For discussion **PWSC(2019-20)10**
on 29 May 2019

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 709 – WATERWORKS
Water Supplies – Fresh water supplies
181WF – In-situ reprovisioning of Sha Tin water treatment works (South Works) – main works
353WF – Uprating of Sheung Wong Yi Au fresh water supply system
368WF – Improvement to Dongjiang water mains P4 at Sheung Shui and Fanling

Water Supplies – Combined fresh/salt water supplies
196WC – Implementation of Water Intelligent Network

Members are invited to recommend to the Finance Committee –

(a) the upgrading of the remaining part of **181WF** to Category A at an estimated cost of $7,019.9 million in money-of-the-day (MOD) prices;

(b) the upgrading of part of **353WF** to Category A at an estimated cost of $207.0 million in MOD prices;

(c) the upgrading of **368WF** to Category A at an estimated cost of $1,071.4 million in MOD prices; and

(d) the upgrading of the remaining part of **196WC** to Category A at an estimated cost of $1,236.0 million in MOD prices.

/PROBLEM …..

PROBLEM

We need to commence the following projects related to water supplies –

(a) the remaining part of **181WF** to replace the aged water treatment facilities of the South Works of Sha Tin water treatment works (WTW) with the treatment capacity uprated to cope with the anticipated increase in water demand arising from new housing developments in a large part of Kowloon, the Central and Western District on Hong Kong Island and part of the New Territories;

(b) part of **353WF** to cope with the increase in water demand in Tai Po South area;

(c) **368WF** to improve the section of aged Dongjiang (DJ) water mains P4 in Sheung Shui and Fanling; and

(d) the remaining part of **196WC** to establish the remaining District Metering Areas (DMAs) in the water distribution network under the Water Intelligent Network (WIN) for continuous monitoring of the DMAs to determine their priorities and the most effective means to tackle the water loss in individual DMAs.

PROPOSAL

2. The Director of Water Supplies, with the support of the Secretary for Development, proposes to upgrade the following projects to Category A –

(a) the remaining part of **181WF** at an estimated cost of $7,019.9 million in MOD prices to carry out the main works for the in-situ reprovisioning of the South Works of Sha Tin WTW;

/(b) …..

(b) part of **353WF** at an estimated cost of $207.0 million in MOD prices to carry out Stage 1 uprating works for the Sheung Wong Yi Au fresh water supply system;

(c) **368WF** at an estimated cost of $1,071.4 million in MOD prices to replace the aged glass reinforced plastic pipes of the section of DJ water mains P4 in Sheung Shui and Fanling; and

(d) the remaining part of **196WC** at an estimated cost of $1,236.0 million in MOD prices to establish the remaining DMAs under WIN.

PROJECT SCOPE AND NATURE

3. Details of the above four projects are provided at Enclosures 1 to 4 respectively.

Development Bureau
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181WF – In-situ reprovisioning of Sha Tin water treatment works (South Works) – main works

PROJECT SCOPE AND NATURE

The scope of the project comprises the following proposed works at Sha Tin water treatment works (WTW) –

(a) reprovisioning of the water treatment facilities and associated installations;

(b) reprovisioning of the administration building; and

(c) associated works including environmental mitigation works, landscaping works and other engineering works.

2. The location plan and the photomontage of the proposed works, and the cross-section of the reprovisioned administration building are at Annexes 1, 2 and 3 to Enclosure 1 respectively.

3. Subject to approval of the Finance Committee (FC), we plan to commence the proposed works in the fourth quarter of 2019 for completion in the second quarter of 2025. In order to meet the tight programme, we will invite tenders in parallel to enable early commencement of the proposed works. The tender will only be awarded after obtaining FC's approval.

JUSTIFICATION

4. Sha Tin WTW and Tai Po WTW are the two major WTWs in Hong Kong providing fresh water supply to a large part of Kowloon, the Central and Western District on Hong Kong Island, and part of the New Territories, serving a total population of around 2.6 million. It is necessary to ensure the reliability of the WTWs. In addition, as there are new public and private housing developments within the combined supply zone of Sha Tin WTW and Tai Po WTW which are being implemented progressively, it is important to ensure that the total treatment capacity of the two WTWs is adequate to meet the increased water demand arising from the new housing developments.

/5. …..

5. Sha Tin WTW comprises the South Works and the North Works. The South Works was commissioned in 1964 while the North Works was commissioned in stages from 1973. After more than 50 years of service, the South Works has deteriorated and its reliable output has been reduced significantly. Moreover, it is uneconomical to maintain its operation. Therefore, we propose to reprovision the South Works in-situ. Apart from replacing the aged treatment facilities, the reprovisioning works will also uprate the treatment capacity of the South Works from 360 000 cubic metres (m^3) per day to 550 000 m^3 per day to meet the increased water demand arising from new housing developments.

6. During the in-situ reprovisioning works of the South Works, the South Works has to be taken out of service, which will reduce the total treatment capacity of Sha Tin WTW and Tai Po WTW. Based on the demand assessment, the proposed works need to be completed in 2025 before the temporarily reduced total treatment capacity of the two WTWs becomes inadequate to meet the water demand.

FINANCIAL IMPLICATIONS

7. We estimate the cost of the proposed works to be $7,019.9 million in money-of-the-day (MOD) prices, broken down as follows –

			$ million (in MOD prices)
(a)	Civil works		2,924.5
	(i) water treatment facilities	1,427.9	
	(ii) administration building	489.7	
	(iii) associated works[1]	1,006.9	
(b)	Electrical and mechanical works		2,626.2
	(i) water treatment facilities	2,081.3	
	(ii) administration building	324.6	
	(iii) associated works	220.3	
(c)	Environmental mitigation measures and environmental monitoring and audit (EM&A) programme		65.1

/$ million …..

1 The associated works include pipeworks, geotechnical works, landscaping works, road works and other miscellaneous civil works.

			$ million (in MOD prices)
(d)	Furniture and equipment[2]		67.4
(e)	Consultants' fees for		99.7
	(i) contract administration	40.5	
	(ii) management of resident site staff (RSS)	59.2	
(f)	Remuneration of RSS		598.8
(g)	Contingencies		638.2
	Total		7,019.9

8. We propose to engage consultants to undertake contract administration and site supervision of the proposed works. A detailed breakdown of the estimates for the consultants' fees and RSS costs by man-months is at Annex 4 to Enclosure 1.

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

Year	**$ million (MOD)**
2019 – 2020	81.6
2020 – 2021	413.3
2021 – 2022	1,126.9
2022 – 2023	1,315.0
2023 – 2024	1,465.1
2024 – 2025	1,185.9
2025 – 2026	828.7

/Year …..

2 The estimated cost is based on an indicative list of furniture and equipment required.

Year	$ million (MOD)
2026 – 2027	369.2
2027 – 2028	234.2
	7,019.9

10. We have derived the MOD estimates on the basis of the Government's latest set of assumptions on the trend rate of change in the prices of public sector building and construction output for the period from 2019 to 2028. We will deliver the proposed works under New Engineering Contract (NEC)[3] form of contract with provision for price adjustment.

11. We estimate the additional annual recurrent expenditure arising from the proposed works to be $25.7 million.

12. The proposed works will lead to an increase in the total annual expenditure on waterworks operation by 1.84% in real terms by 2028[4].

PUBLIC CONSULTATION

13. We consulted the Development and Housing Committee of the Sha Tin District Council on 1 November 2018. Members supported the proposed works.

14. We consulted the Legislative Council Panel on Development on 26 March 2019. Members supported the proposed works.

/ENVIRONMENTAL …..

3 NEC is a form of contract developed by the Institution of Civil Engineers, United Kingdom. It emphasises cooperation, mutual trust and collaborative risk management between contracting parties.

4 The increase in annual expenditure is calculated at the 2018-19 price level and on the assumption that all the relevant factors remain constant during the period from 2019 to 2028.

ENVIRONMENTAL IMPLICATIONS

15. The Sha Tin WTW (South Works) reprovisioning project is a designated project (DP) under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) which requires an environmental permit (EP) for its construction and operation. The Director of Environmental Protection approved the EIA report and issued an EP for the construction and operation of the project in January 2015. With the implementation of the recommended mitigation measures and the EM&A programme, the approved EIA report concluded that the environmental impacts of both the advance works and the main works under the Sha Tin WTW (South Works) reprovisioning project could be controlled to within the criteria under the EIA Ordinance and the Technical Memorandum on EIA Process. We shall implement the environmental mitigation measures and the EM&A programme recommended in the approved EIA report and as required under the EP. The mitigation measures include frequent cleaning and watering of the site, provision of wheel washing facilities, covering of materials on trucks, use of silenced construction plant, temporary noise barriers and acoustic enclosures for noisy construction activities. We have included in paragraph 7(c) above a sum of $65.1 million (in MOD prices) in the project estimate for the implementation of the environmental mitigation measures and the EM&A programme.

16. At the planning and design stages, we have considered design and layout optimisation to reduce generation of construction waste where possible. In addition, we will require the contractor to reuse inert construction waste (e.g. demolished concrete and excavated soil and rock) on site or other suitable construction sites as far as possible, in order to minimise disposal of inert construction waste to public fill reception facilities[5]. We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste, and the use of non-timber formwork to further reduce generation of construction waste.

/17. …..

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5 Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

17. At the construction stage, we will require the contractor 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 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 and non-inert construction waste at public fill reception facilities and landfills respectively through a trip-ticket system.

18. We estimate that the proposed works will generate in total about 324 288 tonnes of construction waste. Of these, we will reuse 14 100 tonnes (4.3%) of inert construction waste on site and deliver 300 508 tonnes (92.7%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 9 680 tonnes (3.0%) of non-inert construction waste at landfills. The total cost for disposal of construction waste at public fill reception facilities and landfill sites is estimated to be $23.3 million for the proposed works (based on a unit charge rate of $71 per tonne for disposal at public fill reception facilities and $200 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)).

HERITAGE IMPLICATIONS

19. 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

20. The proposed works do not involve any resumption of private land.

TRAFFIC IMPLICATIONS

21. We have carried out a Traffic Impact Assessment (TIA) for the proposed works. The TIA concluded that the proposed works would not cause any significant impact on the traffic through implementation of appropriate temporary traffic arrangements. We will carry out a traffic review at the construction stage to revisit the temporary traffic arrangements for meeting the latest traffic condition before implementation of appropriate temporary traffic arrangements.

BACKGROUND INFORMATION

22. We upgraded **181WF** to Category B in February 2002.

23. In January 2003, we engaged consultants to carry out an investigation study for the in-situ reprovisioning of Sha Tin WTW at a cost of about $10.2 million in MOD prices. We charged the amount to block allocation **Subhead 9100WX** "Waterworks, studies and investigations for items in Category D of the Public Works Programme". The investigation study was completed in September 2004. It recommended an outline design scheme for the in-situ reprovisioning of Sha Tin WTW, which was used as the basis for further design development of the proposed works.

24. We submitted an information paper [LC Paper No. CB(1)86/07-08(01)] regarding the implementation strategy for the in-situ reprovisioning of Sha Tin WTW to Legislative Council Panel on Development in October 2007. On 2 July 2010, we upgraded part of **181WF** to Category A as **344WF** "In-situ reprovisioning of Sha Tin water treatment works – South Works – design and site investigation" at an approved project estimate (APE) of $149.1 million in MOD prices. In August 2010, we engaged a contractor to carry out the site investigation works and consultants to undertake the detailed design. The consultants have completed the detailed design of the proposed works.

25. On 10 July 2015, we upgraded part of **181WF** to Category A as **358WF** "In-situ reprovisioning of Sha Tin water treatment works (South Works) – advance works" at an APE of $1,658 million in MOD prices to implement the advance works which comprise primarily the construction of a logistics centre for relocating the existing chemical house, alum saturation tanks, mechanical and electrical workshops and offices of the South Works with their original sites freed up to pave the way for the construction of the main works. The advance works commenced in October 2015 and will be completed in the second half of 2019.

/26. …..

26. Of the 193 trees within the boundary of the proposed works, 63 trees will be preserved. The proposed works will involve the removal of 130 trees, including 105 trees to be felled and 25 trees to be replanted within the project site. All trees to be removed are not important trees[6]. We will incorporate planting proposals as part of the proposed works, including planting of 151 trees and formation of 4 500 square metres of grassed area.

27. We estimate that the proposed works will create about 655 jobs (525 for labourers and 130 for professional or technical staff) providing a total employment of 38 700 man-months.

Development Bureau
May 2019

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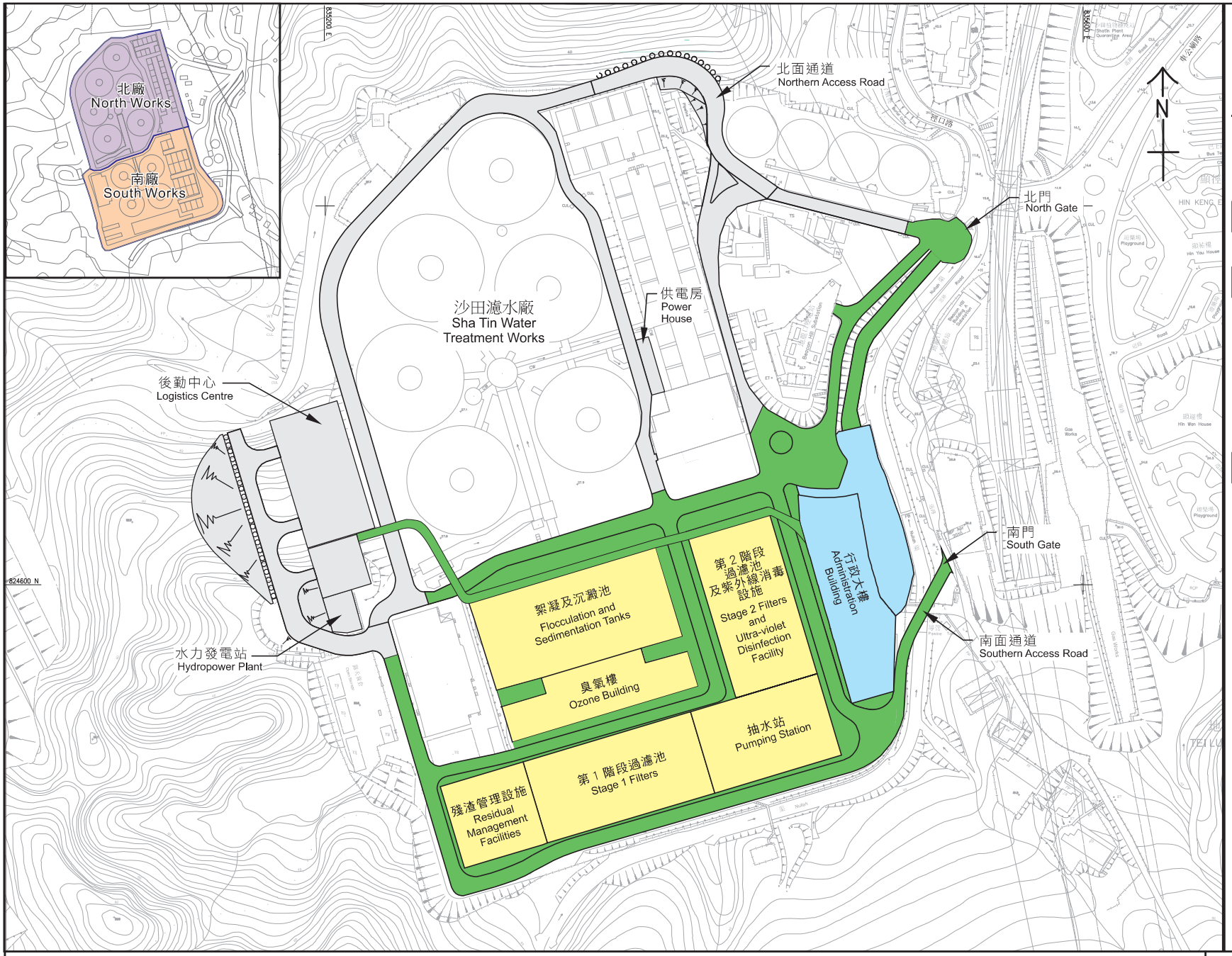
6 "Important trees" refer to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria –

(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 important persons or events;
(c) trees of precious or rare species;
(d) trees of outstanding form (taking account of overall tree sizes, shapes and any special features), e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or
(e) trees with trunk diameter equal or exceeding 1.0 metre (m) (measured at 1.3 m above ground level), or with height/canopy spread equal or exceeding 25 m.



圖例 Legend:

主項工程 Main Works

- 濾水設施及相關裝置
  Water Treatment Facilities and Associated Installations
- 通道和相關工程
  Access Roads and Associated Works
- 行政大樓和相關工程
  Administration Building and Associated Works

前期工程 Advance Works

合約編號 Contract No. 3/WSD/15

- 在358WF下建造中的前期工程
  Advance Works under 358WF In Progress

工務計劃項目第181WF號 — 沙田濾水廠原地重置工程(南廠) — 主項工程

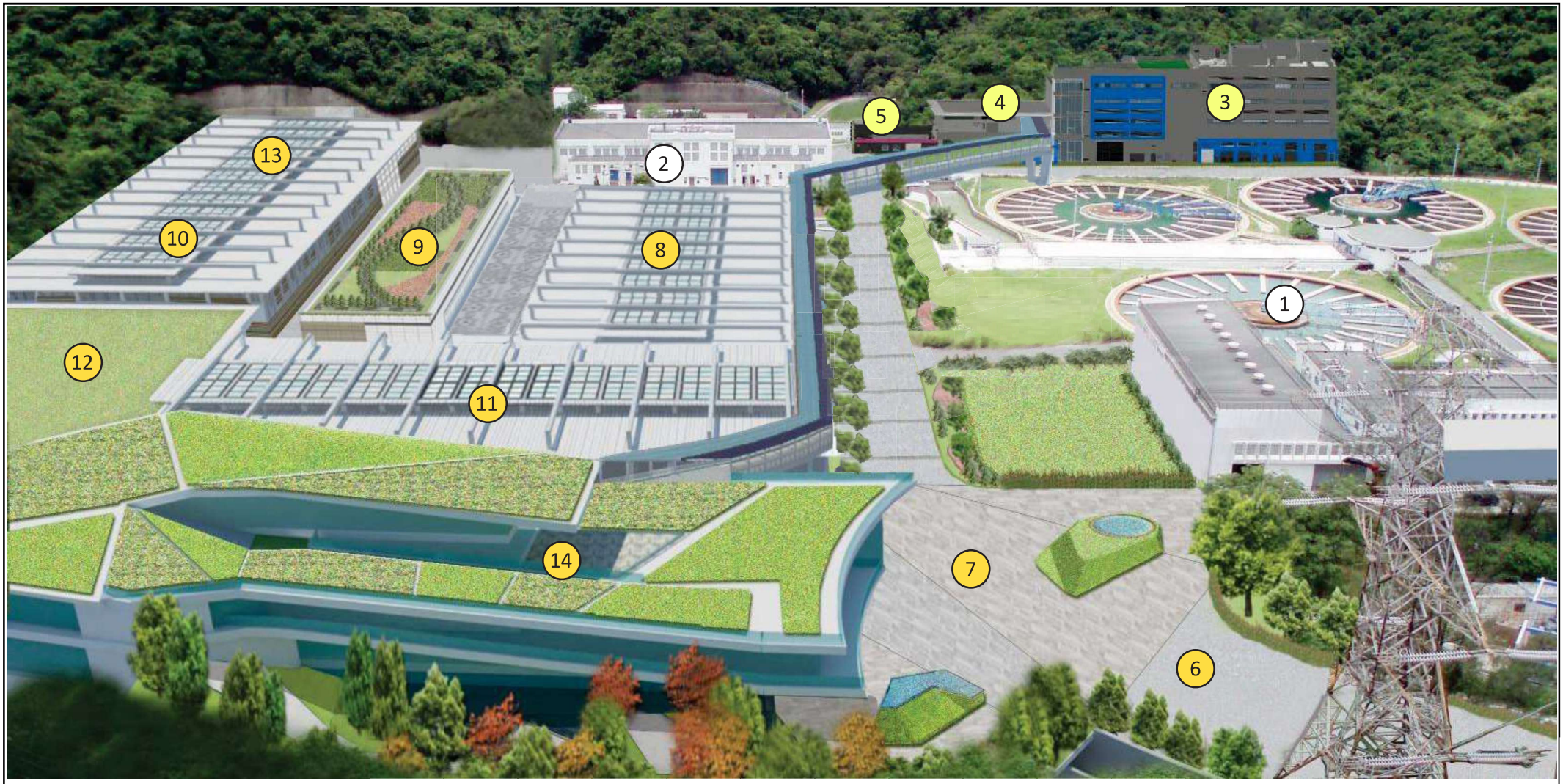
PWP ITEM NO. 181WF — In-situ reprovisioning of Sha Tin water treatment works (South Works) - main works

水務署
WATER SUPPLIES DEPT.

草圖編號 SKETCH NO. SK 62019 / 048

REF. 62019-048.CDR

附件1 附錄1 ANNEX 1 to ENCLOSURE 1



圖例 LEGEND :

現有設施 EXISTING FACILITIES

1. 現有北廠 EXISTING NORTH WORKS
2. 現有加氯設施 EXISTING CHLORINATION FACILITY

前期工程 ADVANCE WORKS CONTRACT

3. 後勤中心 LOGISTICS CENTRE
4. 明礬池 ALUM TANKS
5. 水力發電站 HYDROPOWER PLANT

主項工程 MAIN WORKS CONTRACTS

6. 廣場通道 PIAZZA AVENUE
7. 中央廣場 CENTRAL PIAZZA
8. 絮凝及沉澱池 FLOCCULATION AND SEDIMENTATION TANKS
9. 臭氧樓 OZONE BUILDING
10. 第一階段過濾池 STAGE 1 FILTERS
11. 第二階段過濾池 STAGE 2 FILTERS
12. 南廠抽水站 SOUTH WORKS PUMPING STATION
13. 殘渣管理設施 RESIDUAL MANAGEMENT FACILITIES
14. 行政大樓 ADMINISTRATION BUILDING

工務計劃項目第181WF號 — 沙田濾水廠原地重置工程(南廠) — 主項工程

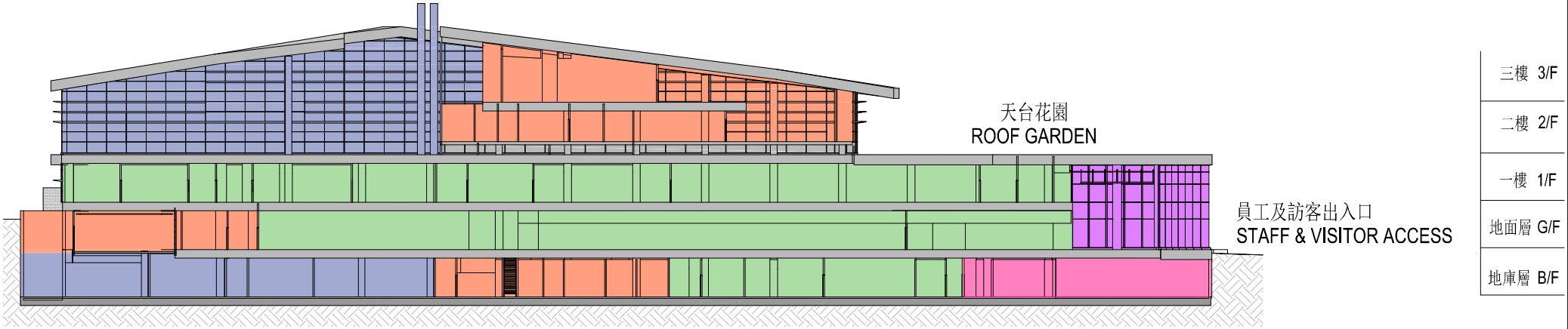
PWP ITEM NO. 181WF — In-situ reprovisioning of Sha Tin water treatment works (South Works) - main works

水務署 WATER SUPPLIES DEPT.

草圖編號 SKETCH NO. SK 62019 / 017

REF. 62019-017

附件1 附錄2 ANNEX 2 to ENCLOSURE 1



圖例 LEGEND

- 機電房 PLANT ROOM
- 實驗室 LABORATORY
- 辦公室 / 控制室 OFFICE / CONTROL ROOM
- 入口大堂及訪客接待設施 ENTRANCE LOBBY & VISITOR RECEPTION FACILITY
- 儲物室 (註) STORAGE AREA (NOTES)

行政大樓剖面圖
CROSS-SECTION OF ADMINISTRATION BUILDING

註 ：用作儲存實驗室器材和化學品等
NOTES : FOR STORAGE OF LABORATORY EQUIPMENT, CHEMICALS ETC.

5m 0 10 25m

工務計劃項目第181WF號 — 沙田濾水廠原地重置工程(南廠) — 主項工程
PWP ITEM NO. 181WF — In-situ reprovisioning of Sha Tin water treatment works (South Works) - main works

水務署 WATER SUPPLIES DEPT.

草圖編號 SKETCH NO. SK 62019 / 037

REF. 62019-037

附件1 附錄3 ANNEX 3 to ENCLOSURE 1

181WF – In-situ reprovisioning of Sha Tin water treatment works (South Works) – main works

Breakdown of the estimates for consultants' fees and resident site staff costs (in September 2018 prices)

			Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee ($ million)
(a)	Consultants' fees for contract administration (Note 2)	Professional	–	–	–	26.9
		Technical	–	–	–	3.0
					Sub-total	29.9#
(b)	Resident site staff (RSS) costs (Note 3)	Professional	2 460	38	1.6	322.7
		Technical	4 800	14	1.6	220.6
					Sub-total	543.3
	Comprising –					
	(i) Consultants' fees for management of RSS				48.9#	
	(ii) Remuneration of RSS				494.4#	
					Total	**573.2**

*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 point 38 = $81,975 per month and MPS point 14 = $28,725 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 the project. The construction phase of the assignment will only be executed subject to Finance Committee's approval to upgrade the remaining part of **181WF** to Category A.

3. The actual man-months and actual costs will only be known after 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 7 of Enclosure 1.

353WF – Uprating of Sheung Wong Yi Au fresh water supply system

PROJECT SCOPE AND NATURE

The part of **353WF** which we propose to upgrade to Category A comprises the uprating of the existing Ha Wong Yi Au (HWYA) fresh water pumping station and laying of associated fresh water mains with diameters ranging from 400 millimetres (mm) to 600 mm with an approximate total length of 5.5 kilometres (km). The location of the proposed works is shown on the plan at Annex 1 to Enclosure 2.

2. Subject to approval of Finance Committee (FC), we plan to commence the proposed works in the third quarter of 2019 for completion in the fourth quarter of 2022. In order to meet the tight programme, we will invite tenders in parallel to enable early commencement of the proposed works. The tender will only be awarded after obtaining Finance Committee's funding approval.

3. We will retain the remainder of **353WF** in Category B, which mainly comprises the construction of Sheung Wong Yi Au (SWYA) No. 3 fresh water service reservoir with a storage capacity of 6 000 cubic metres (m^3) and associated water mains construction works. We will seek approval of FC for the remainder of **353WF** at a later stage.

JUSTIFICATION

4. At present, the SWYA fresh water supply system includes the HWYA fresh water pumping station and the SWYA fresh water service reservoirs, which can cater for a mean daily water demand of about 10 500 m^3 per day.

5. It is projected that the water demand in the supply zone of SWYA fresh water supply system will increase to about 12 900 m^3 per day in 2022 and eventually to 15 600 m^3 in 2030 due to housing developments in Tai Po South area. There is a need to uprate the existing HWYA fresh water pumping station and the associated water mains and complete the works by the fourth quarter of 2022 to meet the increase in water demand.

/6. …..

6. The reservoir storage capacity of the SWYA fresh water supply system also needs to be increased to cope with the further increase in water demand. We propose to construct the SWYA No. 3 fresh water service reservoir under the remainder of **353WF** to be upgraded to Category A at a later stage.

FINANCIAL IMPLICATIONS

7. We estimate the cost of the proposed works to be $207.0 million in money-of-the-day (MOD) prices, broken down as follows –

		$ million (in MOD prices)
(a)	Uprating of HWYA fresh water pumping station	51.8
(b)	Laying of water mains	129.8
(c)	Environmental mitigation measures	2.2
(d)	Consultants' fees for advisory service for administration of contract adopting New Engineering Contract (NEC)[1] form of contract	4.4
(e)	Contingencies	18.8
	Total	207.0

8. While the construction of the proposed works will be supervised by in-house staff, we plan to engage consultants to provide advisory service for administration of the contract for the proposed works which will adopt NEC form of contract. A detailed breakdown of the estimate for the consultants' fees by man-months is at Annex 2 to Enclosure 2.

/9. …..

1 NEC is a suite of contracts developed by the Institution of Civil Engineers, United Kingdom. It emphasises cooperation, mutual trust and collaborative risk management between contracting parties.

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

Year	$ million (MOD)
2019 – 2020	3.8
2020 – 2021	7.8
2021 – 2022	22.9
2022 – 2023	71.9
2023 – 2024	34.5
2024 – 2025	33.3
2025 – 2026	32.8
	207.0

10. We have derived the MOD estimates on the basis of the Government's latest set of assumptions on the trend rate of change in the prices of public sector building and construction output for the period from 2019 to 2026. We will deliver the proposed works under NEC form of contract with provision for price adjustment.

11. We estimate the additional annual recurrent expenditure arising from the proposed works to be $1.37 million.

12. The project will lead to an increase in the total annual expenditure on waterworks operation by 0.05% in real terms by 2026[2].

/PUBLIC …..

2 The increase in annual expenditure is calculated at the 2018-19 price level and on the assumption that all the relevant factors remain constant during the period from 2019 to 2026.

PUBLIC CONSULTATION

13. We consulted the Tai Po Rural Committee and Environment, Housing and Works Committee of the Tai Po District Council on 7 November 2018. Members supported the proposed works.

14. We consulted the Legislative Council Panel on Development on 26 March 2019. Members supported the proposed works.

ENVIRONMENTAL IMPLICATIONS

15. The project is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). We have completed the Preliminary Environmental Review (PER) for the project. The PER concluded and the Director of Environmental Protection agreed that the project would not have any long-term environmental impacts. We will incorporate the mitigation measures recommended in the PER into the works contracts to control the environmental impacts arising from the construction works to within established standards and guidelines. These measures include frequent watering of the site, provision of wheel-washing facilities, covering of materials on trucks and use of silenced construction plant. We have included in paragraph 7(c) above a sum of $2.2 million (in MOD prices) in the project estimate for the implementation of these environmental mitigation measures.

16. At the planning and design stages, we have considered design and layouts optimisation to reduce generation of construction waste. In addition, we will require the contractor to reuse inert construction waste (e.g. demolished concrete and excavated soil and rock) on site or in other suitable construction sites as far as possible, in order to minimise disposal of inert construction waste to public fill reception facilities[3]. We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste, and the use of non-timber formwork to further reduce generation of construction waste where possible.

/17. …..

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3 Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

17. At the construction stage, we will require the contractor 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 contractor to separate the inert portion from non-inert construction waste on site for disposal at appropriate facilities. We will also control the disposal of inert and non-inert construction waste at public fill reception facilities and landfills respectively through a trip-ticket system.

18. We estimate that the proposed works will generate in total about 49 740 tonnes of construction waste. Of these, we will reuse about 10 160 tonnes (20%) of inert construction waste on site and deliver 34 600 tonnes (70%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 4 980 tonnes (10%) of non-inert construction waste at landfills. The total cost for disposal of construction waste at public fill reception facilities and landfills is estimated to be $3.45 million for this project (based on a unit charge rate of $71 per tonne for disposal at public fill reception facilities and $200 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)).

HERITAGE IMPLICATIONS

19. 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

20. The proposed works do not involve any resumption of private land.

TRAFFIC IMPLICATIONS

21. A traffic review has been carried out for the proposed works in the design stage and it concluded that the proposed works would not cause any significant impact on the traffic during the construction and operation stages. Since temporary traffic diversions at Tai Po Road, Shan Tong Road and Shan Yin Road are required, we will conduct a traffic review for the proposed works before commencement of the construction works and will submit temporary traffic arrangement for approval by relevant authorities.

/BACKGROUND …..

BACKGROUND INFORMATION

22. We upgraded **353WF** to Category B in September 2014.

23. In September 2015, we engaged contractors to carry out ground investigation and consultants to undertake the landscape design for the proposed works at a total cost of $1.8 million. We charged the amount to block allocation **Subhead 9100WX** "Waterworks, studies and investigations for items in Category D of the Public Works Programme". The investigation and detailed design of the proposed works were completed in 2019.

24. Of the 336 trees within the project boundary of the proposed works, 225 trees will be preserved and 111 trees will be felled. All trees to be removed are not important trees[4]. We will incorporate planting proposals as part of the proposed works, including planting of 14 trees.

25. We estimate that the proposed works will create about 55 jobs (45 for labourers and 10 for professional or technical staff) providing a total employment of 1 800 man-months.

Development Bureau
May 2019

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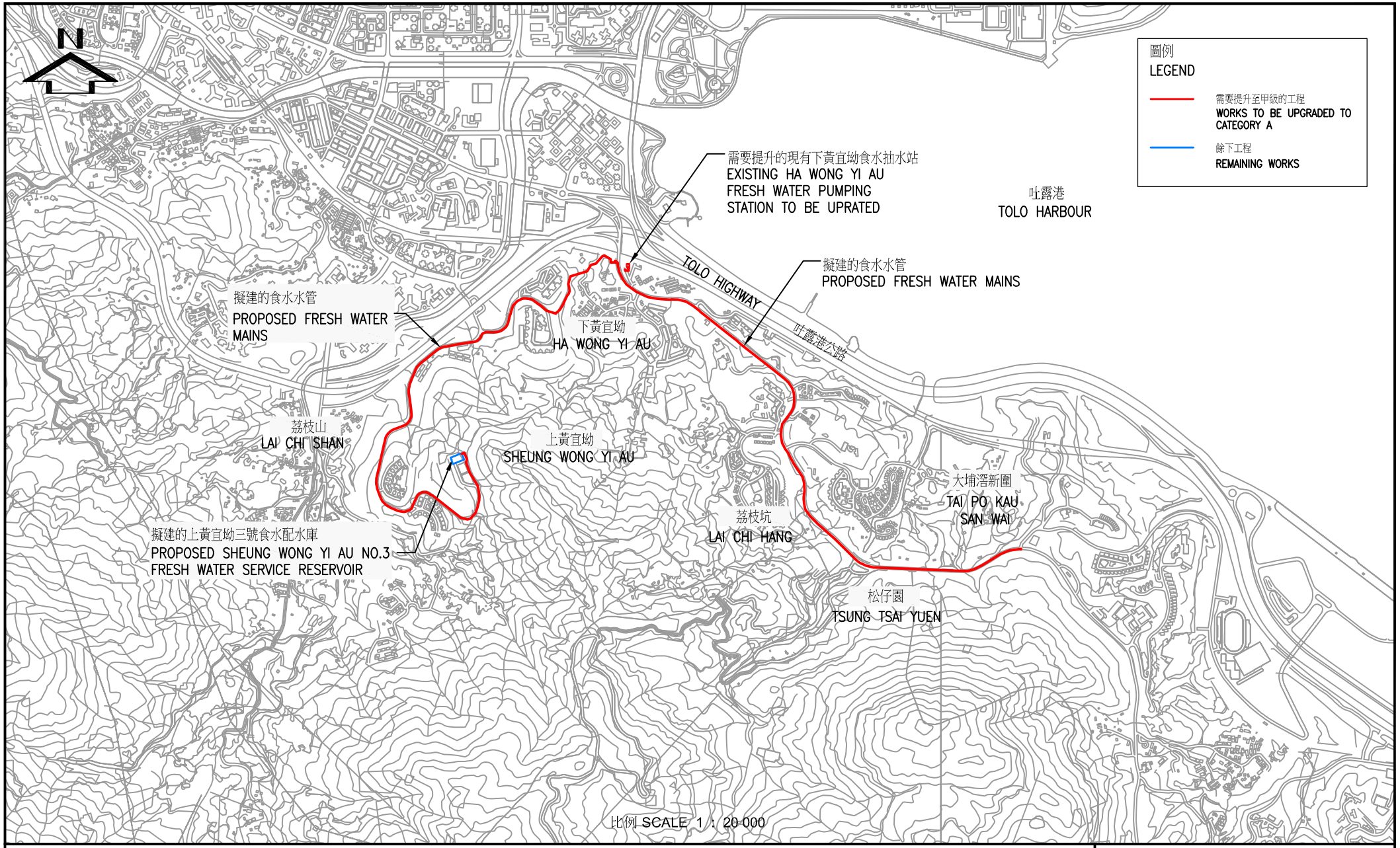
4 "Important trees" refer to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria-

(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 important persons or events;
(c) trees of precious or rare species;
(d) trees of outstanding form (taking account of overall tree sizes, shapes and any special features), e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or
(e) trees with trunk diameter equal to or exceeding 1.0 metre (m) (measured at 1.3 m above ground level), or with height or canopy spread equal to or exceeding 25 m.



工務工程編號 9353WF ----- 上黃宜坳食水供應系統提升工程

P.W.P. Item No. 9353WF ---- Uprating of Sheung Wong Yi Au fresh water supply system

水務署
WATER SUPPLIES DEPARTMENT

草圖編號 SKETCH NO. SK 62019 / 018

REF. 62019 / 018_Rev2.DWG

附件2 附錄1 ANNEX 1 to ENCLOSURE 2

353WF – Uprating of Sheung Wong Yi Au fresh water supply system

Breakdown of the estimate for consultants' fees (in September 2018 prices)

			Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee ($ million)
(a)	Consultants' fees for advisory service for administration of contract adopting New Engineering Contract (NEC) form of contract (Notes 2 & 3)	Professional	18	38	2.0	3.0
		Technical	18	14	2.0	1.0
					Total	**4.0#**

*MPS = Master Pay Scale

Notes

1. A multiplier of 2.0 is applied to the average MPS salary point to arrive at the full staff costs including the consultants' overheads and profit, as the staff will be employed in the consultants' offices (As at now, MPS point 38 = $81,975 per month and MPS point 14 = $28,725 per month).

2. The consultants' staff cost for advisory service for administration of contract adopting NEC form of contract is based on the estimates prepared by the Director of Water Supplies. The actual man-months and fees will only be known after the consultants have been selected.

3. The Water Supplies Department (WSD) will deploy in-house staff to supervise the construction of the proposed works. The fees in (a) above will be used for engaging consultants to provide advisory service for WSD's detailed arrangements for NEC administration.

Remarks

The figures in this Annex are shown in constant prices to correlate with the MPS salary point of the same year. The figure marked with # is shown in money-of-the-day prices in paragraph 7 of Enclosure 2.

368WF – Improvement to Dongjiang water mains P4 at Sheung Shui and Fanling

PROJECT SCOPE AND NATURE

The scope of the project comprises the replacement of about 5 kilometres (km) of aged glass reinforced plastic (GRP) pipes of the section of Dongjiang (DJ) water mains P4 with diameters ranging from 2 100 millimetres (mm) to 2 300 mm. The location of the proposed works is shown on the plan at Annex 1 to Enclosure 3.

2. Subject to approval of the Finance Committee (FC), we plan to commence the proposed works in the fourth quarter of 2019 for completion in the second quarter of 2022. In order to meet the tight programme, we will invite tenders in parallel to enable early commencement of the proposed works. The tender will only be awarded after obtaining FC's approval.

JUSTIFICATION

3. The DJ water mains P4 is one of the water mains for transfer of DJ raw water. It transfers the DJ raw water from Muk Wu Raw Water Pumping Station to Tai Po Tau Raw Water Pumping Station, where the DJ raw water will be further distributed to various water treatment works and the Plover Cove reservoir. The GRP pipes of the section of DJ water mains P4 at Sheung Shui and Fanling were laid more than 30 years ago. They are approaching the end of their service life and are in a deteriorated condition. As a result, they have significant risk of bursts, which will have severe impact on the facilities in the vicinity, as well as disruption to the DJ raw water transfer. Therefore, we need to replace this section of the GRP pipes to ensure the reliability.

/FINANCIAL …..

FINANCIAL IMPLICATIONS

4. We estimate the cost of the proposed works to be $1,071.4 million in money-of-the-day (MOD) prices, broken down as follows –

			$ million (in MOD prices)
(a)	Laying of water mains by		964.5
	(i) conventional method[1]	837.7	
	(ii) trenchless method[2]	126.8	
(b)	Environmental mitigation measures		4.9
(c)	Consultants' fees for advisory service for administration of contract adopting New Engineering Contract (NEC)[3] form of contract		4.6
(d)	Contingencies		97.4
		Total	1,071.4

5. While the construction of the proposed works will be supervised by in-house staff, we plan to engage consultants to provide advisory service for administration of the contract for the proposed works which will adopt NEC form of contract. A detailed breakdown of the estimate for the consultants' fees by man-months is at Annex 2 to Enclosure 3.

/6. …..

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1 The conventional method refers to laying pipelines in trench. It involves opening up the road for laying of pipelines. We estimate that about 90% of the water mains under this project will be laid by the conventional method. The actual percentage will depend on the site conditions.

2 The trenchless method (sometimes referred to 'minimum dig' or 'reduced dig' method) refers to the use of heading, pipe jacking, micro-tunnelling or boring techniques to construct underground pipelines without opening up the road for laying of pipelines. This method will be employed when the conventional method is not feasible due to site constraints such as busy traffic conditions. We estimate that around 10% of the water mains under this project will be laid by the trenchless method. The actual percentage will depend on the site conditions.

3 NEC is a suite of contracts developed by the Institution of Civil Engineers, United Kingdom. It emphasises cooperation, mutual trust and collaborative risk management between contracting parties.

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

Year	$ million (MOD)
2019 – 2020	3.7
2020 – 2021	281.1
2021 – 2022	397.5
2022 – 2023	281.8
2023 – 2024	92.4
2024 – 2025	14.9
	1,071.4

7. We have derived the MOD estimates on the basis of the Government's latest set of assumptions on the trend rate of change in the prices of public sector building and construction output for the period from 2019 to 2025. We will deliver the proposed works under NEC form of contract with provision for price adjustment.

8. We estimate that there would not be any additional recurrent expenditure arising from the proposed works, as only replacement of existing DJ water mains is involved.

9. The proposed works will lead to an increase in the total annual expenditure on waterworks operation by 0.17% in real terms by 2025[4].

/PUBLIC …..

4 The increase in annual expenditure is calculated at the 2018-19 price level and on the assumption that all the relevant factors remain constant during the period from 2019 to 2025.

PUBLIC CONSULTATION

10. We consulted the Environment, Housing and Works Committee of the Tai Po District Council, and the District Minor Works and Environmental Improvement Committee of the North District Council on 9 January 2019 and 21 January 2019 respectively. Members supported the proposed works.

11. We consulted the Legislative Council Panel on Development on 26 March 2019. Members supported the proposed works.

ENVIRONMENTAL IMPLICATIONS

12. The project is not a designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (Cap. 499). We completed a Preliminary Environmental Review (PER), of which the findings were agreed by the Director of Environmental Protection in March 2019. The PER concluded that with the implementation of the recommended mitigation measures, the project will not cause any long-term environmental impacts. We have included in paragraph 4(b) above a sum of $4.9 million (in MOD prices) in the project estimate for the implementation of the environmental mitigation measures.

13. At the planning and design stages, we have considered design and layouts optimisation to reduce generation of construction waste where possible. In addition, we will require the contractor to reuse inert construction waste (e.g. demolished concrete and excavated soil and rock) on site or in other suitable construction sites as far as possible, in order to minimise disposal of inert construction waste to public fill reception facilities[5]. We will encourage the contractor to maximise the use of recycled or recyclable inert construction waste, and the use of non-timber formwork to further reduce generation of construction waste.

/14. …..

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5 Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

14. At the construction stage, we will require the contractor 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 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 and non-inert construction waste at public fill reception facilities and landfills respectively through a trip-ticket system.

15. For short-term environmental impacts during construction, we will control construction noise, dust and site run-off nuisances to within established standards and guidelines through the implementation of mitigation measures, such as regular cleaning and water spraying at the works site and provision of wheel-washing facilities for dust control; use of temporary noise barriers and acoustic machinery enclosures for noisy construction activities; provision of intercepting channel to prevent site runoff from washing into waterbodies/ watercourses.

16. We estimate that the proposed works will generate in total about 83 440 tonnes of construction waste. Of these, we will reuse about 27 170 tonnes (32%) of inert construction waste on site and deliver 43 200 tonnes (52%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 13 070 tonnes (16%) of non-inert construction waste at landfills. The total cost for disposal of construction waste at public fill reception facilities and landfills is estimated to be $5.68 million for this project (based on a unit charge rate of $71 per tonne for disposal at public fill reception facilities and $200 per tonne at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)).

HERITAGE IMPLICATIONS

17. 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

18. The proposed works do not involve any resumption of private land but clearance of government land is required.

TRAFFIC IMPLICATIONS

19. We have carried out a Traffic Impact Assessment (TIA) for the proposed works. The TIA concluded that the proposed works would not cause any significant impact on traffic. We will carry out a traffic review at the construction stage to revisit the temporary traffic arrangements for meeting the latest traffic condition before implementation of appropriate traffic management arrangements.

BACKGROUND INFORMATION

20. We upgraded **368WF** to Category B in September 2018.

21. In September 2018, we engaged contractors to carry out site investigation works and engaged consultants to undertake the TIA, tree survey and landscape design for the project at a total cost of $7.1 million. We charged the amount to block allocation **Subhead 9100WX** "Waterworks, studies and investigations for items in Category D of the Public Works Programme".

22. Of the 777 trees within the boundary of the proposed works, 399 trees will be preserved and 378 trees will be felled. All trees to be removed are not important trees[6]. We will incorporate planting proposals as part of the proposed works, including planting of 378 trees.

/23. …..

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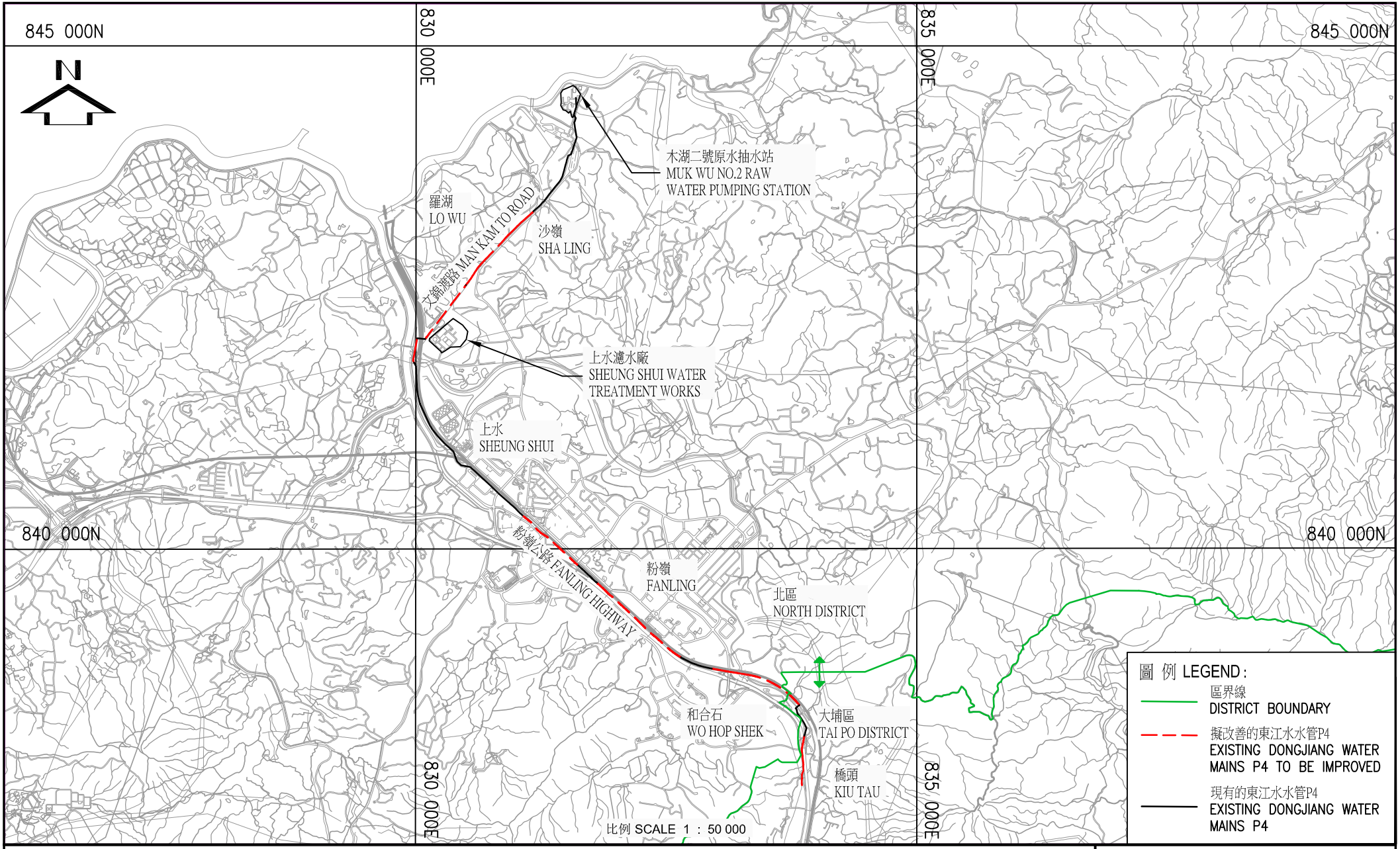
6 "Important trees" refer to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria-

(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 important persons or events;
(c) trees of precious or rare species;
(d) trees of outstanding form (taking account of overall tree sizes, shapes and any special features), e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or
(e) trees with trunk diameter equal to or exceeding 1.0 metre (m) (measured at 1.3 m above ground level), or with height/canopy spread equal to or exceeding 25 m.

23. We estimate that the proposed works will create about 345 jobs (295 for labourers and 50 for professional or technical staff) providing a total employment of 9 200 man-months.

Development Bureau
May 2019



工務計劃項目第368WF號 ——— 上水及粉嶺東江水水管P4改善工程

PWP Item No. 368WF –– Improvement to DongJiang Water Mains P4 at Sheung Shui and Fanling

水 務 署
WATER SUPPLIES DEPARTMENT

草圖編號 SKETCH NO. SK 62019 / 019

REF. 62019-019.dwg

附件3 附錄1 ANNEX 1 to ENCLOSURE 3

368WF – Improvement to Dongjiang water mains P4 at Sheung Shui and Fanling

Breakdown of the estimate for consultants' fees (in September 2018 prices)

			Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee ($ million)
(a)	Consultants' fees for advisory service for administration of contract adopting New Engineering Contract (NEC) form of contract (Note 2)	Professional	14	38	2.0	2.3
		Technical	30	14	2.0	1.7
					Total	**4.0#**

*MPS = Master Pay Scale

Notes

1. A multiplier of 2.0 is applied to the average MPS salary point to arrive at the full staff costs including the consultants' overheads and profit, as the staff will be employed in the consultants' offices. (As at now, MPS point 38 = $81,975 per month and MPS point 14 = $28,725 per month)

2. The consultants' staff cost for advisory service for administration of contract adopting NEC form of contract is based on the estimates prepared by the Director of Water Supplies. The actual man-months and fees will only be known after the consultants have been selected.

Remarks

The figures in this Annex are shown in constant prices to correlate with the MPS salary point of the same year. The figure marked with # is shown in money-of-the-day prices in paragraph 4 of Enclosure 3.

196WC – Implementation of Water Intelligent Network

PROJECT SCOPE AND NATURE

The remaining part of **196WC** which we propose to upgrade to Category A comprises construction works for the establishment of remaining about 640 District Metering Areas (DMAs)[1] under the Water Intelligent Network (WIN).

2. Subject to approval of the Finance Committee (FC), we plan to commence the proposed works in the third quarter of 2019 for completion by the end of 2023. In order to meet the tight programme, we will invite tenders in parallel to enable early commencement of the proposed works. The tender will only be awarded after obtaining FC's approval.

JUSTIFICATION

3. Riding on the technological advancement of sensors, telemetry, network management software and data analysis in recent years, we implement WIN for monitoring the water loss of the water distribution network for follow up action.

4. The essence of WIN is continuous monitoring of water loss of the water distribution network in a holistic manner. Under WIN, the fresh water distribution network will be divided into discrete DMAs of manageable sizes with monitoring and sensing equipment installed in each DMA. WIN enables determination of the priorities of the DMAs and the most effective means to tackle the water loss in individual DMAs under the four pillars of network management in an integrated and coordinated manner. These four pillars include –

(a) active leakage detection and control;

/(b) …..

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1 A DMA is a discrete area of a water distribution network established by the closure of district boundary valve(s) or complete disconnection of water mains across the district boundary, with the quantity of water supplied to the area metered. The monitoring and sensing equipment installed in DMAs includes, among others, flowmeters and pressure loggers to collect water flow and pressure data. For DMAs where there is room for pressure management without affecting the minimum supply pressure to sustain normal supply, they will also serve as Pressure Management Areas by installation of pressure reducing valves to reduce the water supply pressure to the areas.

(b) pressure management to reduce the water supply pressure in the network;

(c) quality and speedy repairs to water mains leaks and bursts; and

(d) reprovisioning of aged water mains which are beyond economical repair.

WIN also enables detection of probable unauthorised consumption in the DMAs.

5. Tremendous amount of flow and pressure data will be collected from the monitoring and sensing equipment of the DMAs under WIN as well as other associated network data. An intelligent network management system (INMS) is being established for analysing the data collected for continuous monitoring of the performance of the DMAs, so as to assess their level of water mains leakage and unauthorised consumption, and to enable timely determination of their priorities and the most effective means to tackle the water loss in individual DMAs. For full implementation of WIN to cover the entire water distribution network in the territory, we will link up all DMAs, which are either established or to be established, to the INMS. By incorporating all the DMAs into the INMS, WIN will enable efficient management of the water distribution network in the territory. With full implementation of WIN and other measures, we target to reduce leakage rate in government water mains from the current about 15% to below 10% by 2030.

6. Some 1 760 DMAs have been established or being established under other projects. We propose to upgrade the remaining part of **196WC** for the establishment of the remaining about 640 DMAs to cover the water distribution network in the territory for full implementation of WIN.

FINANCIAL IMPLICATIONS

7. We estimate the cost of the proposed works to be $1,236.0 million in money-of-the-day (MOD) prices, broken down as follows –

			$ million (in MOD prices)
(a)	Establishment of about 640 DMAs		991.7
(b)	Environmental mitigation measures		10.2
(c)	Consultants' fees for		15.8
	(i) contract administration	9.4	
	(ii) management of resident site staff (RSS)	6.4	
(d)	Remuneration of RSS		106.1
(e)	Contingencies		112.2
	Total		1,236.0

8. We propose to engage consultants to undertake contract administration and site supervision of the proposed works. A detailed breakdown of the estimates for the consultants' fees and RSS costs by man-months is at Annex 1 to Enclosure 4.

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

Year	**$ million (MOD)**
2019 – 2020	14.3
2020 – 2021	136.0
2021 – 2022	335.4

/Year …..

Year	$ million (MOD)
2022 – 2023	323.1
2023 – 2024	189.0
2024 – 2025	150.0
2025 – 2026	88.2
	1,236.0

10. We have derived the MOD estimates on the basis of the Government's latest set of assumptions on the trend rate of change in the prices of public sector building and construction output for the period from 2019 to 2026. We will deliver the proposed works under New Engineering Contract (NEC)[2] form of contract with provision for price adjustment.

11. We estimate the additional annual recurrent expenditure arising from the proposed works to be $23.8 million.

12. The proposed works will lead to an increase in the total annual expenditure on waterworks operation by 0.44% in real terms by 2026[3].

/PUBLIC …..

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

3 The increase in annual expenditure is calculated at the 2018-19 price level on the assumption that all relevant factors remain constant during the period from 2019 to 2026.

PUBLIC CONSULTATION

13. We consulted the relevant committees of all 18 District Councils concerned as listed in Annex 2 to Enclosure 4 between January and February 2019. Members generally supported the proposed works.

14. We consulted the Legislative Council Panel on Development on 26 March 2019. Members supported the proposed works.

ENVIRONMENTAL IMPLICATIONS

15. The proposed works are not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). We have carried out the Environmental Review (ER) for the proposed works. The ER concluded that the project would not have any long-term environmental impacts. We will incorporate the mitigation measures into the works contract to control the environmental impacts arising from the construction works to within established standards and guidelines. These include the use of silencers, mufflers, acoustics lining or shields for noisy construction activities, frequent cleaning and watering of the site, and provision of wheel-washing facilities. We have included in paragraph 7(b) above a sum of $10.2 million (in MOD Prices) in the project estimate for the implementation of these environmental mitigation measures.

16. At the planning and design stages for the proposed works, we have considered locations of chambers for accommodation of the proposed network monitoring and sensing equipment to reduce generation of construction waste where possible. In addition, we will encourage 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 disposal of inert construction waste at public fill reception facilities[4]. We will require the contractors to maximise the use of recycled or recyclable inert construction waste, and the use of non-timber formwork to further reduce generation of construction waste.

/17. …..

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4 Public fill reception facilities are specified in Schedule 4 of the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N). Disposal of inert construction waste in public fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

17. At the construction stage, we will 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 day-to-day operations on site comply with the approved plan. We will require the contractors to separate 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 at public fill reception facilities and landfills respectively through a trip-ticket system.

18. We estimate that the construction works will generate in total about 13 300 tonnes of construction waste. Of these, we will reuse about 1 983 tonnes (14.9%) of inert construction waste on site and deliver 10 617 tonnes (79.8%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 700 tonnes (5.3%) of non-inert construction waste at landfills. The total cost for disposal of construction waste at public fill reception facilities and landfill sites is estimated to be $0.89 million for this project (based on a unit charge rate of $71 per tonne for disposal at public fill reception facilities and $200 per tonne for disposal at landfills as stipulated in the Waste Disposal (Charges for Disposal of Construction Waste) Regulation (Cap. 354N)).

HERITAGE IMPLICATIONS

19. Parts of the proposed works fall within three Sites of Archaeological Interest (SAI) as detailed in Annex 3 to Enclosure 4. Pursuant to the Development Bureau Technical Circular (Works) No. 6/2009, the proposed works affecting the SAI are subject to a Heritage Impact Assessment (HIA). We have carried out a HIA to assess the impacts of the proposed works on the heritage sites and devised measures to mitigate the impacts. The HIA report was considered by the Antiquities and Monuments Office (AMO), which raised no objection to the report. We then consulted the Antiquities Advisory Board (AAB) on the HIA report on 6 December 2018 and members generally supported the findings of the HIA report. We will ensure that the construction and future maintenance of the proposed works will comply with the mitigation measures, recommendations and requirements stipulated in the HIA report. In case of any amendments to the recommended mitigation measures, recommendations and requirements stipulated in the HIA report during the course of the construction of the proposed works, we will further consult the AMO and AAB as necessary to formulate additional mitigation measures to ensure that any possible impact on the heritage sites is acceptable from conservation perspective.

/20. …..

20. Other than the proposed works assessed in the aforesaid HIA report, the remaining proposed works under this project will not affect any heritage sites, i.e. all declared monuments, proposed monuments, graded historic sites or buildings, sites of archaeological interest and government historic sites identified by the AMO.

LAND ACQUISITION

21. The proposed works do not require any resumption of private land.

TRAFFIC IMPLICATIONS

22. We have carried out a Traffic Impact Assessment (TIA) for the proposed works. The TIA concluded that the proposed works would not cause any significant impact on the traffic through implementation of appropriate temporary traffic arrangements. We will carry out a traffic review at the construction stage to revisit the temporary traffic arrangements for meeting the latest traffic condition before implementation of appropriate traffic management arrangements.

BACKGROUND INFORMATION

23. We upgraded **196WC** to Cat B in September 2014.

24. In August 2015, we engaged consultants to undertake the investigation and detailed design for about 85 DMAs in Kwun Tong, Sha Tin and Tai Po Districts, and reprovisioning of water mains at a cost of $4.5 million. We charged this amount to block allocation **Subhead 9100WX** "Waterworks, studies and investigations for items in Category D of the Public Works Programme". The detailed design was completed in June 2016.

/25. …..

25. On 28 June 2016, we upgraded part of **196WC** to Category A as **198WC** "Implementation of Water Intelligent Network, stage 1" at an approved project estimate (APE) of $239.7 million in MOD prices for construction of about 85 DMAs in Kwun Tong, Sha Tin and Tai Po Districts, procurement and establishment of the INMS; and investigation and detailed design for the remaining about 515 DMAs in the territory. In December 2016, we commenced the works for the aforesaid 85 DMAs, and the consultancies on the investigation and detailed design for the remaining DMAs. We also commenced the establishment of INMS in February 2019 for completion by mid-2020.

26. On 1 June 2018, we upgraded another part of **196WC** to Category A as **202WC** "Implementation of Water Intelligent Network, stage 2" at an APE of $655.4 million in MOD prices for construction of about 275 DMAs in Islands, Tsuen Wan, Kwun Tong, Sai Kung, Wong Tai Sin, Sha Tin and Tai Po Districts. In October 2018, we commenced the works for the aforesaid 275 DMAs.

27. The remainder of **196WC** originally encompasses the establishment of the remaining about 240 DMAs in North, Tai Po, Yuen Long and Tuen Mun Districts, and the reprovisioning of water mains. However, based on the operational experience of the established DMAs, we find it necessary to establish additional DMAs by sub-diving the established or proposed DMAs to enhance the effectiveness and efficiency for monitoring their performance. With regard to the reprovisioning of water mains, we will carry out the risk-based improvement works to water mains assessed with high risk under block allocation **Subhead 9100WX** "Waterworks, studies and investigations for items in Category D of the Public Works Programme". To this end, we have varied the remaining scopes of **196WC** by (i) including the construction works to establish about 400 additional DMAs; and (ii) deleting the reprovisioning of the water mains, which will be implemented under the risk-based improvement works to water mains.

/28. …..

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

29. We estimate that the proposed works will create about 215 jobs (170 for labourers and 45 for professional or technical staff) providing a total employment of 9 800 man-months.

Development Bureau
May 2019

196WC – Implementation of Water Intelligent Network

Breakdown of the estimates for consultants' fees and resident site staff costs (in September 2018 prices)

			Estimated man-months	Average MPS* salary point	Multiplier (Note 1)	Estimated fee ($ million)
(a)	Consultants' fees for contract administration (Note 2)	Professional	–	–	–	5.4
		Technical	–	–	–	2.4
					Sub-total	7.8#
(b)	Resident site staff (RSS) costs (Note 3)	Professional	285	38	1.6	37.4
		Technical	1 213	14	1.6	55.7
					Sub-total	93.1
	Comprising –					
	(i) Consultants' fees for management of RSS				5.3#	
	(ii) Remuneration of RSS				87.8#	
					Total	**100.9**

*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 point 38 = $81,975 per month and MPS point 14 = $28,725 per month).

2. The consultants' staff cost for contract administration is calculated in accordance with the existing consultancy agreement for the construction phase of the project. The construction phase of the 640 District Metering Areas and Pressure Management Areas will only be executed subject to Finance Committee's approval to upgrade the remaining part of **196WC** to Category A.

3. The actual man-months and actual costs will only be known after 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 the money-of-the-day prices in paragraph 7 of Enclosure 4.

196WC – 建設智管網
196WC – Implementation of Water Intelligent Network

區 議 會咨詢
Consultation with District Councils

日期 Date	區 議 會 District Council	委員會 Committee
3.1.2019	荃灣 Tsuen Wan	環境及衞生事務委員會 Environmental and Health Affairs Committee
9.1.2019	大埔 Tai Po	環境、房屋及工程委員會 Environment, Housing and Works Committee
10.1.2019	九龍城 Kowloon City	房屋及基礎建設委員會 Housing and Infrastructure Committee
17.1.2019	中西區 Central and Western	食物環境衞生及工務委員會 Food, Environment, Hygiene & Works Committee
17.1.2019	油尖旺 Yau Tsim Mong	食物環境衞生及工務委員會 Food, Environmental Hygiene and Public Works Committee
21.1.2019	北區 North	地區小型工程及環境改善委員會 District Minor Works and Environmental Improvement Committee
21.1.2019	元朗 Yuen Long	環境改善委員會 Environmental Improvement Committee
24.1.2019	西貢 Sai Kung	交通及運輸委員會 Traffic & Transport Committee
25.1.2019	屯門 Tuen Mun	環境、衞生及地區發展委員會 Environment, Hygiene and District Development Committee
28.1.2019	離島 Islands	旅遊漁農及環境衞生委員會 Tourism, Agriculture, Fisheries and Environmental Hygiene Committee
28.1.2019	南區 Southern	地區發展及房屋事務委員會 District Development and Housing Committee
29.1.2019	黃大仙 Wong Tai Sin	交通及運輸事務委員會 Traffic and Transport Committee

日期 **Date**	區議會 **District Council**	委員會 **Committee**
31.1.2019	觀塘 Kwun Tong	交通及運輸委員會 Traffic and Transport Committee
12.2.2019	灣仔 Wan Chai	發展、規劃及交通委員會 Development, Planning & Transport Committee
14.2.2019	深水埗 Sham Shui Po	環境及衞生委員會 Environment and Hygiene Committee
19.2.2019	東區 Eastern	規劃、工程及房屋委員會 Planning, Works and Housing Committee
19.2.2019	葵青 Kwai Tsing	規劃及地區設施管理委員會 Planning and District Facilities Management Committee
28.2.2019	沙田 Sha Tin	發展及房屋委員會 Development & Housing Committee

196WC － 建設智管網
196WC – Implementation of Water Intelligent Network

具考古研究價值的地點
Sites of Archaeological Interest

	地點 **Site**
1	浪濯村具考古研究價值的地點 Long Jok Tsuen Site of Archaeological Interest
2	虎地凹具考古研究價值的地點 Fu Tei Au Site of Archaeological Interest
3	鰲磡沙具考古研究價值的地點 Ngau Hom Sha Site of Archaeological Interest