For discussion **PWSC(2019-20)8**
on 22 May 2019

ITEM FOR PUBLIC WORKS SUBCOMMITTEE OF FINANCE COMMITTEE

HEAD 704 – DRAINAGE
Civil Engineering – Drainage and erosion protection
118CD – Drainage improvement in Northern New Territories - package B (remaining works)
144CD – Drainage improvement in Southern Hong Kong Island - package 2
163CD – Drainage improvement works at Ngong Ping
166CD – Drainage improvement works at Yuen Long

Members are invited to recommend to the Finance Committee –

(a) the upgrading of **118CD** and **163CD** to Category A at estimated costs of $65.5 million and $216.0 million in money-of-the-day (MOD) prices respectively;

(b) the upgrading of part of **144CD**, entitled "Drainage improvement in Southern Hong Kong Island - package 2A", to Category A at an estimated cost of $134.7 million in MOD prices;

(c) the upgrading of part of **166CD**, entitled "Drainage improvement works at Yuen Long, stage 1", to Category A at an estimated cost of $256.2 million in MOD prices; and

/(d) …..

(d) the retention of the remainders of **144CD** and **166CD** in Category B.

PROBLEM

There are urgent needs to take forward the drainage improvement works at Tsung Yuen (Kwu Tung North), Pok Fu Lam, Ngong Ping and Yuen Long in order to alleviate the flooding risks in these areas.

PROPOSAL

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

(a) **118CD** at an estimated cost of $65.5 million in MOD prices for the construction of the drainage improvement works at Tsung Yuen (Kwu Tung North);

(b) part of **144CD** at an estimated cost of $134.7 million in MOD prices for the construction of the drainage improvement works at the peripheral areas of Pok Fu Lam Village;

(c) **163CD** at an estimated cost of $216.0 million in MOD prices for the construction of the drainage improvement works at Ngong Ping; and

(d) part of **166CD** at an estimated cost of $256.2 million in MOD prices for the construction of the drainage improvement works at Yuen Long.

PROJECT SCOPE AND NATURE

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

Development Bureau
May 2019

118CD - Drainage improvement in Northern New Territories – package B (remaining works)

PROJECT SCOPE AND NATURE

The proposed scope of works under **118CD** comprises the construction of –

(a) about 900 metres (m) of stormwater drains of diameters ranging from 300 millimetres (mm) to 1 800 mm at Ho Sheung Heung Road; and

(b) ancillary works[1].

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

3. Subject to the funding approval of the Finance Committee, we plan to commence the proposed works in the fourth quarter of 2019 for completion in the first quarter of 2022.

JUSTIFICATION

4. The Drainage Services Department completed a Drainage Master Plan study for Northern New Territories in 1999 to assess the conditions and the adequacy of the drainage capacity of the local drainage systems in the Northern New Territories. The study recommended a programme of drainage improvement works in the Northern New Territories to be implemented in phases under **118CD**, in order to tackle the flooding problems in the areas.

5. The remaining works under **118CD** comprise the construction of the proposed drainage improvement works in Tsung Yuen, which is susceptible to flooding during heavy rainstorms mainly due to the inadequate capacity of the existing drainage system along Ho Sheung Heung Road to convey surface runoff.

/6. …..

1 Ancillary works include the associated inlet and outlet structures, connection works between the proposed and existing drainage system, etc.

6. Upon completion of the drainage improvement works, the drainage system concerned will be upgraded to the current standard[2] and the flooding risk in Tsung Yuen will be alleviated.

FINANCIAL IMPLICATIONS

7. We estimate the capital cost of the proposed works to be $65.5 million in MOD prices (please see paragraph 8 below), broken down as follows –

		$ million (in MOD prices)
(a)	Construction works - Drainage Improvement Works at Tsung Yuen	58.2
(b)	Ancillary works	0.9
(c)	Environmental mitigation measures	0.6
(d)	Contingencies	5.8
	Total	65.5

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

Year	**$ million (MOD)**
2019 – 2020	0.2
2020 – 2021	13.0
2021 – 2022	38.9
2022 – 2023	4.5
2023 – 2024	4.5

/Year …..

2 The design standard complies with the latest Stormwater Drainage Manual published in 2018 with the effect of climate changes duly considered.

Year	$ million (MOD)
2024 – 2025	4.4
	65.5

9. 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 a New Engineering Contract (NEC)[3] form of contract with provision for price adjustment.

10. We estimate the additional annual recurrent expenditure arising from this project to be $100,000.

PUBLIC CONSULTATION

11. We consulted the Sheung Shui District Rural Committee on 6 March 2014 and 2 September 2015, and subsequently consulted the North District Council on 18 July 2016. Members of the Committee and the District Council supported the proposed works.

12. We consulted the Legislative Council Panel on Development on 26 February 2019 and Members supported the project.

ENVIRONMENTAL IMPLICATIONS

13. The project is not a designated project under the Environmental Impact Assessment (EIA) Ordinance (Cap. 499). A Preliminary Environmental Review (PER) for the project was completed in April 2016. The PER concluded and the Director of Environmental Protection agreed that the proposed works would not cause long-term environmental impacts. We have included in paragraph 7(c) a sum of $600,000 (in MOD prices) in the project estimate for implementation of the necessary environmental mitigation measures.

/14. …..

3 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.

14. For short-term environmental impacts during construction, we will control noise, dust and site run-off nuisances to within established standards and guidelines through the implementation of appropriate mitigation measures in the contract. These include the use of movable noise barriers, noise insulating fabric and quieter powered mechanical equipment, water-spraying to the construction site, and the provision of wheel-washing facilities. We will also carry out routine site audits to ensure mitigation measures will be properly implemented on site.

15. At the planning and design stages, we have considered measures to reduce generation of construction waste where possible including the use of trenchless construction method to avoid excavation works as far as practicable. In addition, we will require the contractor 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 to the public fill reception facilities (PFRF[4]). 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 the generation of construction waste.

16. At the construction stage, we will require the contractor 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 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 PFRF and landfills respectively through a trip-ticket system.

17. We estimate that the proposed works will generate in total about 3 900 tonnes of construction waste. Of these, we will reuse about 1 100 tonnes (28%) of inert construction waste on site and deliver about 2 700 tonnes (69%) of inert construction waste to PFRF for subsequent reuse. We will dispose of the remaining 100 tonnes (3%) of non-inert construction waste at landfills. The total cost for disposal of construction waste at PFRF and landfill sites is estimated to be $212,000 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** …..

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

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.

TRAFFIC IMPLICATIONS

20. We have conducted a traffic impact assessment (TIA) for the proposed works. The TIA indicates that the proposed works will not cause significant traffic impact to the surrounding road network during construction stage. Temporary traffic arrangements (TTAs) will be implemented to facilitate the construction works. We will establish a traffic management liaison group to discuss, scrutinize and review the TTAs proposed by the contractors with a view to minimizing traffic impact arising from the proposed works. In addition, we will set up a telephone hotline to respond to public enquiries or complaints.

BACKGROUND

21. In November 2001, we upgraded **118CD** to Category B.

22. In July 2002, we upgraded part of **118CD** to Category A as **129CD** "Drainage improvement in Northern New Territories – package B – consultants' fee and investigations" at an approved project estimate (APE) of $15.1 million in MOD prices for engaging consultants to carry out site investigations, impact assessment and detailed design for the proposed works.

23. The drainage improvement works under **118CD** are implemented in four phases. The phase 1 works involving drainage improvement of a watercourse located to the north of the junction between Fu Tei Au Road and Man Kam To Road in Sheung Shui were completed in January 2007. The works were funded under the block allocation **Subhead 4100DX** "Drainage works, studies and investigation for items in Category D of the Public Works Programme", at a total cost of $3.3 million in MOD prices.

/24. …..

24. We subsequently upgraded part of **118CD** to Category A as **147CD** "Drainage Improvement Works in Kwu Tung South and Fu Tei Au, Sheung Shui" in June 2006 at an APE of $58.3 million in MOD prices and **156CD** "Drainage improvement in Ki Lun Tsuen, Ma Tso Lung, Ying Pun, Shek Tsai Leng and Sha Ling in New Territories" in May 2008 at an APE of $221.7 million in MOD prices for carrying out phase 2 and phase 3 drainage improvement works respectively. The works for **147CD** and **156CD** commenced in July 2006 and November 2008 respectively, and were completed in 2012. The remaining works under **118CD** comprise the construction of about 900 m of stormwater drains and associated works in Tsung Yuen, Kwu Tung North.

25. We have substantially completed the detailed design of the proposed works mentioned in paragraph 1 above.

26. Of the 264 trees within the boundary of the proposed works, there is no registered Old and Valuable Tree. The proposed works will preserve 208 trees and remove 56 trees. Among these trees, no important trees[5] will be affected during the implementation of the project. We will incorporate planting proposal as part of the proposed works, including an estimated replacement planting of 56 trees.

27. We estimate that the proposed works will create about 25 jobs (20 for labourers and five for professional/technical staff), providing a total employment of 600 man-months.

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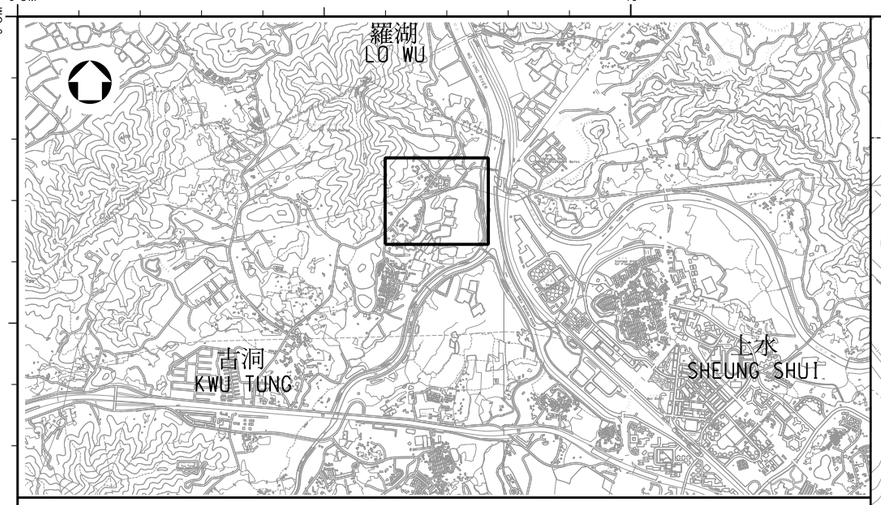
5 "Important trees" refers to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria-

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, shape 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 m (measured at 1.3 m above ground level), or with height or canopy spread equal or exceeding 25 m.



位置圖 LOCATION PLAN

比例 SCALE: 1:20000

842000 N

829550 E

829800 E

829300 E

841750 N

羅湖懲教所
LO WU CORRECTIONAL INSTITUTION

河上鄉路
HO SHEUNG HEUNG ROAD

羅湖騎術會
LO WU SADDLE CLUB

松園
TSUNG YUEN

雙魚河
SHEUNG YUE RIVER (RIVER BEAS)

連接到原有沙井
TO BE CONNECTED WITH EXISTING MANHOLE

連接到原有排水出口
TO BE CONNECTED WITH EXISTING CULVERT

連接到現有水道
TO BE CONNECTED WITH EXISTING CHANNEL

連接到原有沙井
TO BE CONNECTED WITH EXISTING MANHOLE

連接到現有水道
TO BE CONNECTED WITH EXISTING CHANNEL

300-1800

900

300

EXISTING CHANNEL

圖例 LEGEND :

300-1800 擬建之直徑300-1800毫米的雨水渠及水流方向
PROPOSED 300-1800mm DIA. STORMWATER DRAINS AND FLOW DIRECTION

版 no.	日期 date	修改項目 description	簡簽 initial

圖則名稱 drawing title

118CD號工程計劃
「新界北部雨水排放系統改善計劃－B部分」(餘下工程)
118CD
DRAINAGE IMPROVEMENT IN NORTHERN NEW TERRITORIES - PACKAGE B (REMAINING WORKS)

繪畫 drawn	SIGNED W. L. LEUNG	日期 date 18 JAN 2019
核對 checked	SIGNED Ir Sunny E. TAN	日期 date 18 JAN 2019
批核 approved	SIGNED Ir. W. C. CHIU	日期 date 18 JAN 2019
部門 office	排水工程部 DRAINAGE PROJECTS DIVISION	

圖則編號 drawing no. DDP/118CD1/13014

比例 scale 1 : 2 000 OR AS SHOWN

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

144CD — Drainage improvement in Southern Hong Kong Island – package 2

PROJECT SCOPE AND NATURE

The part of **144CD** which we propose to upgrade to Category A comprises the construction of –

(a) about 800 metres (m) of stormwater drains with diameters ranging from 400 millimetres (mm) to 1 000 mm along the horse trail and walking trail located uphill of Pok Fu Lam Village, and about 260 m of stormwater drains with diameters ranging from 800 mm to 1 350 mm along Chi Fu Road; and

(b) ancillary works[1].

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

3. Subject to the funding approval of the Finance Committee, we plan to commence the proposed works in the fourth quarter of 2019 for completion in the fourth quarter of 2023.

4. We will retain the remainder of **144CD** in Category B, which comprises the construction of about 3.2 kilometres of stormwater drains at various locations on Southern Hong Kong Island. We will seek funding for the remainder of **144CD** at a later stage after completion of the detailed design of the remaining works.

JUSTIFICATION

5. The Drainage Services Department completed a Drainage Master Plan study for the Southern Hong Kong Island in 2005 to assess the conditions and the adequacy of the drainage capacity of the local drainage systems in Pok Fu Lam, Wah Fu, Tin Wan, Aberdeen, Wong Chuk Hang, Ap Lei Chau, Shouson Hill, Shek O and Stanley. The recommended drainage improvement works in

/connection …..

1 Ancillary works include associated inlet and outlet structures, diversion weirs, connection works between the proposed and existing drainage system, stabilization of affected geotechnical features, etc.

connection with the Pok Fu Lam Village were grouped into package 1 of the study for early implementation.

6. Upon completion of the drainage improvement works in June 2009, the flooding problem of low-lying areas within Pok Fu Lam Village susceptible to flooding has been improved. However, Pok Fu Lam Village remains a flooding blackspot with major flooding incidents reported on 21 September 2010 and 22 July 2015. In the detailed design of the proposed works, the effect of climate changes has been duly considered.

7. The proposed works comprise the construction of the drainage improvement works at the peripheral areas of Pok Fu Lam Village to intercept the stormwater upstream and divert it to the existing drainage system. Upon completion of the drainage improvement works, the drainage system concerned will be upgraded to the current standard[2] and the flooding risk of Pok Fu Lam Village will be further alleviated.

FINANCIAL IMPLICATIONS

8. We estimate the capital cost of the proposed works to be $134.7 million in MOD prices (please see paragraph 9 below), broken down as follows –

		$ million (in MOD prices)
(a)	Drainage improvement works	117.0
(b)	Ancillary works	3.3
(c)	Environmental mitigation measures	2.2
(d)	Contingencies	12.2
	Total	134.7

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

/**Year** …..

2 The design standard complies with the latest Stormwater Drainage Manual published in 2018 with the effect of climate changes duly considered.

Year	$ million (MOD)
2019 – 2020	0.8
2020 – 2021	19.4
2021 – 2022	30.8
2022 – 2023	33.1
2023 – 2024	23.6
2024 – 2025	10.7
2025 – 2026	9.2
2026 – 2027	7.1
	134.7

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 2027. We will deliver the works under a 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 $110,000.

PUBLIC CONSULTATION

12. We consulted the Pok Fu Lam Village representatives and associated stakeholders on 30 November 2018 and they supported the proposed works. Subsequently, we consulted the District Development and Housing Committee (DDHC) of Southern District Council on 28 January 2019. Members of the DDHC supported the proposed works.

/13. …..

3 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.

13. We consulted the Legislative Council Panel on Development on 26 February 2019 and Members supported the project.

ENVIRONMENTAL IMPLICATIONS

14. The project is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). We completed a Preliminary Environmental Review (PER) for the project in March 2019. The PER concluded and the Director of Environmental Protection agreed that the proposed works would not have any long-term adverse environmental impacts. We have included in paragraph 8(c) a sum of $2.2 million (in MOD prices) in the project estimate for implementation of the necessary environmental mitigation measures.

15. For short-term environmental impacts during construction, we will minimise environmental nuisance to within established standards and guidelines through the implementation of appropriate mitigation measures in the contract. These measures include the use of temporary noise barriers and silenced construction equipment, water-spraying to the construction site and on-site treatment of site run-off. We will also carry out regular site inspections to ensure that these measures and good site practices will be properly implemented on site.

16. At the planning and design stages, we have considered measures to reduce generation of construction waste where possible including the use of trenchless construction method to avoid excavation works as far as practicable. In addition, we will require the contractor 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 to the public fill reception facilities (PFRF)[4]. 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 the generation of construction waste.

17. At the construction stage, we will require the contractor 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 contractor to separate the inert portion from non-inert construction waste on site for disposal at appropriate

/facilities …..

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

facilities. We will control the disposal of inert and non-inert construction waste at PFRF and landfills respectively through a trip-ticket system.

18. We estimate that the proposed works will generate in total about 7 800 tonnes of construction waste. Of these, we will reuse about 1 550 tonnes (20%) of inert construction waste on site and deliver about 5 950 tonnes (76%) of inert construction waste to PFRF for subsequent reuse. We will dispose of the remaining 300 tonnes (4%) of non-inert construction waste at landfills. The total cost for disposal of construction waste at PFRF and landfill sites is estimated to be $482,000 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

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 will only involve government land. No land resumption is required.

TRAFFIC IMPLICATIONS

21. We have conducted a traffic impact assessment (TIA) for the proposed works and the TIA indicates that the proposed works will not cause significant traffic impact to the surrounding road network during construction. Temporary traffic arrnagments (TTAs) will be implemented to facilitate the construction works. We will establish a traffic management liaison group to discuss, scrutinize and review the TTAs proposed by the contractors with a view to minimising traffic impact arising from the proposed works. In addition, we will set up a telephone hotline to respond to public enquiries or complaints.

BACKGROUND INFORMATION

22. In September 2006, we upgraded **144CD** "Drainage improvement in Southern Hong Kong Island" to Category B for improvement of the existing drainage systems on the southern part of Hong Kong Island.

/23. …..

23. In October 2007, we engaged consultants to undertake a traffic impact assessment for the package 1 works, at a total cost of $198,000 in MOD prices.

24. In July 2008, we upgraded part of **144CD** to Category A as **158CD** "Drainage improvement in Southern Hong Kong Island – package 1" at an approved project estimate of $28 million in MOD prices for the construction of drainage improvement works in different locations of Southern Hong Kong Island. The package 1 works commenced in November 2008 and were completed in 2011.

25. In August 2009, we engaged consultants to undertake a traffic impact assessment study and site investigations for the package 2 works. The latest estimated cost is $2 million in MOD prices.

26. In August 2013, we engaged consultants to undertake an investigation study for the proposed works. The latest estimated cost is $3.6 million in MOD prices.

27. We have charged the amounts mentioned in paragraphs 23, 25 and 26 above to block allocation **Subhead 4100DX** "Drainage works, studies and investigations for items in Category D of the Public Works Programme".

28. We have substantially completed the detailed design of the proposed works mentioned in paragraph 1 above.

29. Of the 267 trees within the boundary of the proposed works, there is no registered Old and Valuable Tree. The proposed works will preserve 193 trees and remove 74 trees. Among these trees, no important trees[5] will be affected during the implementation of the project. We will incorporate planting

/proposals…..

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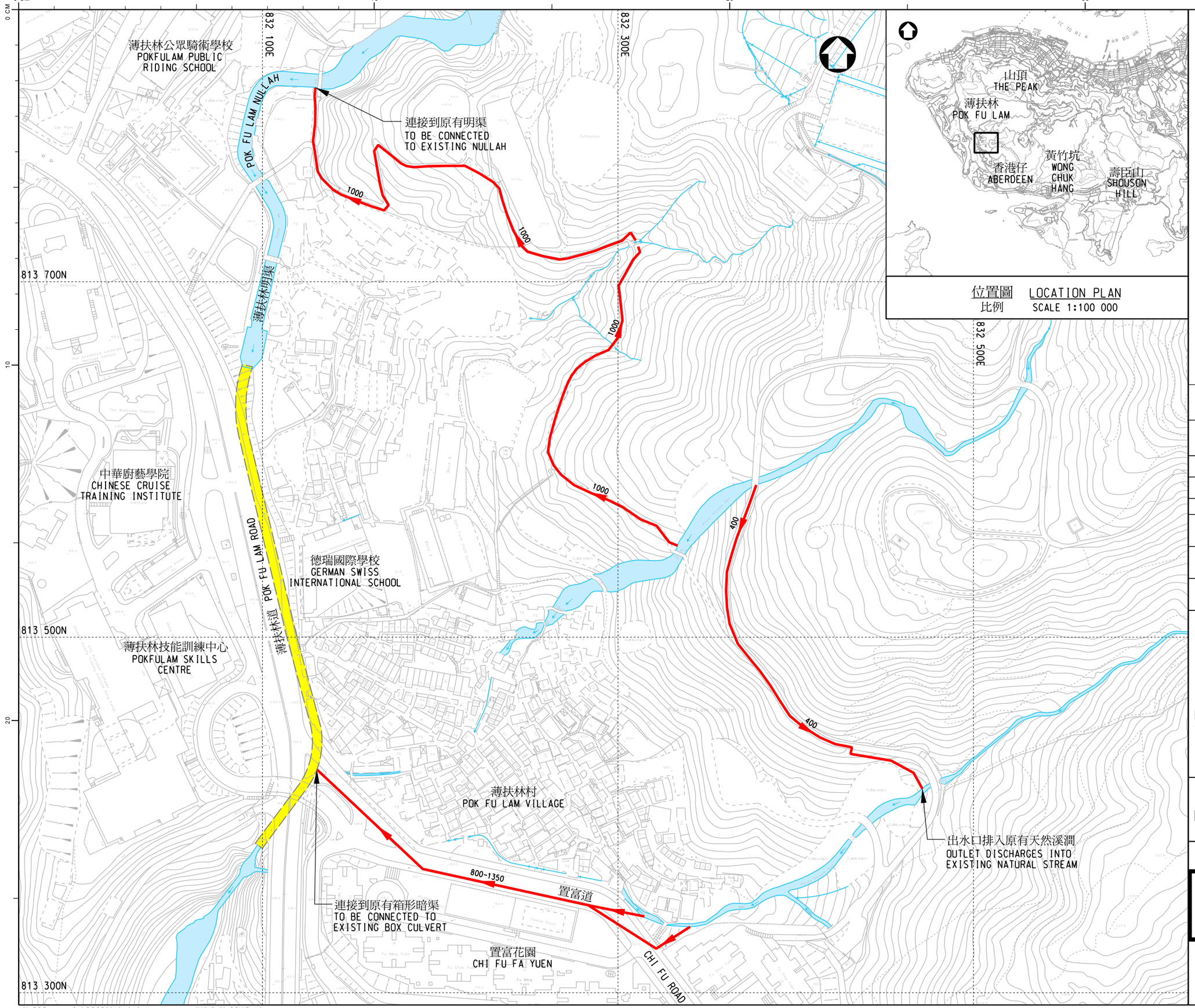
5 "Important trees" refer to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria –

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

proposals as part of the proposed works, including an estimated replacement planting of 74 trees.

30. We estimate that the proposed works will create about 30 jobs (25 for labourers and five for professional or technical staff), providing a total employment of 1 100 man-months.



位置圖 LOCATION PLAN
比例 SCALE 1:100 000

圖例
LEGEND :

400 擬建之直徑400毫米的雨水渠及水流方向
PROPOSED 400mm DIA. STORMWATER DRAINS AND FLOW DIRECTION

原有箱形暗渠
EXISTING BOX CULVERT

版 no.	日期 date	修改項目 description	簽 initial
B	14 FEB 2019	GENERAL REVISION	SIGNED L. M. NG E/D25
A	7 JAN 2019	GENERAL REVISION	SIGNED L. M. NG E/D25

修訂 REVISION

	姓名 name	日期 date
繪畫 drawn	SIGNED M. F. CHAN	28 DEC 2018
核對 checked	SIGNED Ir L. M. NG	31 DEC 2018
批核 approved	SIGNED Ir W. K. MOK	31 DEC 2018

圖則名稱 drawing title

144CD號工程計劃(部分)
「港島南部雨水排放系統改善計劃 - 2A部分」
144CD (PART)
DRAINAGE IMPROVEMENT IN SOUTHERN HONG KONG ISLAND - PACKAGE 2A

圖則編號 drawing no.
DDP/144CD2/36021B

比例 scale
1 : 2000 OR AS SHOWN

部門 office
排水工程部
DRAINAGE PROJECTS DIVISION

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

163CD — Drainage improvement works at Ngong Ping

PROJECT SCOPE AND NATURE

The proposed scope of works under **163CD** comprises the construction of –

(a) about 900 metres (m) of stormwater drains of diameters ranging from 1 500 millimetres (mm) to 1 950 mm, and box culverts with internal width ranging from 2.5 m to 4 m and internal height of 2.5 m at Ngong Ping; and

(b) ancillary works[1].

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

3. Subject to the funding approval of the Finance Committee, we aim to commence the proposed works in the fourth quarter of 2019 for completion in the first quarter of 2022.

JUSTIFICATION

4. Serious flooding occurred at Po Lin Monastery, Ngong Ping Bus Terminus, Ngong Ping Village and areas in the vicinity of Ngong Ping 360 during a heavy rainstorm on 7 June 2008. Subsequent to the rainstorm, the Drainage Services Department completed a drainage study for Ngong Ping in 2013. It was found that the watercourses at the north of Po Lin Monastery as well as the upstream and downstream of Ngong Ping 360 had inadequate capacity and would be susceptible to flooding during heavy rainstorms. With the consideration of the climate change effect, the flooding risk in these areas will further increase. As such, the study recommended improvement measures including construction of stormwater drains to enhance the capacity of the existing drainage system.

/5. …..

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1 Ancillary works include the associated inlet and outlet structures, diversion weirs, connection works between the proposed and existing drainage system, stabilization of affected geotechnical features, etc.

5. Upon completion of the proposed drainage improvement works, the capacity of the trunk stormwater drainage system will be enhanced and the drainage system concerned will be upgraded to the current standard[2] and flooding risk in Ngong Ping will be alleviated.

FINANCIAL IMPLICATIONS

6. We estimate the capital cost of the proposed works to be $216.0 million in MOD prices (please see paragraph 7 below), broken down as follows –

		$ million (in MOD prices)
(a)	Drainage improvement works	174.6
(b)	Ancillary works	16.6
(c)	Environmental mitigation measures	5.2
(d)	Contingencies	19.6
	Total	216.0

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

Year	**$ million (MOD)**
2019 – 2020	2.3
2020 – 2021	66.0
2021 – 2022	108.6
2022 – 2023	32.0
2023 – 2024	5.1

/Year …..

2 The design standard complies with the latest Stormwater Drainage Manual published in 2018 with the effect of climate changes duly considered.

Year	$ million (MOD)
2024 – 2025	2.0
	216.0

8. 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 a New Engineering Contract (NEC)[3] form of contract with provision for price adjustment.

9. We estimate the additional annual recurrent expenditure arising from the project to be $100,000.

PUBLIC CONSULTATION

10. We consulted and updated the progress of the proposed works with the management of the Po Lin Monastery on 23 January 2019 and their support was obtained.

11. We consulted the Tourism, Agriculture, Fisheries and Environmental Hygiene Committee of the Islands District Council on 28 January 2019. Members of the Committee supported the proposed works.

12. We consulted the Legislative Council Panel on Development on 26 February 2019 and Members supported the project.

/ENVIRONMENTAL …..

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[3] 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.

ENVIRONMENTAL IMPLICATIONS

13. The project is a designated project under Schedule 2 of the Environmental Impact Assessment (EIA) Ordinance (Cap. 499) and an environemtal permit (EP) is required for the construction and operation of the project. The EIA Report was approved by the Director of Environmental Protection with conditions under EIA Ordinance in April 2013. The EIA Report concluded that the environmental impact of the project can be controlled to within the criteria under EIA Ordinance and the Technical Memorandum on EIA Process. The Director of Environmental Protection issued the EP for the project in August 2013 and amended the EP in March 2019. We will implement the measures recommended in the approved EIA Report and stipulated in the EP.

14. For short-term environmental impacts during construction, we will minimise environmental nuisance to within established standards and guidelines through the implementation of appropriate mitigation measures in the contract. These measures include the use of temporary noise barriers and silenced construction equipment to reduce noise generation, water-spraying to reduce emission of fugitive dust, and proper treatment of site run-off before discharge. We will also implement an environmental monitoring and audit programme to ensure that these recommended mitigation measures and good site practices will be properly implemented on site. We estimate the cost of implementing the environmental mitigation measures to be $5.2 million (in MOD prices). We have included this cost in the overall project estimate (as in paragraph 6(c)).

15. At the planning and design stages, we have considered ways to reduce the generation of construction waste where possible including the use of trenchless construction method to avoid excavation works as far as practicable. In addition, we will require the contractor to reuse inert construction waste (e.g. excavated soil and rock) on site or in other suitable construction sites as far as possible, in order to minimise the disposal of inert construction waste to public fill reception facilities (PFRF)[4]. 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 the generation of construction waste.

16. 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 …..

[4] PFRF 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 license issued by the Director of Civil Engineering and Development.

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 PFRF and landfills respectively through a trip-ticket system.

17. We estimate that the proposed works will generate in total about 27 300 tonnes of construction waste. Of these, we will reuse about 13 900 tonnes (50.9%) of inert construction waste on site, and deliver 13 300 tonnes (48.7%) of inert construction waste to PFRF for subsequent reuse. We will dispose of the remaining 100 tonnes (0.4%) of non-inert construction waste to landfills. The total cost for disposal of construction waste at PFRF and landfill sites is estimated to be about $964,000 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.

TRAFFIC IMPLICATIONS

20. We have conducted a traffic study for the proposed works. The study indicates that the proposed works will not cause significant traffic impact to the surrounding road network during construction. Temporary traffic arrangements (TTAs) will be implemented to facilitate the construction works. We will establish a traffic management liaison group to discuss, scrutinize and review the TTAs proposed by the contractors with a view to minimizing traffic impact arising from the proposed works. In addition, we will set up a telephone hotline to respond to public enquiries or complaints.

/BACKGROUND …..

BACKGROUND INFORMATION

21. In September 2010, we upgraded **163CD** to Category B.

22. In September 2011, we engaged consultants to undertake an environmental impact assessment study and site investigations of the proposed works under **163CD**. The latest estimated cost is $3.1 million in MOD prices.

23. In December 2018, we engaged consultant to undertake the adoptive review on the proposed geotechnical works under **163CD** to ensure that the proposed works are able to meet the up-to-date geotechnical requirements. The latest estimated cost is $4.2 million in MOD prices.

24. We have charged the amounts mentioned in paragraphs 22 and 23 above to block allocation **Subhead 4100DX** "Drainage works, studies and investigations for items in Category D of the Public Works Programme".

25. We have substantially completed the detailed design for the proposed works mentioned in paragraph 1 above.

26. Of the 300 trees within the project boundary, there is no registered Old and Valuable Tree. The proposed works will preserve 227 trees and remove 73 trees. Among these trees, no important trees[5] will be affected during the implementation of the project. We will incorporate a planting proposal as part of the proposed works, including an estimated replacement planting of 73 trees.

/27. …..

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5 "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 event;

(c) trees of precious or rare species;

(d) trees of outstanding form (taking account of overall tree sizes, shape and any special features) e.g. trees with curtain like aerial roots, trees growing in unusual habitat; or

(e) trees with trunk diameter equal or exceeding 1.0 m (measured at 1.3 m above ground level), or with height/canopy spread equal or exceeding 25 m.

27. We estimate that the proposed works will create 75 jobs (65 for labourers and ten for professional or technical staff), providing a total employment of 1 900 man-months.

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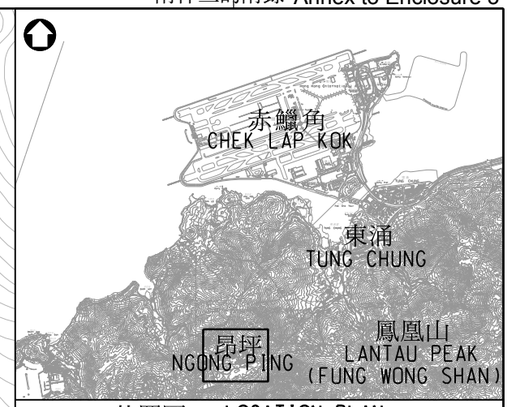
0 CM 10 20 30

808 000 E

808 500 E

813 000 N



位置圖 LOCATION PLAN
比例 SCALE 1 : 150 000

1800

1500 - 1950

昂坪纜車站
NGONG PING 360 TERMINAL

昂坪
NGONG PING

寶蓮禪寺
PO LIN MONASTERY

昂坪污水處理廠
NGONG PING
SEWAGE TREATMENT WORKS

天壇大佛
TIAN TAN
BUDDHA STATUE

圖例：
LEGEND:

- 擬建之入水口結構
  PROPOSED INTAKE STRUCTURE
- 擬建之出水口結構
  PROPOSED OUTFALL STRUCTURE
- 擬建之直徑1800毫米的雨水渠及水流方向
  PROPOSED 1800mm DIA. STORMWATER DRAINS AND FLOW DIRECTION
- 擬建之箱形暗渠（闊2500至4000毫米,高2500毫米）及水流方向
  PROPOSED BOX CULVERT OF 2500-4000mm(W)x2500mm(H) AND FLOW DIRECTION

版 no.	日期 date	修改項目 description	簡簽 initial

圖則名稱 drawing title

163CD號工程計劃
「昂坪雨水排放系統改善工程」
163CD
DRAINAGE IMPROVEMENT WORKS AT NGONG PING

繪畫 drawn	SIGNED W. L. LEUNG	日期 date 18 JAN 2019
核對 checked	SIGNED Ir K. Y. WONG	日期 date 18 JAN 2019
設計 designed	SIGNED Ir Y. P. AU	日期 date 18 JAN 2019
部門 office	排水工程部 DRAINAGE PROJECTS DIVISION	

圖則編號 drawing no. DDP/163CD1/03018
比例 scale 1 : 2500 OR AS SHOWN

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

166CD - Drainage improvement works at Yuen Long

PROJECT SCOPE AND NATURE

The part of **166CD** which we propose to upgrade to Category A comprises the construction of –

(a) about 250 metres (m) of stormwater drain with diameters ranging from 900 millimetres (mm) to 1 650 mm in Tai Tseng Wai;

(b) about 50 m of stormwater drain with diameter of 1 200 mm and about 150 m of drainage channel with 1.5 m in width in Shui Tsiu San Tsuen;

(c) about 400 m of drainage channel with widths ranging from 4 m to 6 m and about 20 m of stormwater drain with diameter of 1 500 mm in Ho Lik Pui;

(d) about 550 m of drainage channel with widths ranging from 750 mm to 900 mm and about 170 m of stormwater drain with diameters ranging from 675 mm to 1 800 mm in Shan Ha Tsuen; and

(e) ancillary works[1].

2. A plan showing the location of the proposed works is at Annex 1 to Enclosure 4.

3. Subject to the funding approval of the Finance Committee, we plan to commence the proposed works in the first quarter of 2020 for completion in the third quarter of 2022.

4. We will retain the remainder of **166CD** in Category B. We will seek funding for the remainder of **166CD** at a later stage after completion of the respective detailed design of the remaining works.

/**JUSTIFICATION** …..

1 Ancillary works include associated roadworks and surface channels, landscaping works, reinstatement of footbridges, connection works between the proposed and existing drainage system, etc.

JUSTIFICATION

5. The Drainage Services Department completed the "Review of Drainage Master Plans in Yuen Long and North District – Feasibility Study" (the Review Study) in 2011 to holistically assess the completed works recommended under the Drainage Master Plan studies for the Yuen Long, Kam Tin, Ngau Tam Mei and Tin Shui Wai Drainage Basin taking into account the new development proposals and town planning studies.

6. The Review Study identified that some areas in Yuen Long District could not meet the required flood protection level for the latest land use changes and future developments. With consideration of the climate change effect, the flooding risk in these areas will further increase. As such, the Review Study recommended the implementation of drainage improvement works at these areas.

7. Among the proposed works, the drainage improvement works at Tai Tseng Wai, Shui Tsiu San Tsuen, Ho Lik Pui and a part of Shan Ha Tsuen can be implemented in advance because they are not classified as designated projects under the Environmental Impact Assessment (EIA) Ordinance and do not involve land resumption. Upon completion of the drainage improvement works, the drainage system concerned will be upgraded to the current standard[2] and flooding risk of these areas will be alleviated.

FINANCIAL IMPLICATIONS

8. We estimate the capital cost of the proposed works to be $256.2 million in MOD prices (please see paragraph 10 below), broken down as follows –

		$ million (in MOD prices)	
(a)	Drainage improvement works		192.1
	(i) Ho Lik Pui	97.2	
	(ii) Tai Tseng Wai	38.8	
	(iii) Shan Ha Tsuen	36.4	
	(iv) Shui Tsiu San Tsuen	19.7	

/(b) …..

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[2] The design standard complies with the latest Stormwater Drainage Manual published in 2018 with the effect of climate changes duly considered.

			$ million (in MOD prices)
(b)	Ancillary works		4.4
(c)	Environmental mitigation measures		4.3
(d)	Consultant's fees for		2.1
	(i) contract administration	1.2	
	(ii) management of resident site staff (RSS)	0.9	
(e)	Remuneration of RSS		30.1
(f)	Contingencies		23.2
	Total		256.2

9. 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 4.

10. Subject to funding approval, we plan to phase the expenditure as follows -

Year	**$ million (MOD)**
2019 – 2020	0.7
2020 – 2021	39.6
2021 – 2022	88.3
2022 – 2023	78.8
2023 – 2024	38.2
2024 – 2025	8.5
2025 – 2026	2.1
	256.2

/11. …..

11. 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 a New Engineering Contract (NEC)[3] form of contract with provision for price adjustment.

12. We estimate the additional annual recurrent expenditure arising from the proposed project to be $160,000.

PUBLIC CONSULTATION

13. We consulted the Pat Heung Rural Committee, the Ping Shan Rural Committee and the Shap Pat Heung Rural Committee on 22 May 2015, and the Environmental Improvement Committee of the Yuen Long District Council (EICYLDC) on 13 July 2015. Members of the Committees supported the proposed works.

14. We consulted the above three Rural Committees and the EICYLDC again on 28 November 2018 and 6 December 2018 respectively. Members of the Committees remain supportive of the proposed works.

15. We consulted the Legislative Council Panel on Development on 26 February 2019 and Members supported the project.

ENVIRONMENTAL IMPLICATIONS

16. The project is not a designated project under the EIA Ordinance (Cap. 499). We completed a Preliminary Environmental Review (PER) for the proposed works in March 2019. The PER concluded and the Director of Environmental Protection agreed that the proposed works would not have any long-term adverse environmental impacts. We have included in paragraph 8(c) a sum of $4.3 million (in MOD prices) in the project estimate for implementation of the necessary environmental mitigation measures.

/17. …..

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3 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.

17. For short-term environmental impacts during construction, we will minimise environmental nuisance to within established standards and guidelines through the implementation of appropriate mitigation measures in the contract. These measures include the use of temporary noise barriers and silenced construction equipment, water-spraying to the construction site and on-site treatment of site run-off. We will carry out regular site inspections to ensure these measures and good site practices will be properly implemented on site.

18. At the planning and design stages, we have considered measures to reduce generation of construction waste where possible. In addition, we will require the contractor 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 to the public fill reception facilities (PFRF)[4]. 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 the generation of construction waste.

19. At the construction stage, we will require the contractor 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 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 PFRF and landfills respectively through a trip-ticket system.

20. We estimate that the proposed works will generate a total of about 20 800 tonnes of construction waste. Of these, we will reuse about 4 800 tonnes (23%) of inert construction waste on site, deliver about 15 800 tonnes (76%) of inert construction waste to PFRF for subsequent reuse. We will dispose of the remaining about 200 tonnes (1%) 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 $1.2 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 …..

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

HERITAGE IMPLICATIONS

21. 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

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

TRAFFIC IMPLICATIONS

23. We have conducted a traffic impact assessment (TIA) for the proposed works. The TIA indicated that the proposed works will not cause significant traffic impact to the surrounding road network during construction. Temporary traffic arrangements (TTAs) will be implemented to facilitate the construction works. We will establish a traffic management liaison group to discuss, scrutinize and review the TTAs proposed by the contractors with a view to minimizing traffic impact arising from the proposed works. In addition, we will set up a telephone hotline to respond to public enquiries or complaints.

BACKGROUND INFORMATION

24. In September 2012, we upgraded **166CD** to Category B.

25. In November 2013, we engaged consultants to carry out site investigations, surveys, impact assessments and detailed design for **166CD**. The latest estimated cost is $19.1 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".

26. We have substantially completed the detailed design of the proposed works mentioned in paragraph 1 above.

27. Of the 146 trees within the boundary of the proposed works, there is no registered Old and Valuable Tree. The proposed works will preserve 77 trees

/and …..

and remove 69 trees. Among these trees, no important trees[5] will be affected during the implementation of the project. We will incorporate planting proposal as part of the proposed works, including an estimated replacement planting of 176 trees.

28. We estimate that the proposed works will create about 70 jobs (55 for labourers and 15 for professional or technical staff), providing a total employment of 2 000 man-months.

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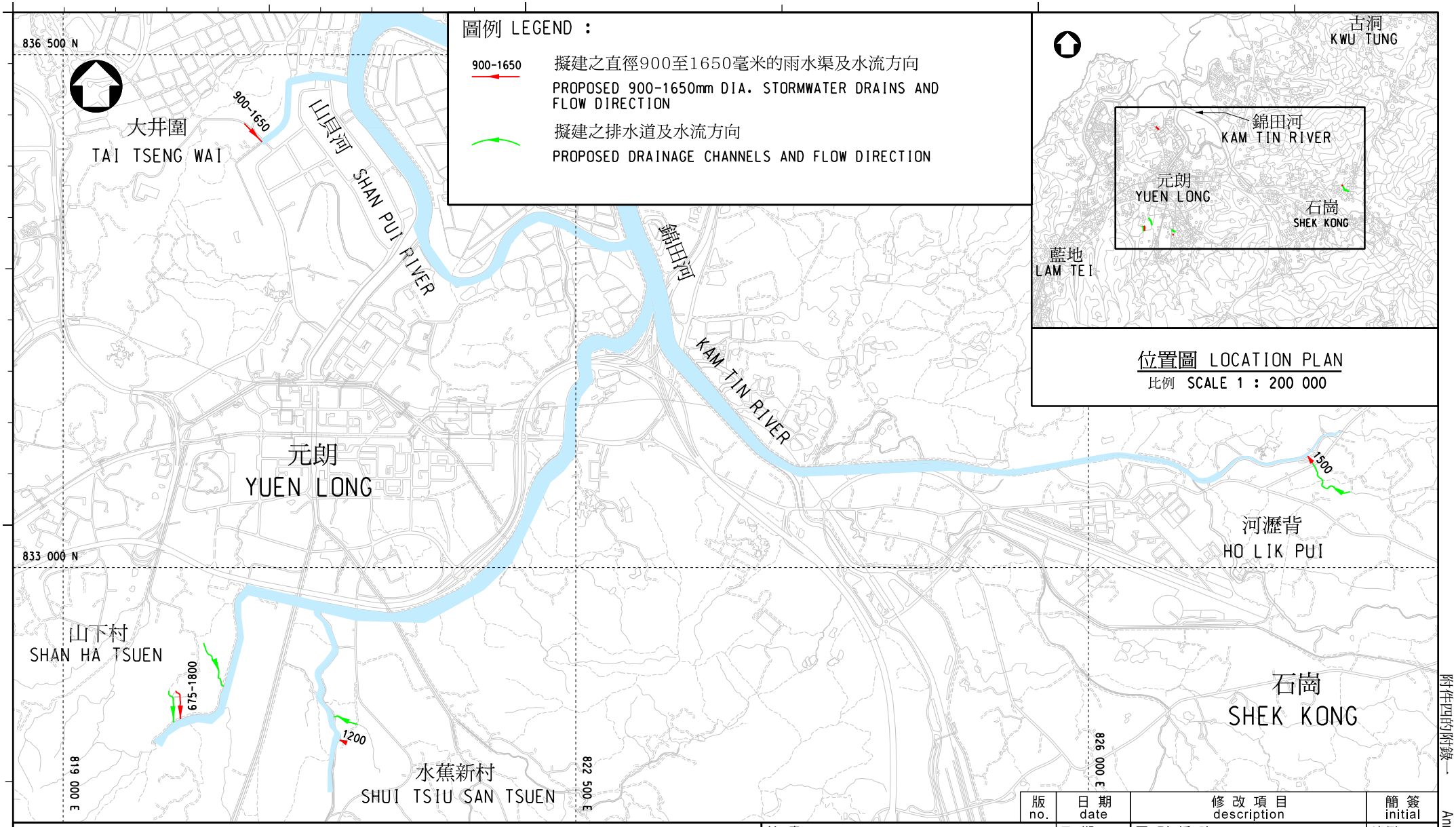
5 "Important trees" refers to trees in the Register of Old and Valuable Trees, or any other trees that meet one or more of the following criteria-

(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, shape 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 or canopy spread equal or exceeding 25 m.



版 no.	日 期 date	修 改 項 目 description	簡 簽 initial

圖 則 名 稱 drawing title

166CD號工程計劃
「元朗區雨水排放系統改善工程 」
166CD
DRAINAGE IMPROVEMENT WORKS AT YUEN LONG

繪 畫 drawn	*SIGNED* H.Y. LEE	日 期 date 15 NOV 2018
核 對 checked	*SIGNED* K.L. LIANG	日 期 date 15 NOV 2018
批 核 approved	*SIGNED* K.W. FUNG	日 期 date 15 NOV 2018
部 門 office	工 程 管 理 部 PROJECT MANAGEMENT DIVISION	

圖 則 編 號 drawing no. DPM/166CD/1014

比例 scale 1 : 35 000 OR AS SHOWN

香 港 特 別 行 政 區 政 府 渠 務 署
DRAINAGE SERVICES DEPARTMENT
GOVERNMENT OF THE HONG KONG SPECIAL ADMINISTRATIVE REGION

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附件四的附錄一 Annex 1 to Enclosure 4

166CD - Drainage improvement works at Yuen Long

Breakdown of 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	-	-	-	0.7
		Technical	-	-	-	0.3
					Sub-total	1.0#
(b)	Resident site staff (RSS) costs (Note 3)	Professional	73	38	1.6	9.6
		Technical	362	14	1.6	16.6
					Sub-total	26.2
	Comprising –					
	(i) Consultants' fees for management of RSS				0.8#	
	(ii) Remuneration of RSS				25.4#	
					Total	**27.2**

* 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 salary point 38 = $81,975 per month and MPS salary 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 **166CD**. The construction phase of the assignment will only be executed subject to Finance Committee's approval to upgrade **166CD** 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 8 of Enclosure 4.