

For information

Legislative Council Panel on Development

189WC – Replacement and rehabilitation of water mains, stage 4

PURPOSE

This paper briefs Members on the proposal to upgrade part of **189WC** to Category A, entitled “Replacement and rehabilitation of water mains, stage 4 phase 1”, at an estimated cost of \$6,262.4 million in money-of-the-day (MOD) prices for the implementation of the first phase of stage 4 of the water mains replacement and rehabilitation (R & R) programme.

PROPOSAL

2. The proposed part upgrading of **189WC** to Category A comprises the replacement and rehabilitation of water mains at various districts as shown in **Enclosure 1** and is summarised below –

- (a) about 435 kilometres (km) of fresh water mains ranging from 20 to 200 millimetres (mm) in diameter including the associated service pipes and connections; and
- (b) about 65 km of salt water mains ranging from 25 to 100 mm in diameter including the associated service pipes and connections.

3. We will retain the remainder of **189WC** in Category B, which includes the replacement and rehabilitation of approximately 302 km of fresh water mains and 48 km of salt water mains scattered throughout the territory. Funding for the remainder of **189WC** will be sought to dovetail with the implementation programme of the project.

4. Subject to the approval of the Finance Committee, we plan to commence the proposed works in March 2011 for completion in December 2015.

JUSTIFICATION

5. Hong Kong's fresh water and salt water supplies are provided through a network of about 7 800 km of water mains. Most of these water mains are underground. A substantial portion of the water mains was laid more than 30 years ago. They are progressively approaching the end of their service lives and have become increasingly difficult and costly to maintain. As a result of the ageing problem, we faced an increasing number of main bursts and leakages causing inconvenience to the public and loss of precious water resources. Starting from 2000, we have implemented a comprehensive programme for replacement and rehabilitation of some 3 000 km of aged water mains in stages to prevent further deterioration of the water supply network.

6. The R & R programme was originally planned for implementation in stages from 2000 to 2020. In response to the Members and the public's demand for early completion of the project, we compressed the works programme in 2005 and advanced the target completion date of the entire project to 2015.

7. The R & R programme has passed through the difficult initialisation period and is achieving a steady rate of progress. With the R & R works completed to-date, coupled with the proactive leakage control and pressure management measures implemented, the annual number of bursts has been reduced from the peak of about **2 500** in 2000/01 to **990** in 2009/10 as shown in **Enclosure 2**. For 2010/11, from 1 April 2010 to 30 September 2010, there are 362 numbers of bursts. The leakage rate has also been reduced from **25%** in 2001 to **21%** in 2009. We anticipate that the water main leakage rate will further decrease to **15%** upon completion of the R & R programme in 2015.

8. In order to achieve this target and maintain the momentum of the works in progress, we need to commence the stage 4 of the R & R programme in 2011. We propose to take on board the works as detailed in paragraph 2 (a) and (b) above, for which the design has been finalised and ready to proceed to construction stage. We will continue the detailed design of the remaining works and seek the necessary funding approval for construction of these works upon completion of their detailed design.

FINANCIAL IMPLICATIONS

9. We estimate the cost of the proposed works to be \$6,262.4 million in MOD prices made up as follows –

	\$ million	
(a) Water mains replacement by	2,880.0	
(i) conventional method ¹	2,450.0	
(ii) trenchless methods ²	430.0	
(b) Water mains rehabilitation ³ by trenchless methods	1,355.0	
(c) Environmental mitigation measures	40.0	
(d) Consultants' fees for	51.0	
(i) contract administration	8.0	
(ii) management of resident site staff	43.0	
(e) Remuneration of resident site staff	359.0	
(f) Contingencies	460.0	
Sub-total	5,145.0	(in September 2010 prices)
(g) Provision for price adjustment	1,117.4	
Total	6,262.4	(in MOD prices)

10. The proposed works will not give rise to additional recurrent expenditure.

¹ Water mains replacement by conventional method refers to laying of new water mains in trench. It involves opening up the road surface for the whole lengths of the pipelines.

² Water mains replacement by trenchless methods refers to the use of pipe jacking, micro-tunnelling or boring techniques to construct underground pipelines without opening up the road surface for the whole lengths of the pipelines.

³ Rehabilitation methods are generally classified as trenchless methods (sometimes referred to as 'minimum dig' or 'reduced dig' methods). In these techniques, a new pipe is launched from a 'launching pit' and travels inside the existing pipe to a 'receiving pit' without opening up the road surface except at the pits.

PUBLIC CONSULTATION

11. We have consulted the concerned District Councils in mid 2010 on the proposed works and all the District Councils supported their implementation. A table showing details of the consultations is at **Enclosure 3**. We will implement adequate traffic and environmental mitigation measures under the works contracts to minimise the inconvenience to the public. We will also closely monitor the implementation of these mitigation measures and the interfacing of works, and will consult the relevant District Councils when necessary during the project period.

ENVIRONMENTAL IMPLICATIONS

12. This is not a designated project under the Environmental Impact Assessment Ordinance (Cap. 499). The project does not have any long-term environmental impact. Short-term construction impacts will be mitigated through the implementation of standard pollution control measures, and also the measures recommended in the Preliminary Environmental Review Report for this project. We have included about \$40.0 million (in September 2010 prices) to implement these mitigation measures and will incorporate these requirements into the works contracts for implementation.

13. We have considered the alignments of the proposed water mains in the planning and design stages to reduce the generation of construction waste where possible. In addition, we will require the contractors to reuse inert construction waste (e.g. excavated soil) on site or in other suitable construction sites as far as possible, in order to minimise the quantity of inert construction waste to be disposed at public fill reception facilities⁴. We will encourage the contractors to maximise the use of recycled or recyclable inert construction waste, as well as the use of non-timber formwork to further minimise the generation of construction waste.

14. We will also require the contractors to submit for approval a plan setting out the waste management measures, which will include appropriate mitigation means to avoid, reduce, reuse and recycle inert construction waste. We will ensure that the day-to-day operations on site comply with the approved plan. We will require the

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

contractors to separate the inert and non-inert portion of construction waste on site for disposal at appropriate facilities. We will control the disposal of inert construction waste and non-inert construction waste to public fill reception facilities and landfills respectively through a trip-ticket system.

15. We estimate that the project will generate in total about 712 000 tonnes of construction waste. Of these, we will reuse about 401 500 tonnes (56.4%) of inert construction waste on site and deliver 300 000 tonnes (42.1%) of inert construction waste to public fill reception facilities for subsequent reuse. In addition, we will dispose of about 10 500 tonnes (1.5%) of non-inert construction waste at landfills. The total cost for accommodating construction waste at public fill reception facilities and landfill sites is estimated to be \$9.4 million for this project (based on a unit cost of \$27 per tonne for disposal at public fill reception facilities and \$125 per tonne⁵ at landfills)

HERITAGE IMPLICATIONS

16. The proposed works in Kowloon and on Hong Kong Island will not affect any heritage sites, i.e. all declared monuments, proposed monuments, graded historic sites/buildings, sites of archaeological interest and Government historic sites identified by the Antiquities and Monuments Office. Heritage Impact Assessment (HIA) has been conducted for the proposed works in the New Territories during the investigation phase. Some of the proposed alignments fall within sites of archaeological interest. Given the nature of the proposed replacement and rehabilitation works, adverse impact on site of archaeological interest is not anticipated. We will conduct archaeological watching brief during excavation as a precautionary measure according to the recommendation of the HIA report.

TRAFFIC IMPLICATIONS

17. We have carried out traffic impact assessments (TIA) for the proposed works. The cumulative effects of traffic from projects at adjacent sites are also covered in the TIA. The TIA have concluded that the proposed works would not cause any significant traffic impact to the surrounding road network. We will implement temporary traffic

⁵ This estimate has taken into account the cost for developing, operating and restoring the landfills after they are filled and the aftercare required. It does not include the land opportunity cost for existing landfill sites (which is estimated at \$90 per m³), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

arrangements to minimise the impact on traffic during construction and will display notice boards on site to explain the reason of temporary traffic arrangements and the expected completion dates of the individual sections of works. In addition, we will set up telephone hotlines for public enquiries or complaints. Furthermore, trenchless methods will be used whenever practicable for works along busy roads.

LAND ACQUISITION

18. The proposed works do not require any land acquisition.

BACKGROUND INFORMATION

19. The R&R programme is implemented in four stages. Stage 1 involves 600 km water mains and all the works were completed in early 2010. Stages 2 and 3 involve 1 550 km water mains with 52% of the works completed as at October 2010.

20. As regards the remaining stage 4 which involves 850 km water mains, in July 2008, we upgraded part of **189WC** to Category A as **190WC** “Replacement and rehabilitation of water mains, stage 4 – investigation and detailed design” for engagement of consultants to carry out investigation and detailed design of the proposed works. As the design of the proposed works as detailed in paragraph 2 (a) and (b) above have been completed, the construction is ready to commence in March 2011.

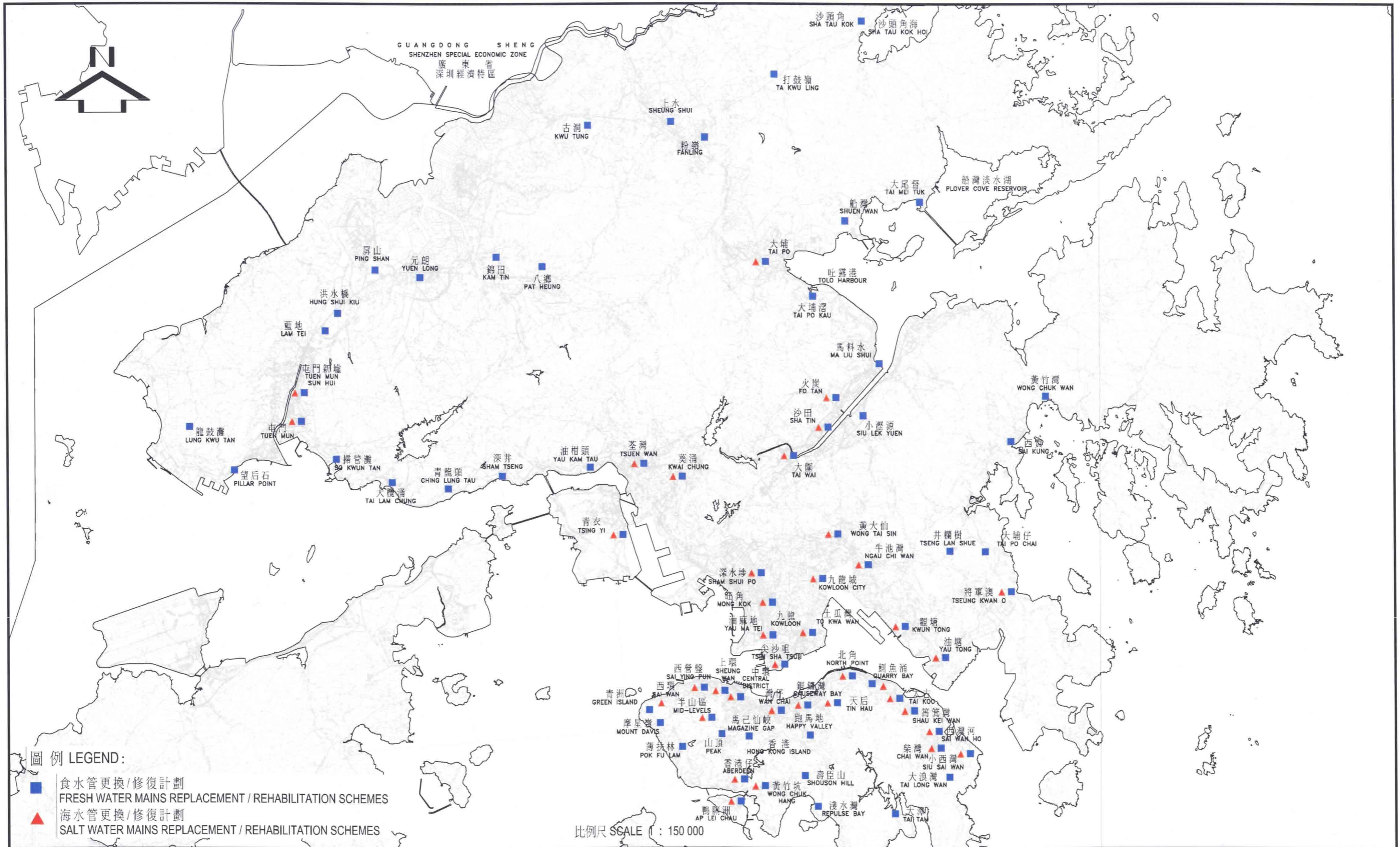
21. The proposed works will not involve any tree felling proposal.

WAY FORWARD

22. We intend to seek the support of the Public Works Subcommittee for upgrading part of **189WC** to Category A in January 2011 with a view to seeking funding approval from the Finance Committee in February 2011.

Development Bureau
Water Supplies Department


December 2010



圖例 LEGEND:

- 食水管更換/修復計劃
FRESH WATER MAINS REPLACEMENT / REHABILITATION SCHEMES
- ▲ 海水管更換/修復計劃
SALT WATER MAINS REPLACEMENT / REHABILITATION SCHEMES

比例尺 SCALE 1 : 150 000

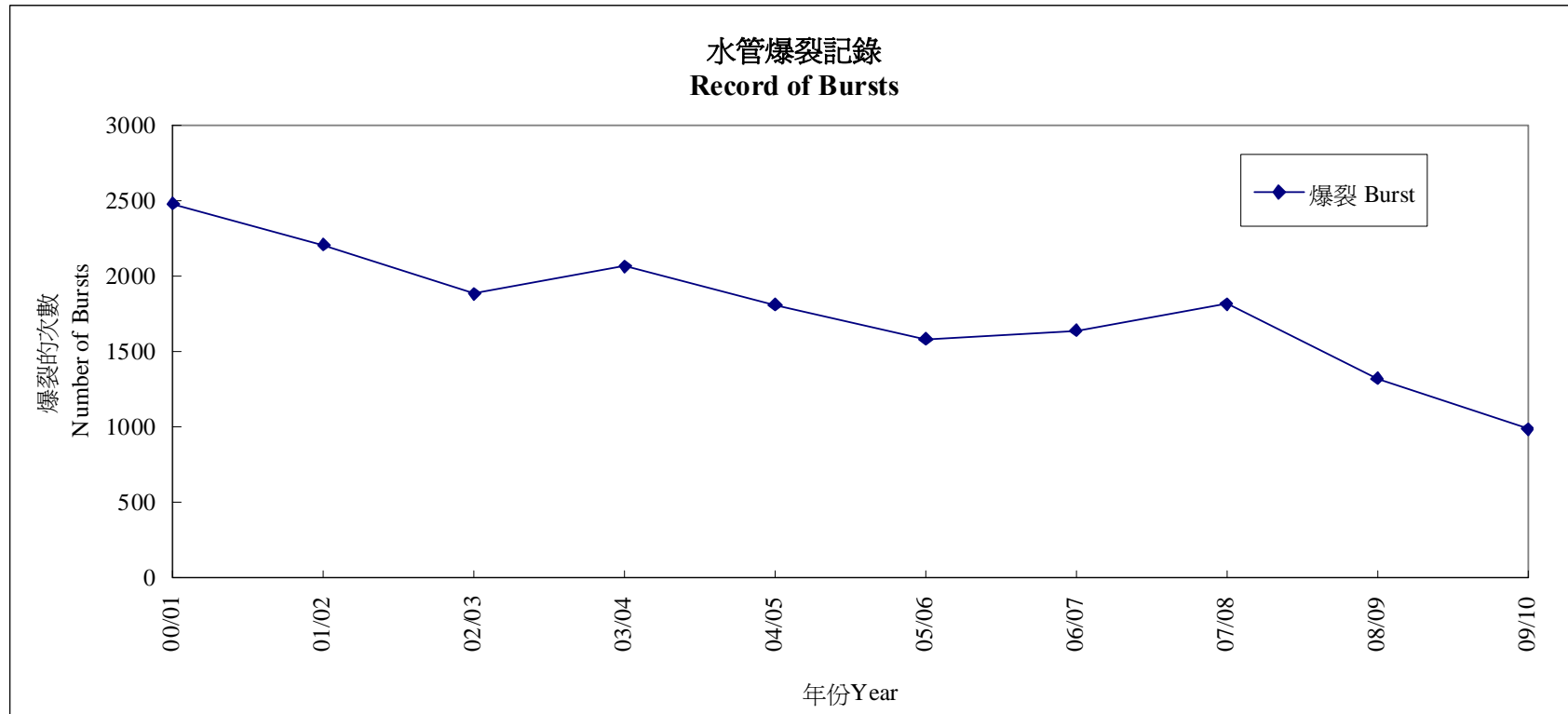
核准 APPROVED 
 總工程師/工程管理 CE / PM
 23 / 11 / 2010

工務計劃項目第 189WC 號 ----- 更換及修復水管工程第 4 階段第一期
 P.W.P. Item no. 189WC ----- Replacement and rehabilitation of water mains, stage 4 phase 1

(甲級工程)
 (CAT 'A' Submission)

 水務署
 WATER SUPPLIES DEPARTMENT

草圖編號 SKETCH NO. SK 62010 / 054



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Consultation with District Councils

District Council	Date of Meeting	Decision
Tai Po District Council Environment, Housing and Works Committee	14 July 2010	Supported
Yuen Long District Council Town Planning and Development Committee	14 July 2010	Supported
Tuen Mun District Council Environmental, Hygiene and District Development Committee	16 July 2010	Supported
North District Council District Minor Works and Environmental Improvement Committee	19 July 2010	Supported
Sai Kung District Council Traffic and Transport Committee	22 July 2010	Supported
Wong Tai Sin District Council Traffic and Transport Committee	27 July 2010	Supported
Sham Shui Po District Council Transport and Housing Affairs Committee	29 July 2010	Supported
Kwai Tsing District Council Traffic and Transport Committee	12 August 2010	Supported
Tsuen Wan District Council Environmental and Health Affairs Committee and Traffic and Transport Committee,	2 September 2010 and 6 September 2010	Supported

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District Council	Date of Meeting	Decision
Wan Chai District Council Development, Planning and Transport Committee	2 September 2010	Supported
Sha Tin District Council Development and Housing Committee	9 September 2010	Supported
Yau Tsim Mong District Council Traffic and Transport Committee	9 September 2010	Supported
Eastern District Council Planning, Works and Housing Committee	16 September 2010	Supported
Kowloon City District Council Housing and Infrastructure Committee	16 September 2010	Supported
Southern District Council District Development and Environment Committee	27 September 2010	Supported
Kwun Tong District Council Traffic & Transport Committee	7 October 2010	Supported
Central and Western District Council Food, Environment, Hygiene and Works Committee	14 October 2010	Supported