For information

Legislative Council Panel on Development

333WF – Improvement of fresh water supply to Cheung Chau

PURPOSE

This paper briefs Members on the proposal to upgrade **333WF** "Improvement of fresh water supply to Cheung Chau" to Category A, at an estimated cost of $254.8 million in money-of-the-day (MOD) prices, for carrying out mainlaying works to improve the fresh water supply to Cheung Chau.

PROPOSAL

2. The scope of **333WF**, which we propose to upgrade to Category A, comprises –

(a) laying of about 1.4 kilometres (km) of submarine fresh water main of 500 millimetres (mm) in diameter across the Adamasta Channel from Lantau Island to Cheung Chau by horizontal directional drilling[1] (HDD) method; and

(b) laying of about 200 metres (m) of fresh water mains of 450 mm in diameter on Lantau Island and Cheung Chau.

The location of the proposed works and a typical section of the proposed submarine fresh water main are shown on the plans at **Enclosure 1**.

3. The design of the proposed work mentioned in paragraph 2 above has been completed. Subject to the approval of the Finance Committee (FC), we plan to commence the proposed works in September 2013 for completion in September 2015.

JUSTIFICATION

4. Cheung Chau used to receive fresh water supply from the Silver Mine Bay Water Treatment Works on Lantau Island through two submarine water

[1] Laying of submarine main by HDD method involves the use of boring technique to construct underground pipeline and would not cause any impact to the marine environment or disruption to marine traffic.

mains across the Adamasta Channel. The two submarine water mains of 250 mm and 500 mm in diameter were laid in 1963 and 1986 respectively. Before 2008, the 500 mm diameter submarine water main was used as the normal fresh water supply to Cheung Chau and the 250 mm diameter submarine water main was used as an emergency backup supply in case of emergency repair or regular maintenance of the 500 mm diameter submarine water main.

5. Because of aging and leakage problems, the 250 mm diameter submarine water main became out of service and beyond repair in 2008. The 500 mm diameter submarine main has since been the sole submarine main supplying fresh water to Cheung Chau. In case of its failure, fresh water supply to Cheung Chau will be disrupted affecting the entire population of around 23 000 people on the island.

6. To enhance the reliability of fresh water supply to Cheung Chau, we need to provide a new emergency back-up supply by laying a new submarine main as described in paragraph 2(a) above. The proposed water mains on Lantau Island and Cheung Chau as described in paragraph 2(b) above are required for connecting the proposed submarine water main to the existing water supply networks.

FINANCIAL IMPLICATIONS

7. We estimate the capital cost of the proposed works to be $254.8 million in MOD prices, made up as follows –

			$ million
(a)	Laying of submarine water main by HDD method		170.5
(b)	Laying of water mains on land by conventional open trench method		3.4
(c)	Environmental mitigation measures		3.0
(d)	Consultants' fees for		3.9
	(i) contract administration	1.4	

			$ million	
	(ii)	management of resident site staff	1.5	
	(iii)	environmental monitoring and auditing (EM&A) programme	1.0	
(e)	Remuneration of resident site staff		25.3	
(f)	Contingencies		20.6	
		Sub-total	226.7	(in September 2012 prices)
(g)	Provision for price adjustment		28.1	
		Total	254.8	(in MOD prices)

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

PUBLIC CONSULTATION

9. We consulted the Cheung Chau Rural Committee and the South Lantao Rural Committee on 5 and 17 October 2012 respectively. Members of both Committees supported the proposed works.

10. We consulted the Tourism, Agriculture, Fisheries and Environmental Hygiene Committee of the Islands District Council on 19 November 2012. Members supported the proposed works.

ENVIRONMENTAL IMPLICATIONS

11. The project is a designated project under Schedule 2 of the Environmental Impact Assessment Ordinance (Cap. 499) (EIAO) and an environmental permit (EP) is required for the construction and operation of the project. We have completed the Environmental Impact Assessment (EIA) study which concluded that the environmental impacts of the proposed works could be mitigated and controlled to comply with the requirements of the EIAO. The EIA report was approved by the Director of Environmental Protection in May 2010 and the EP for the proposed works was granted in June 2010. We will implement the recommendations of the approved EIA report in the construction and operation stages of the project.

12. For short-term impacts during construction, we will minimize impacts to water quality, ecology and fisheries with the adoption of the HDD technique as described in paragraph 2(a) above. We will also control noise, dust and site run-off to levels within established standards and guidelines through the implementation of mitigation measures and good construction practices. These measures include the provision of temporary noise barrier, the use of slienced construction plants for noisy construction activities, frequent cleaning and watering of the site and the provision of wheel-washing facilities to prevent dust nuisance. We will also conduct a comprehensive environmental monitoring and audit programme during the construction stage to ensure compliance with the EP requirements. We have included a sum of $3.0 million (in September 2012 prices) in the project estimate for the implementation of the environmental mitigation measures.

13. At the planning and design stages, we have considered the alignment of the water mains to reduce the 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 at public fill reception facilities[2]. We will encourage the contractor to maximise the use of recycled / recyclable inert construction waste, and the use of non-timber formwork to further reduce the generation of construction waste.

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 and 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.

15. We estimate that the project will generate in total about 8 900 tonnes of construction waste. Of these, we will reuse about 400 tonnes (4.5%) of inert construction waste on site and deliver 5 500 tonnes (61.8%) of inert construction waste to public fill reception facilities for subsequent reuse. We will dispose of the remaining 3 000 tonnes (33.7%) 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 $523,500 for this

---

[2] 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 fill reception facilities requires a licence issued by the Director of Civil Engineering and Development.

project (based on a unit cost of $27 per tonne for disposal at public fill reception facilities and $125 per tonne[3] at landfills).

HERITAGE IMPLICATIONS

16. The proposed works will not affect any heritage site, 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.

TRAFFIC IMPLICATIONS

17. We have completed the traffic impact assessment (TIA) for the proposed water mains on Lantau Island and Cheung Chau. The TIA concluded that laying of the water mains will not cause any significant traffic impact through implementation of appropriate temporary traffic management schemes. We will also display publicity boards on site to explain the reasons of temporary traffic arrangements and indicate the expected completion dates of concerned sections of the works. In addition, we will set up telephone hotlines for public enquiries and complaints.

18. We have also completed the marine traffic impact assessment (MTIA) for the proposed submarine main. The MTIA concluded that laying of the submarine main across the Adamasta Channel using the HDD method as described in paragraph 2(a) above will not cause any significant impact on marine activities.

LAND ACQUISITION

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

BACKGROUND INFORMATION

20. We included **333WF** in Category B in September 2007.

21. In June 2008, we engaged consultants to undertake the investigation study for the proposed works at a cost of 4.9 million in MOD prices under block

---

[3] 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 m^3), nor the cost to provide new landfills (which is likely to be more expensive) when the existing ones are filled.

allocation of **Subhead 9100WX** "Waterworks, studies and investigations for items in Category D of the Public Works Programme". The investigation study was completed in November 2010.

22. In December 2010, we engaged consultants to undertake the detailed design for the proposed works at a cost of 2.6 million in MOD prices under block allocation of **Subhead 9100WX** "Waterworks, studies and investigations for items in Category D of the Public Works Programme". We have substantially completed the detailed design of the proposed works mentioned in paragraph 2 above.

23. Of the 162 trees within the project boundary, 74 trees will be preserved. The proposed works will involve the felling of 88 trees, of which two are in poor health or form and 86 are invasive weedy species. All trees to be felled are not important trees[4]. We will incorporate planting proposals as part of the project, including estimated quantities of 20 trees.

24. We estimate that the proposed works will create about 127 jobs (101 for labourers and another 26 for professional/technical staff) providing a total employment of 2 700 man-months.

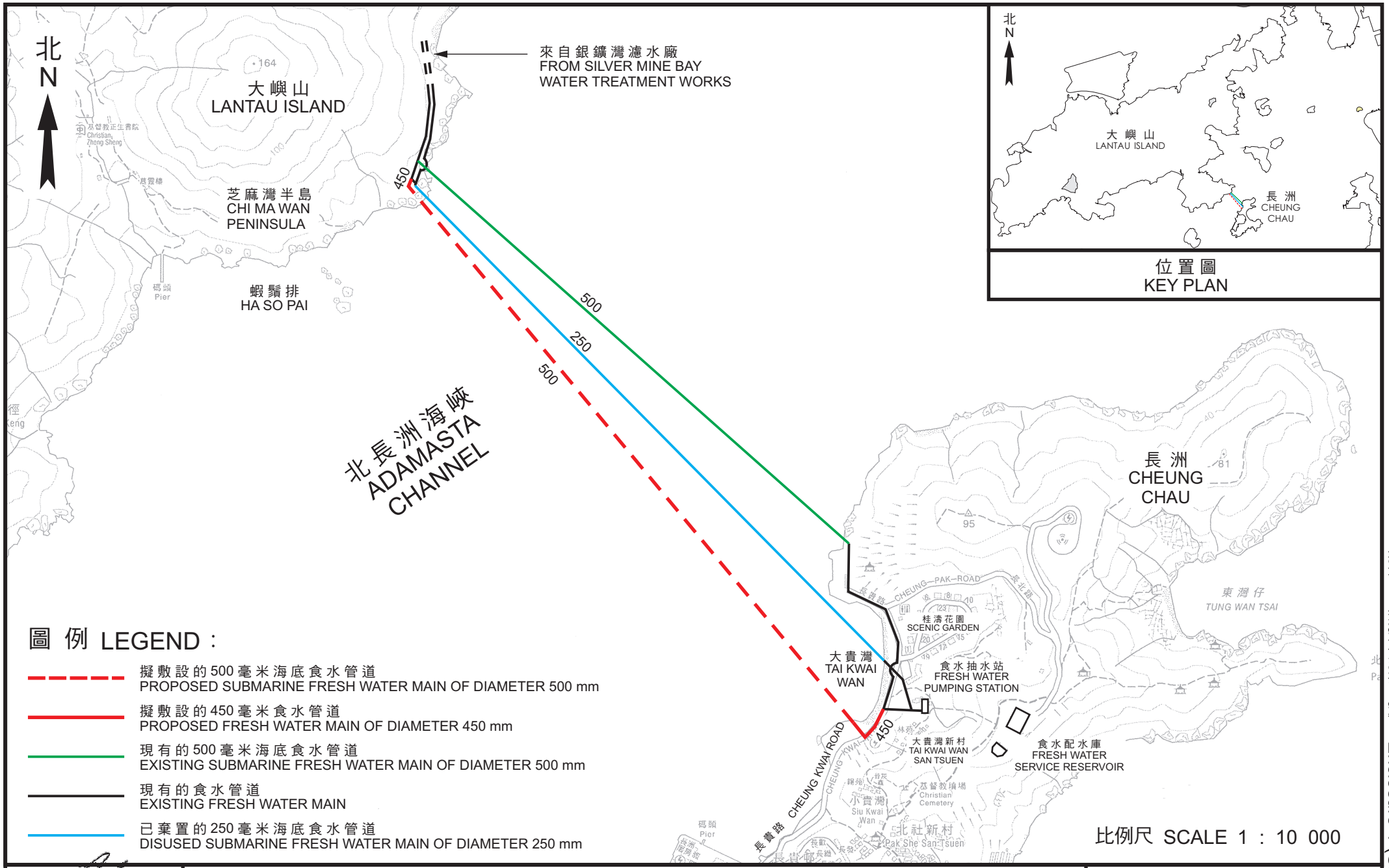
WAY FORWARD

25. We plan to seek the support of the Public Works Subcommittee for the proposed upgrading of **333WF** to Category A in February 2013 with a view to seeking funding approval from the FC in March 2013.

Development Bureau
Water Supplies Department
January 2013

---

[4] "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/canopy spread equal or exceeding 25 m.



位置圖
KEY PLAN

圖例 LEGEND：

- 擬敷設的500毫米海底食水管道
  PROPOSED SUBMARINE FRESH WATER MAIN OF DIAMETER 500 mm
- 擬敷設的450毫米食水管道
  PROPOSED FRESH WATER MAIN OF DIAMETER 450 mm
- 現有的500毫米海底食水管道
  EXISTING SUBMARINE FRESH WATER MAIN OF DIAMETER 500 mm
- 現有的食水管道
  EXISTING FRESH WATER MAIN
- 已棄置的250毫米海底食水管道
  DISUSED SUBMARINE FRESH WATER MAIN OF DIAMETER 250 mm

核准 APPROVED

總工程師/設計 CE / Des

31 / 1 / 2013

工務計劃項目第333WF號 — 長洲食水供應改善工程

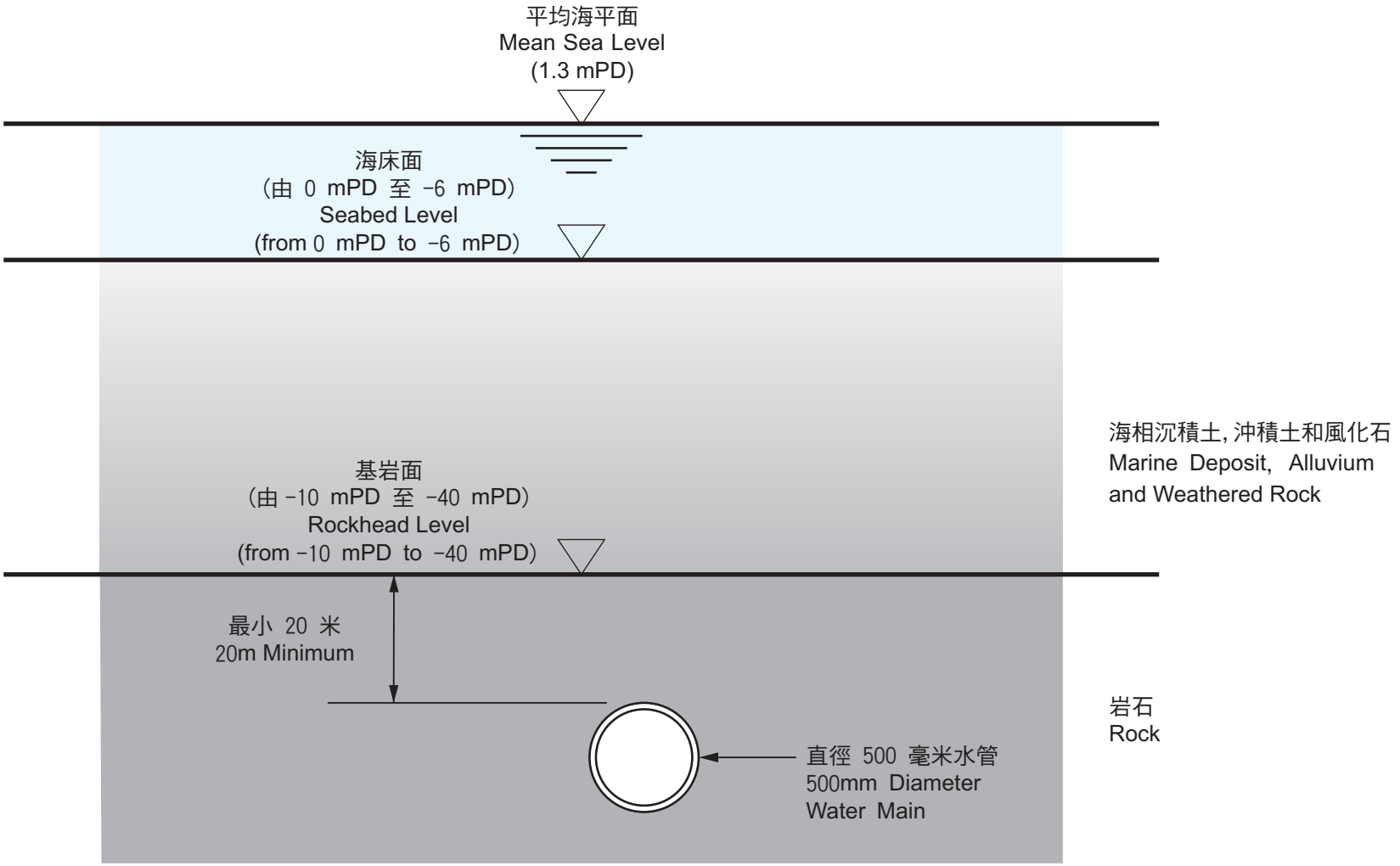
P.W.P. ITEM NO. 333WF — IMPROVEMENT OF FRESH WATER SUPPLY TO CHEUNG CHAU

水務署
WATER SUPPLIES DEPARTMENT

草圖編號 SKETCH NO. SK 62012 / 045 / 001

REF. 62012-045-001.CDR

附件一（兩張中的第一張） Enclosure 1 (Sheet 1 of 2)



海底水管的典型切面圖

TYPICAL SECTION OF SUBMARINE PIPELINE

核准 APPROVED

總工程師/設計 CE / Des

31 / 1 / 2013

工務計劃項目第 333WF 號 — 長洲食水供應改善工程

P.W.P. ITEM NO. 333WF — IMPROVEMENT OF FRESH WATER SUPPLY TO CHEUNG CHAU

水 務 署
WATER SUPPLIES DEPARTMENT

草圖編號 SKETCH NO. SK 62012 / 045 / 002

REF. 62012-045-002.CDR

附件一（兩張中的第二張） Enclosure 1 (Sheet 2 of 2)