

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

### **HEAD 704 – DRAINAGE**

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

**417DS – Construction and rehabilitation of trunk sewage rising mains in Yuen Long**

**419DS – Construction and rehabilitation of sewage rising mains in Tai Po Kau**

**420DS – Construction and rehabilitation of trunk sewage rising mains in Yau Tong**

Members are invited to recommend to the Finance Committee –

- (a) the upgrading of **417DS** to Category A at an estimated cost of \$886.3 million in money-of-the-day (MOD) prices;
- (b) the upgrading of **419DS** to Category A at an estimated cost of \$107.6 million in MOD prices; and
- (c) the upgrading of **420DS** to Category A at an estimated cost of \$621.1 million in MOD prices.

**/PROBLEM .....**

## PROBLEM

2. Two sections of sewage rising mains in Yuen Long, one section of sewage rising main in Tai Po Kau and one section of sewage rising main in Yau Tong have been in service for many years and are suffering from ageing and deterioration. There is a need to construct and rehabilitate these four sections of rising mains to enhance the operation reliability of the sewerage system and reduce the potential risks of polluting the environment.

## PROPOSAL

3. The Director of Drainage Services, with the support of the Secretary for the Environment, proposes to upgrade the following projects to Category A –

- (a) **417DS** at an estimated cost of \$886.3 million in MOD prices for the construction and rehabilitation of two sections of the rising mains in Yuen Long;
- (b) **419DS** at an estimated cost of \$107.6 million in MOD prices for the construction of one section of twin rising mains in Tai Po Kau; and
- (c) **420DS** at an estimated cost of \$621.1 million in MOD prices for the construction and rehabilitation of one section of the rising mains in Yau Tong.

## PROJECT SCOPE AND NATURE

4. The Government has been planning and extending the sewerage infrastructure proactively over the years to strive for continuous improvement in the public hygiene condition and water quality in rivers, harbours and open waters. In recent years, the sewerage planning strategy focuses on four aspects, namely upgrading sewage treatment facilities and extending public sewerage systems to cater for population growth and development needs; providing village sewerage systems to improve the rural environment; installing dry weather flow interceptors to improve the water quality of nearshore waters of Victoria Harbour; and rehabilitating aging sewers progressively.

5. At present, there are about 1 800 kilometres (km) of underground sewers in Hong Kong, of which 180 km are rising mains. Many of these rising mains have been in service for many years and are of single-pipe design, with the risk of pipe burst increasing over the remaining service life. Depending on the extent of ageing and deterioration, we will rehabilitate aged rising mains progressively and upgrade them to twin-pipe system in order to enhance their operational reliability and prevent pollution caused by leakage. Currently, there are 9 km of rising mains under replacement and rehabilitation and we plan to carry out similar works for another 75 km of rising mains in the coming 10 years, including the three proposed projects.

6. Apart from the above-mentioned plans, we are planning sewerage facilities to support various regional and housing developments and conducting feasibility studies for pollutant interception projects to improve the quality of nearshore waters of Victoria Harbour. We will submit further recommendations on these projects at appropriate time for the Legislative Council's consideration.

7. This paper consists of three projects for the construction and rehabilitation of rising mains in Yuen Long, Tai Po Kau and Yau Tong, which will serve an ultimate population of about 470 000.

8. Details of the above proposals are provided at **Enclosures 1 to 3** respectively.

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Environment Bureau  
April 2021

**417DS – Construction and rehabilitation of trunk sewage rising mains  
in Yuen Long**

**PROJECT SCOPE AND NATURE**

The proposed scope of works under **417DS** comprises –

- (a) the construction of about 2.7 kilometres (km) of sewage rising main with a diameter of 1 000 millimetres (mm) between Ping Shun Street Sewage Pumping Station (PSSPS) and the sewerage network at Tin Fuk Road and about 1 km of sewage rising main with a diameter of 900 mm between PSSPS and the sewerage network at Wang Lok Street;
- (b) the rehabilitation of about 2.7 km of rising main with a diameter of 1 000 mm between PSSPS and sewerage network at Tin Fuk Road and about 1 km of rising main with a diameter of 900 mm between PSSPS and the sewerage network at Wang Lok Street; and
- (c) ancillary works<sup>1</sup>.

2. A plan showing the location of the proposed works is at **Annex 1 to Enclosure 1**.

3. We plan to commence the proposed works upon obtaining funding approval from the Finance Committee for target completion of the works in around five years.

**JUSTIFICATION**

4. According to the evaluation of the “Enhanced Management of Underground Sewer and Drain Networks – Feasibility Study” conducted in 2015, two sections of trunk rising main in Yuen Long between PSSPS and the sewerage network at Tin Fuk Road, and between PSSPS and the sewerage network at Wang Lok .....  
/Lok .....

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<sup>1</sup> Ancillary works include the utilities diversion, provision of manholes, temporary closure and reinstatement of carriageways/footpaths/open space, necessary landscaping works that are required to complete the proposed works.

Lok Street, should be rehabilitated. These two existing rising mains serve a planned population of about 280 000. As the rising mains have been in service continuously for more than 21 years, they are suffering from ageing and deterioration. If the rising mains are damaged or encountered operational failure, the water quality of Deep Bay will be adversely affected.

5. We now propose to rehabilitate the two existing rising mains mentioned above and construct two new rising mains of a total length of about 3.7 km. Trenchless technologies will be employed as far as possible to reduce inconvenience to the public.

## FINANCIAL IMPLICATIONS

6. We estimate the cost of the proposed works to be \$886.3 million in money-of-the-day (MOD) prices (please see paragraph 8 below), broken down as follows –

		\$ million (in MOD prices)
(a)	Construction of rising mains	393.4
(b)	Rehabilitation of rising mains	275.3
(c)	Ancillary works	34.7
(d)	Environmental mitigation measures	2.6
(e)	Consultants' fees for	3.8
	(i) contract administration	2.1
	(ii) management of resident site staff (RSS)	1.7
(f)	Remuneration of RSS	95.9
(g)	Contingencies	80.6
Total		<hr/> 886.3 <hr/>

7. We propose to engage consultants to undertake contract administration and site supervision of the project. A detailed breakdown of the estimates for the consultants' fees and RSS costs by man-months is at **Annex 2 to Enclosure 1**.

8. Subject to funding approval, we plan to phase the expenditure as follows –

Year	\$ million (in MOD prices)
2021 – 2022	2.5
2022 – 2023	40.2
2023 – 2024	201.2
2024 - 2025	312.7
2025 – 2026	242.9
2026 – 2027	42.1
2027 – 2028	26.9
2028 – 2029	10.4
2029 – 2030	7.4
	<hr/> 886.3 <hr/>

9. We have derived the MOD estimates on the basis of the Government's latest forecast of the trend rate of change in the prices of public sector building and construction output for the period from 2021 to 2030. We will deliver the proposed works under a New Engineering Contract (NEC<sup>2</sup>) form of contract with provision for price adjustment.

/10. ....

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<sup>2</sup> NEC is a suite of contracts developed by the Institution of Civil Engineers, United Kingdom. It is a contract form that emphasises cooperation, mutual trust and collaborative risk management between contracting parties.

10. We estimate the additional annual recurrent expenditure arising from the proposed project to be \$970,000. The recurrent expenditure will be taken into consideration when determining the sewage charge and trade effluent surcharge rates in future.

## **PUBLIC CONSULTATION**

11. We have consulted the Housing, Town Planning and Development Committee of Yuen Long District Council on 18 November 2020. The Committee had no objection to the proposed works.

12. We consulted the Panel on Environmental Affairs of the Legislative Council on 22 March 2021 and Members supported the proposed works.

## **ENVIRONMENTAL IMPLICATIONS**

13. The project is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). The project will not cause long-term environmental impacts. We have included in paragraph 6(d) above a sum of \$2.6 million (in MOD prices) in the project estimate to implement suitable mitigation measures to control the short-term environmental impacts.

14. At the construction phase, we will require the contractors to control noise, dust and site run-off nuisances to within the established standards and guidelines through the implementation of the recommended mitigation measures. These measures include the use of silenced construction equipment and temporary noise barriers to reduce noise impact, regular water-spraying to the construction site to minimise emission of fugitive dust, and on-site treatment of site run-off to minimise potential water quality impact. We will also carry out regular site inspections to ensure that these recommended mitigation measures and good practices will be properly implemented on site.

15. At the planning and design stages, we have considered ways to reduce the generation of construction waste (e.g. use of trenchless construction method to avoid excavation works) where possible. In addition, we will require the contractors to reuse inert construction waste (e.g. excavated soil) on site or in other suitable construction sites as far as possible in order to minimise the disposal

/of .....

of inert construction waste at the public fill reception facilities (PFRF<sup>3</sup>). We will encourage the contractors to maximise the use of recycled or recyclable inert construction waste, and the use of non-timber formwork to further reduce the generation of construction waste.

16. We will also require the contractors 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 contractors 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.

17. We estimate that the proposed works will generate in total about 48 200 tonnes of construction waste. Of these, we will reuse about 31 300 tonnes (65%) of inert construction waste on site, and deliver about 13 300 tonnes (28%) of inert construction waste to PFRF for subsequent reuse. We will dispose of the remaining 3 600 tonnes (7%) of non-inert construction waste at landfills. The total cost for disposal of construction waste at PFRF and landfill sites is estimated to be about \$1.7 million for the proposed works (based on a unit charge rate of \$71 per tonne for disposal at PFRF and \$200 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)).

## **HERITAGE IMPLICATIONS**

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

## **LAND ACQUISITION**

19. No land resumption is required for the proposed works.

**/BACKGROUND .....**

<sup>3</sup> PFRF are specified in Schedule 4 of Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste at PFRF requires a licence issued by the Director of Civil Engineering and Development.

## BACKGROUND INFORMATION

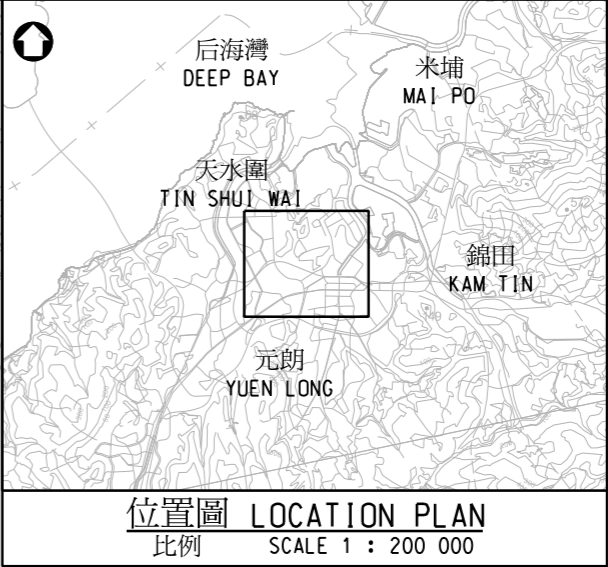
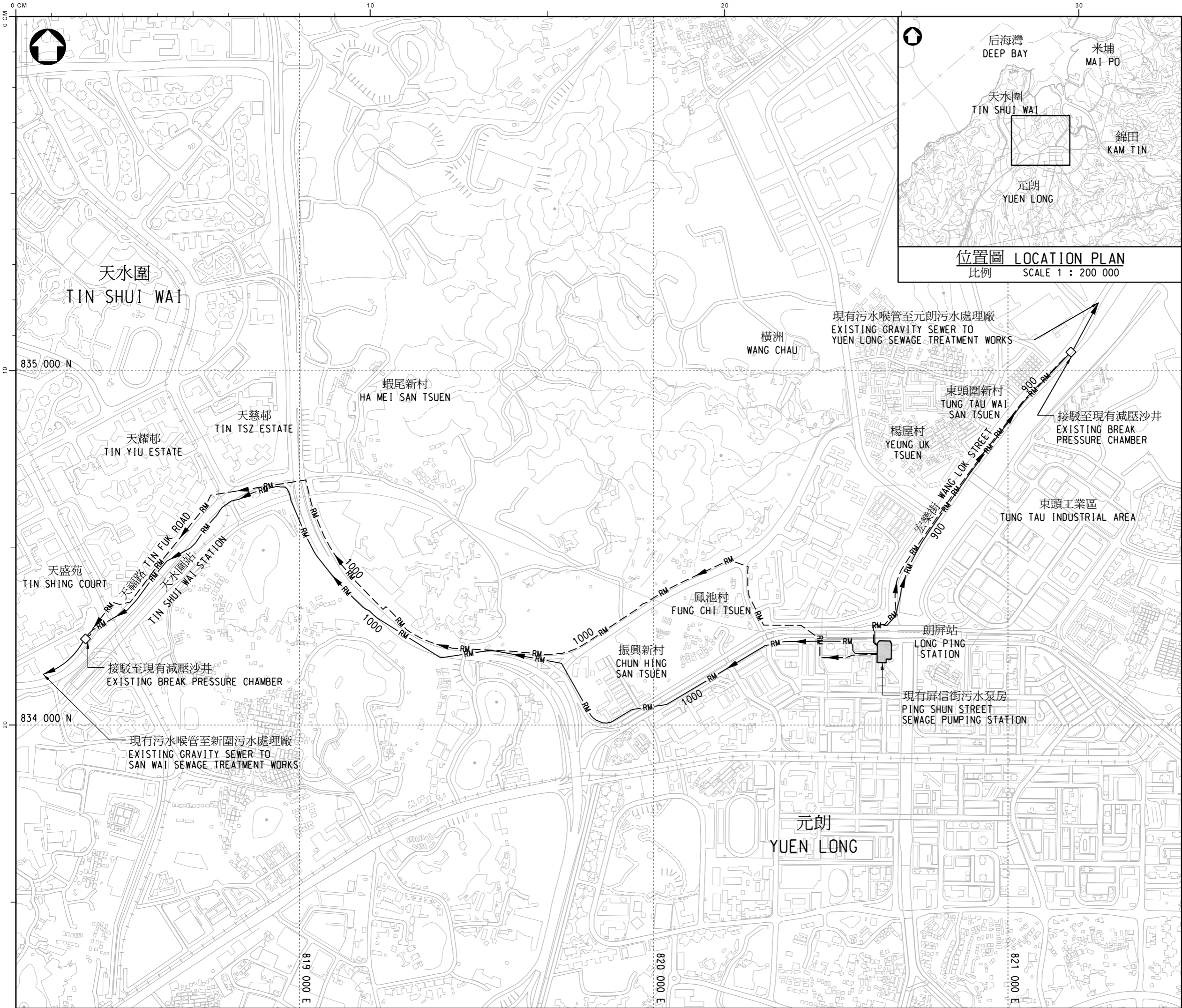
20. We upgraded **417DS** to Category B in September 2017.

21. In January 2019, we engaged consultants to undertake site investigation, surveys, impact assessments and detailed design for the proposed works. The total estimated cost was \$13.9 million in MOD prices. We have charged this amount to block allocation **Subhead 4100DX** “Drainage works, studies and investigations for items in Category D of the Public Works Programme”. We have substantially completed the detailed design of the proposed works mentioned in paragraph 1 above.

22. The proposed works will not involve any tree removal or planting proposals.

23. We estimate that the proposed works will create about 140 jobs (110 for labourers and 30 for professional or technical staff), providing a total employment of 7 300 man-months.

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圖例  
LEGEND :

- RM 900 擬修復現有直徑900毫米的污水泵喉  
EXISTING 900mm DIAMETER RISING MAIN  
TO BE REHABILITATED
- RM 1000 擬修復現有直徑1000毫米的污水泵喉  
EXISTING 1000mm DIAMETER RISING MAIN  
TO BE REHABILITATED
- RM 900 擬新建直徑900毫米的污水泵喉  
PROPOSED 900mm DIAMETER RISING MAIN  
TO BE CONSTRUCTED
- RM 1000 擬新建直徑1000毫米的污水泵喉  
PROPOSED 1000mm DIAMETER RISING MAIN  
TO BE CONSTRUCTED

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修訂 REVISION

	姓名 name	日期 date
繪畫 drawn	SIGNED K. S. LEUNG	18 DEC 2020
核對 checked	SIGNED Ir Y. H. LEE	18 DEC 2020
批核 approved	SIGNED Ir S. Y. CHAN	18 DEC 2020

圖則名稱 drawing title

工務工程計劃編號417DS  
- 元朗污水主幹泵喉建造及修復工程  
PWP ITEM NO. 417DS  
- CONSTRUCTION AND  
REHABILITATION OF  
TRUNK SEWAGE RISING MAINS  
IN YUEN LONG

圖則編號 drawing no.

DCM/2020/041

比例 scale

1 : 10 000

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顧問工程管理部  
CONSULTANTS MANAGEMENT DIVISION

香港特別行政區政府渠務署  
DRAINAGE SERVICES DEPARTMENT  
GOVERNMENT OF THE  
HONG KONG  
SPECIAL ADMINISTRATIVE REGION

## Annex 2 to Enclosure 1 to PWSC(2021-22)7

### 417DS – Construction and rehabilitation of trunk sewage rising mains in Yuen Long

#### Breakdown of the estimates for consultants' fees and resident site staff costs (in September 2020 prices)

			Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
(a)	Consultants' fees for contract administration (Note 2)	Professional	-	-	-	1.1
		Technical	-	-	-	0.6
					Sub-total	1.7#
(b)	Resident site staff (RSS) costs (Note 3)	Professional	323	38	1.6	44.4
		Technical	736	14	1.6	35.6
					Sub-total	80.0
	Comprising –					
	(i) Consultants' fees for management of RSS				1.4#	
	(ii) Remuneration of RSS				78.6#	
					<b>Total</b>	<b>81.7</b>

\* MPS = Master Pay Scale

#### Notes

1. 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 salary point 38 = \$85,870 per month and MPS salary point 14 = \$30,235 per month).
2. The consultants' staff cost for contract administration is calculated in accordance with the existing consultancy agreement for the design and construction of **417DS**. The construction phase of the assignment will only be executed subject to Finance Committee's approval to upgrade **417DS** to Category A.
3. The actual man-months and actual costs will only be known after the completion of the construction works.

#### Remarks

The figures in this Annex are shown in constant prices to correlate with the MPS salary point of the same year. The figures marked with # are shown in money-of-the-day prices in paragraph 6 of Enclosure 1.

**419DS – Construction and rehabilitation of sewage rising mains  
in Tai Po Kau**

**PROJECT SCOPE AND NATURE**

The proposed scope of works under **419DS** comprises –

- (a) the construction of about 600 metres (m) of twin sewage rising mains with a diameter of 300 millimetres (mm) between Tai Po Kau Sewage Pumping Station (TPKSPS) and the sewerage network at Nam Wan Road; and
- (b) ancillary works<sup>1</sup>.

2. A plan showing the location of the proposed works is at **Annex 1 to Enclosure 2**.

3. We plan to commence the proposed works upon obtaining funding approval from the Finance Committee for target completion of the works in around two years.

**JUSTIFICATION**

4. According to the evaluation of the “Enhanced Management of Underground Sewer and Drain Networks Feasibility Study” conducted in 2015, a section of rising main between TPKSPS and the sewerage network at Nam Wan Road should be replaced. This existing single-pipe rising main serves a planned population of about 11 000. As it has been in service continuously for more than 35 years, it is suffering from ageing and deterioration. If this rising main is damaged or encountered operational failure, the water quality of Tolo Harbour will be adversely affected.

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<sup>1</sup> Ancillary works include the utilities diversion, provision of manholes, temporary closure and reinstatement of carriageways/footpaths/open space, necessary landscaping works that are required to complete the proposed works.

5. We now propose to construct about 600 m of twin rising mains with a diameter of 300 mm to substitute for the existing one. Trenchless technologies will be employed as far as possible to reduce inconvenience to the public.

## FINANCIAL IMPLICATIONS

6. We estimate the cost of the proposed works to be \$107.6 million in money-of-the-day (MOD) prices (please see paragraph 8 below), broken down as follows –

		\$ million (in MOD prices)
(a)	Construction of twin rising mains	78.3
(b)	Ancillary works	6.5
(c)	Environmental mitigation measures	1.0
(d)	Consultants' fees for	0.4
	(i) contract administration	0.2
	(ii) management of resident site staff (RSS)	0.2
(e)	Remuneration of RSS	11.6
(f)	Contingencies	9.8
		<hr/>
	Total	107.6

7. We propose to engage consultants to undertake contract administration and site supervision of the project. A detailed breakdown of the estimates for the consultants' fees and RSS costs by man-months is at **Annex 2 to Enclosure 2**.

8. Subject to funding approval, we plan to phase the expenditure as follows –

Year	\$ million (in MOD prices)
2021 – 2022	0.2
2022 – 2023	20.3
2023 – 2024	59.4
2024 – 2025	20.0
2025 – 2026	6.5
2026 – 2027	1.2
	<hr/> 107.6 <hr/>

9. We have derived the MOD estimates on the basis of the Government's latest forecast of the trend rate of change in the prices of public sector building and construction output for the period from 2021 to 2027. We will deliver the proposed works under a New Engineering Contract (NEC<sup>2</sup>) form of contract with provision for price adjustment.

10. We estimate the additional annual recurrent expenditure arising from the proposed project to be \$180,000. The recurrent expenditure will be taken into consideration when determining the sewage charge and trade effluent surcharge rates in future.

## **PUBLIC CONSULTATION**

11. We have consulted the Planning, Housing and Works Committee of the Tai Po District Council on 17 November 2020. The Committee supported the proposed works.

/12. ....

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<sup>2</sup> NEC is a suite of contracts developed by the Institution of Civil Engineers, United Kingdom. It is a contract form that emphasises cooperation, mutual trust and collaborative risk management between contracting parties.

12. We consulted the Panel on Environmental Affairs of the Legislative Council on 22 March 2021 and Members supported the proposed works.

## ENVIRONMENTAL IMPLICATIONS

13. The project is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). The project will not cause long-term environmental impacts. We have included in paragraph 6(c) a sum of \$1 million (in MOD prices) in the project estimate to implement suitable mitigation measures to control the short-term environmental impacts.

14. At the construction phase, we will require the contractors to control noise, dust and site run-off nuisances to within the established standards and guidelines through the implementation of the recommended mitigation measures. These measures include the use of silenced construction equipment and temporary noise barriers to reduce noise impact, regular water-spraying to the construction site to minimise emission of fugitive dust, and on-site treatment of site run-off to minimise potential water quality impact. We will also carry out regular site inspections to ensure that these recommended mitigation measures and good practices will be properly implemented on site.

15. At the planning and design stages, we have considered ways to reduce the generation of construction waste (e.g. use of trenchless construction method to avoid excavation works) where possible. In addition, we will require the contractors to reuse inert construction waste (e.g. excavated soil) on site or in other suitable construction sites as far as possible in order to minimise the disposal of inert construction waste at the public fill reception facilities (PFRF<sup>3</sup>). We will encourage the contractors to maximise the use of recycled or recyclable inert construction waste, and the use of non-timber formwork to further reduce the generation of construction waste.

16. We will also require the contractors 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 contractors 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.

/17. ....

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<sup>3</sup> PFRF are specified in Schedule 4 of Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste at PFRF requires a licence issued by the Director of Civil Engineering and Development.

17. We estimate that the proposed works will generate in total about 6 000 tonnes of construction waste. Of these, we will reuse about 1 200 tonnes (20%) of inert construction waste on site and deliver about 4 400 tonnes (73%) of inert construction waste to PFRF for subsequent reuse. We will dispose of the remaining 400 tonnes (7%) of non-inert construction waste at landfills. The total cost for disposal of the construction waste at PFRF and landfill sites is estimated to be about \$392,000 for the proposed works (based on a unit charge rate of \$71 per tonne for disposal at PFRF and \$200 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)).

## HERITAGE IMPLICATIONS

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

## LAND ACQUISITION

19. The proposed works will only involve government land. No land resumption is required.

## BACKGROUND INFORMATION

20. We upgraded **419DS** to Category B in September 2017.

21. In January 2019, we engaged consultants to undertake site investigation, surveys, impact assessments and detailed design for the proposed works. The total estimated cost was \$2.2 million in MOD prices. We have charged this amount to block allocation **Subhead 4100DX** “Drainage works, studies and investigations for items in Category D of the Public Works Programme”. We have substantially completed the detailed design of the proposed works mentioned in paragraph 1 above.

22. The proposed works will involve the felling of six trees. All the trees to be removed are not important trees<sup>4</sup>. We will incorporate a planting proposal as part of the project, including an estimated total of six trees.

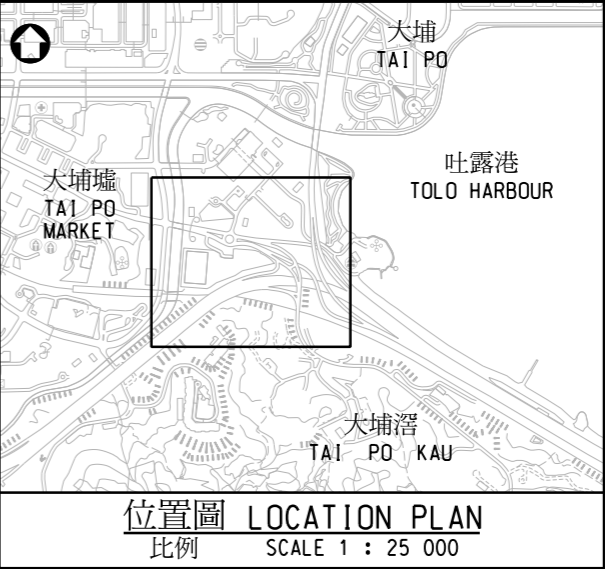
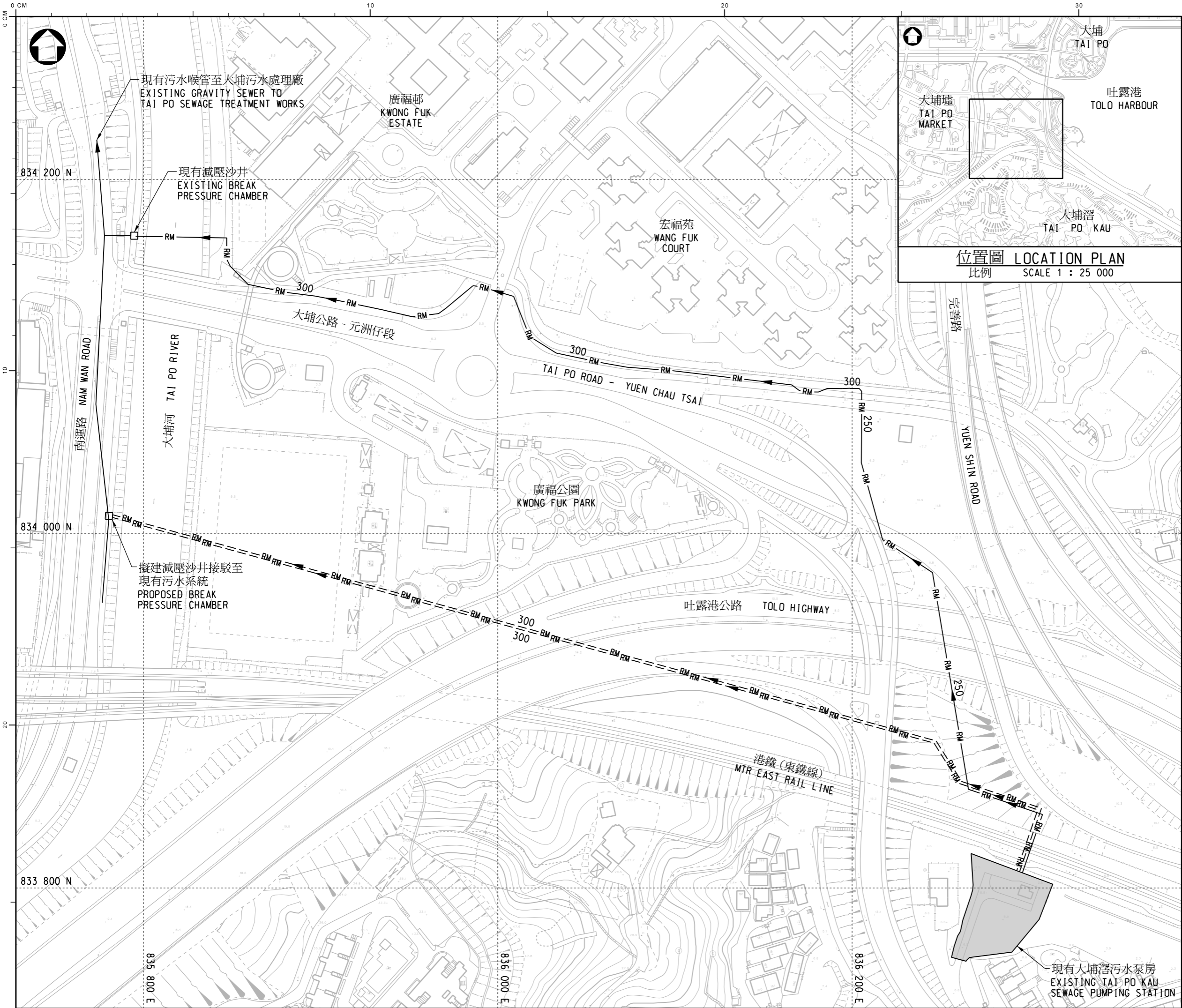
23. We estimate that the proposed works will create about 50 jobs (40 for labourers and ten for professional or technical staff), providing a total employment of 900 man-months.

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<sup>4</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 –

- (a) trees of 100 years old or above;
- (b) 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 an important person or event;
- (c) trees of precious or rare species;
- (d) trees of outstanding form (taking account of the overall tree sizes, shape and any special features) e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or
- (e) trees with a trunk diameter equal to or exceeding 1.0 m (measured at 1.3 m above ground level), or with a height/canopy spread equal to or exceeding 25 m.



圖例  
LEGEND :

- RM— 250 擬保留現有直徑250毫米的污水泵喉作緊急備用喉管  
EXISTING 250mm DIAMETER RISING MAIN TO BE RETAINED AS EMERGENCY BACKUP
- RM— 300 擬保留現有直徑300毫米的污水泵喉作緊急備用喉管  
EXISTING 300mm DIAMETER RISING MAIN TO BE RETAINED AS EMERGENCY BACKUP
- RM— 300 擬新建直徑300毫米的污水泵喉  
PROPOSED 300mm DIAMETER RISING MAIN TO BE CONSTRUCTED

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修訂 REVISION

	姓名 name	日期 date
繪畫 drawn	SIGNED K. S. LEUNG	16 MAR 2021
核對 checked	SIGNED Ir Y. H. LEE	16 MAR 2021
批核 approved	SIGNED Ir S. Y. CHAN	16 MAR 2021

圖則名稱 drawing title

工務工程計劃編號419DS  
- 大埔墟污水泵喉建造及修復工程  
PWP ITEM NO. 419DS  
- CONSTRUCTION AND  
REHABILITATION OF  
SEWAGE RISING MAINS  
IN TAI PO KAU

圖則編號 drawing no.

DCM/2020/042

比例 scale

1 : 2000

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DRAINAGE SERVICES DEPARTMENT  
GOVERNMENT OF THE  
HONG KONG  
SPECIAL ADMINISTRATIVE REGION

## Annex 2 to Enclosure 2 to PWSC(2021-22)7

### 419DS – Construction and rehabilitation of sewage rising mains in Tai Po Kau

#### Breakdown of the estimates for consultants' fees and resident site staff costs (in September 2020 prices)

			Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
(a)	Consultants' fees for contract administration (Note 2)	Professional	-	-	-	0.1
		Technical	-	-	-	0.1
					Sub-total	0.2#
(b)	Resident site staff (RSS) costs (Note 3)	Professional	42	38	1.6	5.8
		Technical	96	14	1.6	4.6
					Sub-total	10.4
	Comprising –					
	(i) Consultants' fees for management of RSS				0.2#	
	(ii) Remuneration of RSS				10.2#	
					<b>Total</b>	<b>10.6</b>

\* MPS = Master Pay Scale

#### Notes

1. 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 salary point 38 = \$85,870 per month and MPS salary point 14 = \$30,235 per month).
2. The consultants' staff cost for contract administration is calculated in accordance with the existing consultancy agreement for the design and construction of **419DS**. The construction phase of the assignment will only be executed subject to Finance Committee's approval to upgrade **419DS** to Category A.
3. The actual man-months and actual costs will only be known after the completion of the construction works.

#### Remarks

The figures in this Annex are shown in constant prices to correlate with the MPS salary point of the same year. The figures marked with # are shown in money-of-the-day prices in paragraph 6 to Enclosure 2.

**420DS – Construction and rehabilitation of trunk sewage rising mains  
in Yau Tong**

**PROJECT SCOPE AND NATURE**

The proposed scope of works under **420DS** comprises –

- (a) the construction of about 3.1 kilometres (km) of sewage rising main with a diameter of 900 millimetres (mm) between Yau Tong Sewage Pumping Station (YTSPS) and Kwun Tong Preliminary Treatment Works (KTPTW);
- (b) the rehabilitation of about 2.5 km of rising main with a diameter of 900 mm between YTSPS and KTPTW; and
- (c) ancillary works<sup>1</sup>.

2. A plan showing the location of the proposed works is at **Annex 1 to Enclosure 3**.

3. We plan to commence the proposed works upon obtaining funding approval from the Finance Committee for target completion of the works in around five years.

**JUSTIFICATION**

4. According to the evaluation of the “Enhanced Management of Underground Sewer and Drain Networks – Feasibility Study” conducted in 2015, a section of the trunk rising main between YTSPS and KTPTW should be rehabilitated. This existing single-pipe rising main serves a planned population of about 180 000. As it has been in service continuously for more than 27 years, it is suffering from ageing and deterioration. If the rising main is damaged or encountered operational failure, the water quality of Victoria Harbour will be adversely affected.

/5. ....

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<sup>1</sup> Ancillary works include the utilities diversion, provision of manholes, demolition of about 30 metres of existing rising main, temporary closure and reinstatement of carriageways/footpaths/open space, necessary landscaping works that are required to complete the proposed works.

5. We now propose to rehabilitate about 2.5 km of the existing rising main and construct about 3.1 km of new rising main. Approximate 300 metres of the existing rising main will be abandoned, of which, a small section across Tsui Ping River will be demolished. Trenchless technologies will be employed as far as possible to reduce inconvenience to the public.

## FINANCIAL IMPLICATIONS

6. We estimate the cost of the proposed works to be \$621.1 million in money-of-the-day (MOD) prices (please see paragraph 8 below), broken down as follows –

		<b>\$ million (in MOD prices)</b>
(a)	Construction of rising mains	343.7
(b)	Rehabilitation of rising mains	143.1
(c)	Ancillary works	6.8
(d)	Environmental mitigation measures	1.2
(e)	Consultants' fees for	2.7
	(i) contract administration	1.5
	(ii) management of resident site staff (RSS)	1.2
(f)	Remuneration of RSS	67.2
(g)	Contingencies	56.4
		<hr/>
	Total	<u>621.1</u>

7. We propose to engage consultants to undertake contract administration and site supervision of the project. A detailed breakdown of the estimates for the consultants' fees and RSS costs by man-months is at **Annex 2 to Enclosure 3**.

8. Subject to funding approval, we plan to phase the expenditure as follows –

Year	\$ million (in MOD prices)
2021 – 2022	1.8
2022 – 2023	39.0
2023 – 2024	151.7
2024 - 2025	157.3
2025 – 2026	121.6
2026 – 2027	84.9
2027 – 2028	46.5
2028 – 2029	12.9
2029 – 2030	5.4
	<hr/> 621.1 <hr/>

9. We have derived the MOD estimates on the basis of the Government's latest forecast of the trend rate of change in the prices of public sector building and construction output for the period from 2021 to 2030. We will deliver the proposed works under a New Engineering Contract (NEC<sup>2</sup>) form of contract with provision for price adjustment.

10. We estimate the additional annual recurrent expenditure arising from the proposed project to be \$730,000. The recurrent expenditure will be taken into consideration when determining the sewage charge and trade effluent surcharge rates in future.

/PUBLIC .....

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<sup>2</sup> NEC is a suite of contracts developed by the Institution of Civil Engineers, United Kingdom. It is a contract form that emphasises cooperation, mutual trust and collaborative risk management between contracting parties.

## **PUBLIC CONSULTATION**

11. We have consulted the Food, Environment and Hygiene Committee of Kwun Tong District Council on 17 November 2020. The Committee supported the proposed works.

12. We consulted the Panel on Environmental Affairs of the Legislative Council on 22 March 2021 and Members supported the proposed works.

## **ENVIRONMENTAL IMPLICATIONS**

13. The project is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). The project will not cause long-term environmental impacts. We have included in paragraph 6(d) above a sum of \$1.2 million (in MOD prices) in the project estimate to implement suitable mitigation measures to control the short-term environmental impacts.

14. At the construction phase, we will require the contractors to control noise, dust and site run-off nuisances to within the established standards and guidelines through the implementation of the recommended mitigation measures. These measures include the use of silenced construction equipment and temporary noise barriers to reduce noise impact, regular water-spraying to the construction site to minimise emission of fugitive dust, and on-site treatment of site run-off to minimise potential water quality impact. We will also carry out regular site inspections to ensure that these recommended mitigation measures and good practices will be properly implemented on site.

15. At the planning and design stages, we have considered ways to reduce the generation of construction waste (e.g. use of trenchless construction method to avoid excavation works) where possible. In addition, we will require the contractors to reuse inert construction waste (e.g. excavated soil) on site or in other suitable construction sites as far as possible in order to minimise the disposal of inert construction waste at the public fill reception facilities (PFRF<sup>3</sup>). We will encourage the contractors to maximise the use of recycled or recyclable inert construction waste, and the use of non-timber formwork to further reduce the generation of construction waste.

/16. ....

<sup>3</sup> PFRF are specified in Schedule 4 of Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste at PFRF requires a licence issued by the Director of Civil Engineering and Development.

16. We will also require the contractors to submit for approval a plan setting out 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 contractors 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.

17. We estimate that the proposed works will generate in total about 21 300 tonnes of construction waste. Of these, we will reuse about 5 300 tonnes (25%) of inert construction waste on site, and deliver about 14 600 tonnes (68%) of inert construction waste to PFRF for subsequent reuse. We will dispose of the remaining 1 400 tonnes (7%) of non-inert construction waste at landfills. The total cost for disposal of construction waste at PFRF and landfill sites is estimated to be about \$1.3 million for the proposed works (based on a unit charge rate of \$71 per tonne for disposal at PFRF and \$200 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)).

## **HERITAGE IMPLICATIONS**

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

## **LAND ACQUISITION**

19. The proposed works will only involve government land. No land resumption is required.

## **BACKGROUND INFORMATION**

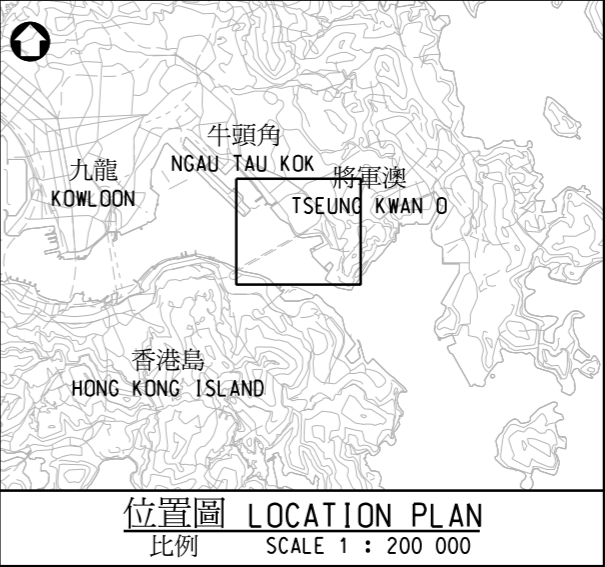
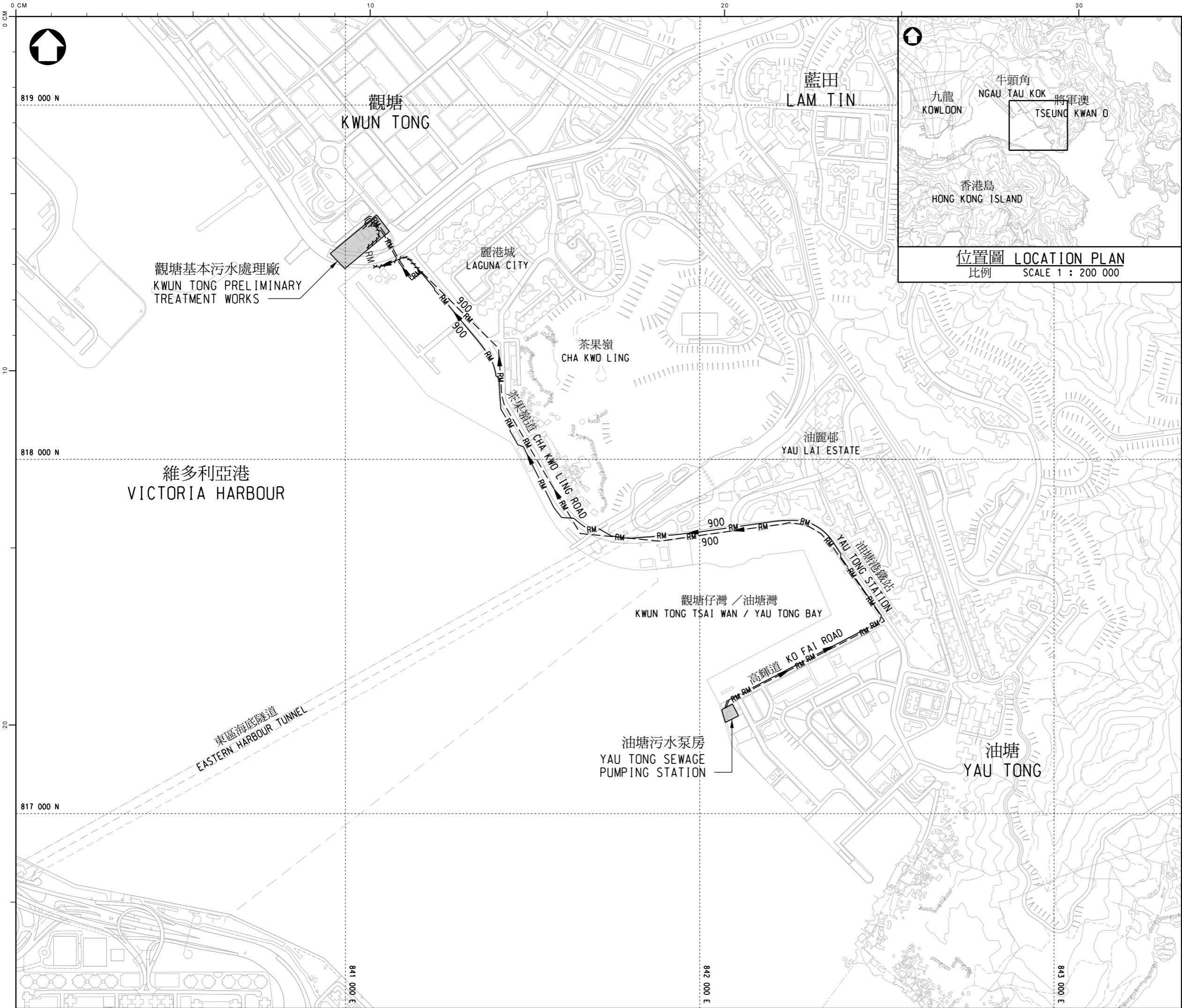
20. We upgraded **420DS** to Category B in September 2017.

21. In January 2019, we engaged consultants to undertake site investigation, surveys, impact assessments and detailed design for the proposed works. The total estimated cost was \$7 million in MOD prices. We have charged this amount to block allocation **Subhead 4100DX** "Drainage works, studies and investigations for items in Category D of the Public Works Programme". We have substantially completed the detailed design of the proposed works mentioned in paragraph 1 above.

22. The proposed works will not involve any tree removal or planting proposals.

23. We estimate that the proposed works will create about 100 jobs (80 for labourers and 20 for professional or technical staff), providing a total employment of 5 100 man-months.

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圖例  
LEGEND :

- RM — 900 — 擬修復現有直徑900毫米的污水泵喉  
EXISTING 900mm DIAMETER RISING MAIN TO BE REHABILITATED
- RM — 900 — 擬新建直徑900毫米的污水泵喉  
PROPOSED 900mm DIAMETER RISING MAIN TO BE CONSTRUCTED
- RM — 900 — 擬廢棄/拆除現有直徑900毫米的污水泵喉  
EXISTING 900mm DIAMETER RISING MAIN TO BE ABANDONED/DEMOLISHED

版 no.	日期 date	修改項目 description	簡簽 initial
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修訂 REVISION

	姓名 name	日期 date
繪畫 drawn	SIGNED L. L. LIU	16 MAR 2021
核對 checked	SIGNED Ir Y. H. LEE	16 MAR 2021
批核 approved	SIGNED Ir S. Y. CHAN	16 MAR 2021

圖則名稱 drawing title

工務工程計劃編號420DS  
- 油塘污水主幹泵喉建造及修復工程  
PWP ITEM NO. 420DS  
- CONSTRUCTION AND  
REHABILITATION OF  
TRUNK SEWAGE RISING MAINS  
IN YAU TONG

圖則編號 drawing no.

DCM/2020/043

比例 scale

1 : 10 000

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顧問工程管理部  
CONSULTANTS MANAGEMENT DIVISION

香港特別行政區政府渠務署  
DRAINAGE SERVICES DEPARTMENT  
GOVERNMENT OF THE  
HONG KONG  
SPECIAL ADMINISTRATIVE REGION

## Annex 2 to Enclosure 3 to PWSC(2021-22)7

### 420DS – Construction and rehabilitation of trunk sewage rising mains in Yau Tong

#### Breakdown of the estimates for consultants' fees and resident site staff costs (in September 2020 prices)

			Estimated man- months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee (\$ million)
(a)	Consultants' fees for contract administration (Note 2)	Professional	-	-	-	0.8
		Technical	-	-	-	0.4
					Sub-total	1.2#
(b)	Resident site staff (RSS) costs (Note 3)	Professional	224	38	1.6	30.8
		Technical	510	14	1.6	24.7
					Sub-total	55.5
	Comprising –					
	(i) Consultants' fees for management of RSS				1.0#	
	(ii) Remuneration of RSS				54.5#	
					<b>Total</b>	56.7

\* MPS = Master Pay Scale

#### Notes

1. 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 salary point 38 = \$85,870 per month and MPS salary point 14 = \$30,235 per month).
2. The consultants' staff cost for contract administration is calculated in accordance with the existing consultancy agreement for the design and construction of **420DS**. The construction phase of the assignment will only be executed subject to Finance Committee's approval to upgrade **420DS** to Category A.
3. The actual man-months and actual costs will only be known after the completion of the construction works.

#### Remarks

The figures in this Annex are shown in constant prices to correlate with the MPS salary point of the same year. The figures marked with # are shown in money-of-the-day prices in paragraph 6 of Enclosure 3.