For discussion
on 8 May 2012

Legislative Council Panel on Security

Replacement of Fireboat No. 7 and three turntable ladders of the Fire Services Department

PURPOSE

This paper consults the Panel on the proposals to:

(a) procure a new rescue fireboat for replacing the existing Fireboat No. 7 of the Fire Services Department (FSD); and

(b) procure three 55-metre Turntable Ladders (TLs) for replacing three existing 52-metre TLs in FSD (fleet numbers are F279, F280 and F281).

BACKGROUND

FSD's fireboat fleet and Fireboat No.7

2. At present, there are 21 vessels in the fireboat fleet of FSD. They include fireboat, rescue boat, support vessel, command boat and speedboat. Information of each vessel is at **Annex I**. Fireboat No. 7 is mainly used as a rescue boat. The main functions of a rescue boat are to rescue and convey a large number of victims and casualties to a safe place speedily in case of a large-scale calamity at sea or marine fire.

3. Fireboat No.7 was put into service in 1990 and is an aluminium-hulled catamaran rescue boat. It is also the only rescue boat designated for rescue purpose in marine areas other than the airport. Its designed life was about 15 years. In 2005, the Marine Department (MD) assessed that the boat could remain in service for several more years. However, it has now been in use for over 20 years. Considering that it takes about some 2 years for the procurement work, it is appropriate and necessary

to commence the procurement work of the new boat at this stage. The main duties of Fireboat No. 7 are as follows:

(a) to provide port safety and rescue services in Hong Kong waters, in particular to convey a large number of victims/causalities from the disaster scene at sea to a safe place or medical facilities on land in case of large-scale marine incidents (for instance marine fire or even the sinking of a large vessel);

(b) to provide support to fire-fighting services of other fireboats when there is a marine fire; and

(c) to serve as a rescue boat when nuclear-powered vessel visits Hong Kong. In case of emergency, it will be responsible for evacuating the crew members on board, monitoring their radiation level and providing simple decontamination facilities to them on the spot where necessary.

The existing TL fleet and the TLs proposed to be replaced

4. At present, FSD has 23 TLs including fifteen 37-metre[1], six 52-metre and two 55-metre TLs. Their main functions are to carry out fire fighting and rescue operations at high level and be used as surveillance towers. Their detailed information is at **Annex II**.

5. Three 52-metre TLs are now proposed to be replaced. Among which, the TL 279 was put into use in 1999 and is currently deployed at the Driving Training School for training purpose. TLs F280 and F281 were put into service in 2000 and are currently deployed at Shatin Fire Station and Kong Wan Fire Station respectively for frontline operation. The normal serviceable life of this kind of TL is about 12 years and the 3 vehicles mentioned above have been in service for more than or close to the said life limit. Their performance has been deteriorating and there is an imminent need for replacement. Considering that it takes about 3 years to complete the work such as tendering, construction, delivery and arranging for the commencement of their services, it is necessary to commence the

[1] The vehicle body of the 37-metre TL is relatively narrow and hence can access old districts with narrow streets.

replacement work at this stage.

JUSTIFICATIONS FOR THE PROPOSED REPLACEMENT

6. FSD proposes to replace Fireboat No. 7 and three 52-metre TLs on the following grounds:

(a) Fireboat No.7

(i) Expiry of serviceable life, frequent repair and high maintenance cost

MD advises that the designed life expectancy of the Government's aluminium-hulled vessel is 15 years in general. Fireboat No. 7 has now been in service for over 20 years[2]. The routine annual overhaul conducted by MD revealed that the hull and the decking plate of the fireboat are ageing notably and rusting away. The performance of the boat has also notable deterioration in these two years. The annual maintenance downtime due to mechanical fault increased by about 62% from 24 days in 2008 to 39 days in 2011, causing inconvenience in daily operation. The annual maintenance cost of the fireboat has also increased from about $590,000 in 2008 to about $1.4 million in 2011. MD anticipates that the conditions of the fireboat would continue to deteriorate in the next few years, which will pose threat to the safety of its passengers and crew members. The relevant maintenance cost will also continue to increase, which will not be cost-effective.

(ii) No supply of individual components for major parts of the vessel

MD advises that some components for the major parts such

[2] In 2005, MD conducted an assessment on Fireboat No. 7 which had been in service for 15 years and considered that the Fireboat could remain in service for several more years. 7 years have elapsed since then.

as engine and electricity generator of Fireboat No. 7 have become obsolete and are no longer available in market, making it increasingly difficult to service the fireboat.

(b) Turntable Ladders

(i) Approaching the end of normal serviceable life

FSD advises that the normal serviceable life of a TL is about 12 years. If a TL continues to be used for a long period of time after the end of its normal serviceable life, the deteriorating functions may affect the frontline operation and other duties of the department. The three 52-metre TLs proposed to be replaced have been put in use for about 12 years. Considering that it takes about 3 years to complete the work such as tendering, construction and delivery and arranging for their commencement of service, it is necessary for FSD to commence the replacement work at this stage so as to ensure its operational readiness.

(ii) Extensive and costly repair

The major parts such as engine, gearbox and electrical controlling device of the three TLs are ageing. To keep them in good operating conditions, it is necessary to carry out repairs more frequently, thus increasing the maintenance cost and making it not cost-effective. The average annual maintenance cost of the three TLs proposed to be replaced was about $180,000 each in 2011, which is substantially higher than the average maintenance cost of $50,000 per TL in the fleet.

PROPOSAL TO PROCURE ONE NEW FIREBOAT AND THREE NEW TURNTABLE LADDERS

7. In view of the above problems, FSD proposes to procure one fireboat and three TLs as replacement.

The new fireboat

8. The new fireboat will mainly have the following enhanced functions and installations:

(a) The maximum speed will increase to 35 knots from the existing 27.5 knots. The higher speed enables speedier arrival at the incident scene and conveyance of victims/casualties to a safe place or medical facilities on land;

(b) An independent fire pump and two remote-controlled water/fire extinguishing foam monitors will be installed, which will substantially improve the fire-fighting capability and efficiency as compared to the existing fire pump with power supplied by the fireboat engine and 1 manual-controlled water/ fire extinguishing foam monitor;

(c) There will be rescue life rafts with higher capacity for mass rescue to tie in with the commissioning of the cruise terminal[3]. In the event of a cruise incident, casualty of over a thousand might be involved;

(d) There will be an additional small boat to facilitate fire services staff conducting incident scene assessment at shallow waters and formulating action plan;

(e) There will be enhanced complementary facilities such as the addition of night vision telescope, remote-controlled search lights, flood lights and diving equipment store room, etc. to provide better support for operations;

(f) There will be a high-efficient air filtration system and radiation monitoring equipment etc, and the wheelhouse/cabin will have pressurisation systems. These are to prepare for rescue operations just in case there is such a need during the visits of nuclear-powered vessels to Hong Kong. The new vessel will also be better equipped with decontamination facilities to enhance FSD's capability in dealing with relevant incidents and provide

[3] The cruise terminal is expected to be in operation from mid-2013 onwards.

better protection to the frontline staff; and

(g) Waterjet propulsion system will be installed, which is more suitable for operation in shallow waters than the existing propeller system.

A comparison of the main functions of the existing and the proposed new Fireboat No. 7 is at **Annex III**. As the fire-fighting equipment of the new fireboat will be enhanced considerably as compared to the current one, FSD plans to deploy the new fireboat to Tuen Mun Fireboat Station to carry out more marine fire-fighting work.

The new Turntable Ladders

9. The three proposed 55-metre TLs will have better fire-fighting and rescue capabilities. Details are as follows:

(a) The maximum rescue height will increase from 52 to 55 metres, enabling the TLs to reach a higher place for rescue operation;

(b) A CCTV system will be installed at the rescue cage. This can facilitate the ladder operator to position the rescue cage more accurately and safely for operation; and

(c) A portable electricity generator will be provided to provide electricity for operation of ladder in case of engine breakdown.

10. For better use of resources, FSD will deploy the three new TLs for frontline operation. Subject to the conditions of the three old TLs, they may be redeployed for training purpose.

FINANCIAL IMPLICATIONS

The new fireboat

11. FSD estimates that the total non-recurrent cost of procuring the new fireboat is $85 million. A detailed breakdown is as follows:

	Item	HKD ($'000)
(a)	Entire vessel (including basic facilities such as engine, electricity generator, anchorage equipment, rudder as well as fire-fighting, communication and navigation equipment, etc.)	64,800
(b)	Installation of equipment for handling chemical, biochemical and radiological related incidents	9,000
(c)	Installation of selective catalytic reduction device to reduce emission of pollutants of the fireboat	2,000
(d)	Payment to Electrical and Mechanical Services Trading Fund	1,600
(e)	Contingency (about 10% of items (a) to (c))	7,600
	Total :	**85,000**

The costs required in 2012-13, 2013-14 and 2014-15 are estimated to be $8.5 million, $42.5 million and $34 million respectively.

12. The estimated annual recurrent cost of the new fireboat is $6 million, which will be higher than the recurrent cost ($1.7 million[4]) of the existing Fireboat No. 7 in 2011. The higher recurrent cost is mainly due to the higher maintenance cost from new facilities such as the equipment for handling nuclear and biochemical related incidents and other complementary facilities such as high-efficient air filtration system and radiation monitoring equipment. There will also be higher fuel cost resulting from the enhancement of the overall functions of the new fireboat, which include enhanced speed, fire-fighting and rescue capabilities. FSD will absorb the additional recurrent cost from its existing resources and deploy existing manpower to operate the new fireboat. No additional manpower will be required.

[4] Includes about 1.4 million maintenance cost and about 0.3 million fuel cost.

The new Turntable Ladders

13. The total non-recurrent cost of procuring three new 55-metre Turntable Ladders is estimated to be $39.69 million. A detailed breakdown is as follows:

	Item	Unit cost ($'000)	Total cost ($'000)
(a)	3 basic vehicles	10,934	32,802
(b)	Fitting-out, accessories, factory acceptance test and operation training, etc.	1,093	3,279
(c)	Contingency (10% of items (a) and (b))	1,203	3,609
	Total :	**13,230**	**39,690**

The costs required in 2012-13, 2013-14, 2014-15 and 2015-16 are estimated to be $0.36 million, $11.87 million, $11.07 million and $16.39 million respectively.

14. FSD estimates that the annual recurrent cost of the three new TLs will be roughly the same as the current amount. The replacement proposal will not incur additional recurrent cost. FSD will deploy existing manpower to operate the new TLs, and therefore will not require additional manpower.

IMPLEMENTATION TIMETABLE

15. Subject to Members' views on the proposals, we plan to seek funding approval from the Finance Committee of the Legislative Council in June 2012. If the funding approval is granted, we expect that the implementation timetable would be as follows:

The new fireboat

	Item	Target Completion Date
(a)	Preparation of tender specifications	November 2012
(b)	Invitation of tender	February 2013
(c)	Evaluation of tender and award of contract	July 2013
(d)	Construction and delivery of vessel	September 2014
(e)	Training and commissioning of the vessel	December 2014

The new Turntable Ladders

	Item	Target Completion Date
(a)	Invitation of tender[5]	July 2012
(b)	Evaluation of tender and award of contract	November 2012
(c)	Construction, modification and delivery of sample vehicle	May 2014
(d)	Testing and acceptance, training, minor modification and trial use of sample vehicle	August 2014
(e)	Construction, modification and delivery of remaining vehicles	February 2015
(f)	Testing and acceptance, training, minor modification and trial use of remaining vehicles	May 2015
(g)	Commissioning of the vehicles	June 2015

[5] As the specifications of the proposed TLs are broadly the same as that of the current 55-metre TL in FSD, the preparation of relevant tender specifications has already been completed.

ADVICE SOUGHT

16. Members are invited to comment on the above proposals.

Security Bureau
Fire Services Department
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Annex I

Existing fireboat fleet of FSD

Name of Vessel (Type)	Number of units	Berth	Year of Commissioning	Length (metre)	Breath (metre)	Speed (Knot)
Elite (major fireboat)	1	Central Fireboat Station	2001	42.5	9.6	15
Excellence (major fireboat)	1	Tsing Yi Fireboat Station	2004	42	10	15
No.2 (medium fireboat)	1	North Point Fireboat Station	1995	30.5	6.5	15
No.3 (medium fireboat)	1	Cheung Chau Fireboat Station	1998	27.7	6	20
No.4 (medium fireboat)	1	Aberdeen Fireboat Station	2008	23	5	22
No.5 (medium fireboat)	1	Tuen Mun Fireboat Station	1997	35.5	7.4	15
No.7 (rescue boat)	1	Airport	1990	23	10	27.5
No.8 (support vessel)	1	North Point Fireboat Station	2008	18	5	28
Diving Support Vessel (support vessel)	1	FSD Diving Base on Stonecutters Island	2004	20.9	4.95	22
Command Boat No.1 and No.2	2	Airport	1997	35	12	28
Speedboats	10	FSD Diving Base on Stonecutters Island and the Airport	1999	9	3.5	35

Annex II

Existing Turntable Ladder fleet of FSD

Command	Division	Fire Station	Turntable Ladder Type	Year of Commissioning
Hong Kong	Central	Wan Chai	37-metre	2004
		Kong Wan	52-metre (F281*)	2000
	East	North Point	37-metre	2004
		Chai Wan	55-metre	2011
	West	Aberdeen	37-metre	2011
		Kennedy Town	37-metre	1997#
Kowloon	Central	Ma Tau Chung	37-metre	2011
	East	Po Lam	37-metre	2004
		Po Lam	37-metre	1996#
	South	Tsim Sha Tsui	52-metre	2000
	West	Lai Chi Kok	37-metre	2009
		Mong Kok	52-metre	2000
New Territories	East	Ma On Shan	37-metre	2004
		Shatin	52-metre (F280*)	2000
	North	Sheung Shui	37-metre	2011
	South	Tsuen Wan	37-metre	2011
		Lei Muk Shue	55-metre	2011
	South-west	Penny's Bay	37-metre	2004
		Chek Lap Kok	37-metre	1997#
	West	Tuen Mun	52-metre	2000
		Tuen Mun	37-metre	1996#
Headquarters		Driving Training School	37-metre	1996#
		Driving Training School	52-metre (F279*)	1999

* Proposed to be replaced in the current proposal.

Funding has been granted for replacement of these vehicles.

Annex III

Comparison of main specifications/ equipment of the existing and the proposed new Fireboat No. 7

General specifications

	Item	The existing "Fireboat No. 7"	The new "Fireboat No. 7"
1.	Length	23 m	Not more than 30 m
2.	Breadth	10 m	About 10 m
3.	Draught	1.6 m	About 1.8 m
4.	Air draught	12.5 m	Not more than 12 m
5.	Endurance	7 hours	9 hours
6.	Engine	2 sets of 410-kilowatt diesel engines	2 sets of about 2200-kilowatt diesel engines (the actual engine power to be designed by the successful tenderer)
7.	Speed	27.5 knots	35 knots
8.	Electricity generator	1 set	2 sets
9.	Type of propulsion system	Propeller	Waterjet

Rescue and fire-fighting equipment

	Item	The existing "Fireboat No. 7"	The new "Fireboat No. 7"
1.	Rescue capacity (by means of life rafts)	320 persons	420 persons
2.	Installation and provision of equipment for handling chemical, biochemical and radiological related incidents	Only simple decontamination facilities	Air filtration system, radiation monitoring equipment, etc. Wheelhouse/cabin will have pressurisation system and with enhanced

	Item	The existing "Fireboat No. 7"	The new "Fireboat No. 7"
			decontamination facilities
3.	Small boat (to facilitate operation in shallow waters)	Nil	1 unit (a rigid hull inflatable boat of about 6m long)
4.	Sonar	Nil	Equipped
5.	Night vision telescope	Nil	Equipped
6.	Portable water-proof marine radio communication system	Nil	Equipped
7.	Search light	1 set of remote-controlled search light	2 sets of remote-controlled search lights
8.	Flood light	2 sets of manual-controlled flood lights	2 sets of remote-controlled flood lights
9.	Fire pump	Driven by the power of fireboat engine	Driven by the power of an independent engine
10.	Water/ fire extinguishing foam monitor	1 set of manual-controlled water / fire extinguishing foam monitor	2 sets of remote-controlled water / fire extinguishing foam monitors
11.	Drencher system	Nil	Equipped