and labour-intensive liaison work.

Higher-than-Expected Tendered Price

14. The contract works were procured through a competitive tendering process, and we subsequently accepted the lowest tender. The overall tendered sum was about 5% higher than the corresponding sum allocated in the APE. In particular, the successful contractor included relatively high unit rates for constructing and connecting sewers in his bid, and these rates were 28% higher than those anticipated in the original estimate. The contractor might have expected more resources to be required for carrying out sewerage works in remote restricted areas and in private premises. The contract is a remeasurement contract with payment made to the contractor based on the tendered unit rate and quantity of sewerage actually carried out. While the sewerage works have been substantially increased as

mentioned in the above paragraphs, the higher-than-expected unit rates for sewerage works have also contributed a major portion of the increase in project cost.

15. Following a review of the financial position of the project, we consider it necessary to increase the APE of **61DR** from \$107.0 million by \$38.0 million to \$145.0 million in MOD prices in order to cover the total costs of the works under the project. A summary of the proposed increase of \$38.0 million is as follows –

Factor		Increase/ (Decrease) in MOD prices (\$ million)	%
(a)	Additional cost of works	21.5	56.6
(b)	Increase in site staff costs	10.7	28.1
(c)	Higher awarded contract sum than the sum allowed in the APE	4.1	10.8
(d)	Contractor's prolongation costs	3.0	7.9
(e)	Inflation allowance	5.8	15.3
(f)	Contingencies	(7.1)	(18.7)
Total		38.0	100.0

A comparison of the cost breakdown of the APE and the revised project estimate is at Enclosure 2.

16. The proposed increase in the APE will not give rise to any additional recurrent expenditure.

PUBLIC CONSULTATION

17. We have been keeping the local community informed of the latest development of this project. On 16 March 2006, the Chairman of the Ta Kwu Ling District Rural Committee wrote to us reiterating his support for the project and urging the Government to seek additional funds for completing the project so as to fully discharge the Government's previous commitment to provide house connections to the villagers affected by the NENT Landfill project.

ENVIRONMENTAL IMPLICATIONS

18. The proposed increase in the APE does not have any environmental implications.

ADVICE SOUGHT

19. Members are invited to support our proposal to make a submission concerning **61DR** to the Public Works Subcommittee in May 2006 with a view to seeking the Finance Committee's approval in June 2006 for increasing the APE of **61DR** from \$107.0 million by \$38.0 million to \$145.0 million in MOD prices.

Environmental Protection Department
April 2006



竹園(北)
CHUK YUEN (NORTH)

竹園(南)
CHUK YUEN (SOUTH)

較寮
KAW LIU

簡頭圍
KAN TAU WAI

鳳凰湖
FUNG WONG WU

大埔田
TAI PO TIN

石湖墟污水處理廠
SHEK WU HUI SEWAGE
TREATMENT WORKS

新界東北部鄉村污水收集系統第2期
NORTHEAST NEW TERRITORIES VILLAGE SEWERAGE, PHASE 2

蓮麻坑路
LIN MA HANG ROAD

下香園
HA HEUNG YUEN

香園圍
HEUNG YUEN WAI

新界東北堆填區
NENT LANDFILL

打鼓嶺
TA KWU LING

塘坊
TONG FONG

坪洋
PING YEUNG

坪輦
PING CHE

白鶴山
PAK HOK SHAN

大塘湖
TAI TONG WU

嶺仔
LENG TSAI

孔嶺
HUNG LENG

沙頭角路
SHA TAU KOK ROAD

圖例

LEGEND :

新界東北堆填區滲濾污水處理第1期

NENT LANDFILL LEACHATE TREATMENT WORKS PHASE 1



已建之滲濾處理廠
EXISTING LEACHATE TREATMENT WORKS



已建之滲濾輸送管及泵房
EXISTING LEACHATE PIPELINE & PUMPING STATION

新界東北部鄉村污水收集系統第1期

NORTHEAST NEW TERRITORIES VILLAGE SEWERAGE PHASE 1



已建之鄉村污水收集系統主幹渠及泵房
EXISTING VILLAGE SEWERAGE TRUNK SEWER & PUMPING STATION

新界東北部鄉村污水收集系統第2期

NORTHEAST NEW TERRITORIES VILLAGE SEWERAGE PHASE 2



擬建之污水收集系統所覆蓋的鄉村範圍
VILLAGE AREAS TO BE COVERED BY THE PROPOSED SEWERAGE



擬建之泵房
PROPOSED PUMPING STATION



在鳳凰湖村擬建之公共廁所
PROPOSED AQUA-PRIVY AT FUNG WONG WU



擬建之公共化糞池及滲濾場
PROPOSED COMMUNAL SEPTIC TANKS & ABSORPTION FIELDS

繪畫 drawn	Original Signed	C.W. CHAN	日期 date	09-01-2002
核對 checked	Original Signed	K.H. LAI	日期 date	09-01-2002
批准 approved	Original Signed	S.S. LAM	日期 date	09-01-2002
部門 office	顧問工程管理部 CONSULTANTS MANAGEMENT DIVISION			

圖則編號 drawing no.	比例 scale
DCM/2002/001	N.T.S.
保留版權 COPYRIGHT RESERVED	
 香港特別行政區政府渠務署 DRAINAGE SERVICES DEPARTMENT GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION	

61DR - Northeast New Territories village sewerage, phase 2

A comparison of the approved project estimate and revised project estimate is as follows –

	Approved Estimate for 61DR (MOD) \$ million	Revised Estimate after the Contract award (MOD) \$ million	Latest Revised Estimate for 61DR (MOD) \$ million	Difference \$ million
(a) Sewers (including house connection works)	49.3	63.0	86.3	37.0
(b) Sewage Pumping Stations				
(i) civil works	7.1	6.3	11.0	3.9
(ii) electrical and mechanical works	13.7	6.7	9.0	(4.7)
(c) Communal septic tanks and absorption fields	5.1	4.4	4.4	(0.7)
(d) Aqua-privy	0.9	0.9	0.9	0.0
(e) Environmental mitigation measures	2.6	1.5	1.5	(1.1)
(f) Consultant's fees for				
(i) contract administration	3.9	3.9	3.9	0.0
(ii) site supervision	14.3	19.0	25.0	10.7
(g) Contingencies	10.1	1.3	3.0	(7.1)
Total	107.0	107.0	145.0	38.0

2. As regards (a) (sewers including house connection works), the total increase of \$37.0 million includes –

- (i) \$13.7 million due to the higher-than-expected unit rates for the sewerage and house connection works under the awarded contract;
- (ii) \$7.2 million for the costs arising from an additional number of about 270 houses with their late requests for house connection made after commencement of the works;
- (iii) \$7.3 million for the costs arising from variations to address villagers' concerns and requests during construction and additional works to overcome unforeseen site constraints;
- (iv) \$3.0 million for the contractor's prolongation cost due to extended contract period; and
- (v) \$5.8 million for the costs arising from inflation.

3. As regards (b) (i) (civil works for sewage pumping stations), the total increase of \$3.9 million includes –

- (i) the increase of \$4.7 million for the costs arising from the additional works to resolve local objections; and
- (ii) the decrease of \$0.8 million due to lower-than-expected unit rates for these civil works under the awarded contract.

4. As regards (b) (ii) (electrical and mechanical works for sewage pumping stations), the total decrease of \$4.7 million includes –

- (i) the increase of \$2.3 million for the costs arising from the additional electrical and mechanical works to suit the revised layout of the pumping stations; and
- (ii) the decrease of \$7.0 million due to lower-than-expected unit rates for the electrical and mechanical works under the awarded contract.

5. As regards (c) (Communal septic tanks and absorption fields), the decrease of \$0.7 million is due to lower-than-expected unit rates for these works under the awarded contract.

6. **As regards (e) (Environmental mitigation measures)**, the decrease of \$1.1 million is due to lower-than-expected unit rates for the environmental mitigation measures under the awarded contract.

7. **As regards (f) (ii) (site supervision), the total increase of \$10.7 million includes –**

- (i) \$6.0 million to cover additional site staff cost due to the extended contract period of the project; and
- (ii) \$4.7 million to cover additional site staff cost to enhance the site supervision team to deal with the time-consuming and labour-intensive liaison work.

8. **As regards (g) (contingencies)**, we retain \$3.0 million as the contingencies for future incidental additional works, for settlement of the final accounts and resolution of possible claims from the contractor.