

PILOTAGE ADVISORY COMMITTEE

Permanent Aviation Fuel Facility at Tuen Mun Area 38

Purpose

The purpose of this paper is to seek endorsement from members on the conclusions and recommendations of the Marine Traffic Impact Assessment (MTIA) which provides an evaluation of the marine impacts associated with the construction and operation of a Permanent Aviation Fuel Facility (PAFF) at Tuen Mun Area 38 (TMA38).

Briefing

2. A Briefing Paper prepared by the Airport Authority is attached at Annex A. It summarises the results of the marine traffic surveys and findings of the MTIA and provides the recommended mitigation measures to ameliorate potential impacts identified.

Advice

3. Members are invited to express their comments/views on the MTIA.

**Briefing Paper on
Permanent Aviation Fuel Facility at Tuen Mun Area 38**

Purpose

1. The purpose of this Paper is to brief members on the background of the PAFF Project and the findings and mitigation measures of the Marine Traffic Impact Assessment (MTIA) provide an evaluation of the marine impacts associated with the construction and operation of a Permanent Aviation Fuel Facility (PAFF) at Tuen Mun Area 38 (TMA 38).

Background

Need and Urgency for the PAFF

2. At present, aviation fuel is delivered to the Hong Kong International Airport via an existing temporary Aviation Fuel Receiving Facility (AFRF) sited off Sha Chau. This facility does not have the capacity to meet the forecast demand for aviation fuel during the operational lifetime of the airport.

3. Hong Kong International Airport is strategically extremely important to Hong Kong. It provides passengers and cargo with air transport connections to 130 destinations, employment of 45,000 people, facilitates tourism, and offers a multiplier effect to the economy of Hong Kong. The aviation fuel throughput demand for the airport is currently 4.3 billion litres per annum and the capacity of the AFRF at Sha Chau is only 5.1 billion litres per annum. However, the projected ultimate throughput capacity of the airport is more than 12 billion litres per annum. The capacity of the AFRF is forecast to reach its capacity by late 2005/early 2006. As the airport cannot operate without an adequate supply of aviation fuel, a Permanent Aviation Fuel Facility (PAFF) must be in place by that time.

4. The Gazette Notice 1294 of 13 April 1995 authorised the development of the AFRF. This Notice stipulated that the PAFF should be expedited and that the AFRF must revert to an emergency back up upon completion of the proposed PAFF.

Search for the PAFF Site

5. Since 1991, the Airport Authority, in conjunction with the Government, has undertaken an exhaustive search for the most suitable site for the PAFF. Many alternative sites were considered, however, most of the sites were ruled out due to various reasons, leaving the eight sites shown in Figure 1 (attached) that were studied in greater depth. These sites were then considered against a number of criteria, of which the main ones were water depth, environmental considerations including risks, land availability and compatibility, and timely completion to meet the date that the AFRF reaches its capacity. Accordingly, the site at Tuen Mun Area 38 is found to be the preferred site as shown in Figure 2, which is attached.

Description of the PAFF

6. The PAFF comprises three principal elements:

- A tank farm on TMA 38 for the receipt, quality control and storage of aviation fuel prior to transferring to the tank farm located on the airport island;
- An “island” jetty set 200m off the TMA 38 shoreline with two berths which will accommodate vessels of size up to 40,000 and 80,000 DWT simultaneously, and linked to the tank farm with a short submarine pipeline; and
- Twin submarine pipelines linking the tank farm with the existing AFRF at Sha Chau.

7. An island berth to be 200m off the TMA 38 shoreline has been adopted to allow developments like the proposed Recovery Park, Logistics Park etc. at TMA 38, together with safe means of marine access for the berthing and unberthing of vessels. This 200m width water channel between the island berth and the shoreline was determined in a separate study undertaken by the Airport Authority in consultation with the Marine Department. The study concluded that a distance greater than 200m would penetrate into the main shipping lane at Urmston Road, thus causing obstruction to marine traffic, and therefore would affect the safe navigation and efficient traffic flow in the vicinity. It also concluded that any waterway design with width less than 200m would inhibit 2-way traffic in the channel. Such restrictions would generate operational constraints on future users in the TMA 38.

8. Aviation fuel would be transported to the airport via the twin submarine pipelines to the AFRF and then to the Hong Kong International Airport via the existing pipeline. The alignment of the twin pipelines is the shortest amongst all the options considered and it would traverse approximately at right angles across the existing Urmston Road navigation channel. By adopting such an alignment, the impact on marine traffic would be reduced.

Approvals Received to Date under Statutory Ordinances

9. Separately, the Airport Authority has commissioned an Environmental Impact Assessment (EIA) for the PAFF. This has been endorsed by the Advisory Council on the Environment and approved by the EPD. The Airport Authority has also received endorsement from the Country and Marine Parks Board to tie in with the twin submarine pipelines from Tuen Mun Area 38 into the AFRF. Furthermore, the Airport Authority has obtained Town Planning Board approval under Section 16 for the land at Tuen Mun Area 38. Finally, it is expected that gazettal of the pipeline and jetty under the Foreshore and Seabed Ordinance will take place in autumn 2002.

Marine Traffic Impact Assessment

Objectives

10. The key objectives of the MTIA are to:
- Demonstrate that tankers can safely operate at the PAFF jetty in the prevailing current and wind regime;
 - ensure that the PAFF operations would not impact marine traffic within the adjacent waterways on the basis of Quantitative Risk Assessment (QRA); and
 - identify that the PAFF operations themselves do not unduly impact local marine traffic activity on a QRA basis.

Current Traffic Environment

11. The marine traffic activity within Urmston Road has been defined following assessment of a 12-day time-lapse visual video survey record. The pattern and volume of vessel activity has been comprehensively mapped; average daylight vessel activity of 35 movements per hour is dominated by River trade vessels (50%), with fast ferry (20%) and fishing vessels (13%) also contribute important constituents of the traffic mix. In 2001 there were 18 reported incidents

within the

Study Area (50% of which were collisions), a steady rise from 8 incidents in 1996 and most of them were caused by human errors.

12. Upon operation of the PAFF, cessation of the aviation fuel tanker service to Sha Chau would reduce the movement of aviation fuel vessels in North Lantau waters to about one fifth of the current level.

Construction Activity

13. The jetty will be constructed with marine plant typically used for Hong Kong marine construction projects, namely percussively driven steel tubular piles and derrick barges. Construction activity associated with the jetty would be restricted to the immediate vicinity of the TMA 38 site.

14. Construction of the pipeline would require dredging, pipeline laying, sand filling and rock-dumping. The pipeline would be bottom pulled from a stationary lay barge situated south of Urmston Road, first towards the PAFF site, and then towards East Sha Chau. This method will eliminate pipe-laying operations directly within Urmston Road thus reducing impacts on marine traffic.

15. Dredging would be carried out by hopper dredgers within the fairway, while rock dumping would be conducted by manoeuvrable barges. A risk assessment has been conducted for these marine operations. The findings were that the risks identified were within the “ALARP” region, meaning that measures should be taken to reduce risks to “As Low As Reasonably Practicable”.

Operational Activity

16. Operational risks are associated with the navigation of the PAFF tankers as part of the traffic activity within Urmston Road.

Navigation Risk Assessment

17. A comprehensive ship navigation simulation study has been conducted for PAFF tanker operations (by BMT) as well as for navigation to/from the adjacent Shui Wing Steel jetty (by BMT and the HK Pilots Association). The simulation study has shown that tankers can safely operate at the PAFF jetty, while arrivals/departures at Shui Wing will not be adversely affected by the presence of the jetty under normal operations.

Traffic Risk Assessment

18. A risk assessment has been conducted for the marine population in transit within HKSAR western waters, with particular focus on Urmston Road. It is identified that, given the low level of tanker activity, traffic risks are acceptable, if the appropriate control measures are applied.

Impact on TMA 38 Activity and Urmston Road from Jetty Structure

19. The risks to the jetty associated with marine traffic activities to TMA 38 and traffic within Urmston Road has been assessed and identified as acceptable.

Conclusion

20. The PAFF may be constructed, commissioned and operated with no adverse impact on the marine safety environment within HKSAR western waters provided that the recommendations stated below are addressed.

Recommendations for Mitigation Measures

21. The specific control measures have been proposed to control risks under the conditions summarised below.

Construction of the proposed PAFF

22. For construction vessels operating in Urmston Road, up to year 2005:
- Promulgation of Notices to Mariners;
 - Drafting of schedule of operations;
 - Deployment of two Guard vessels, positioned upstream and downstream of dredgers or works barges sited within the fairway;
 - A command centre established to co-ordinate marine operations with contractors' vessels and VTC of Marine Department; and
 - Operations curtailment if visibility falls below 1 nautical mile.

Operations

23. For PAFF tanker transits from year 2006 onwards, the risks associated with PAFF tanker operations will be significantly mitigated due to the reduced

numbers of movements resulting from the cessation of operations at Sha Chau and by the HKSAR western waters improvements recommended below. Until the implementation of enhanced traffic control within HKSAR western waters, it is proposed that the present practice, whereby pilots specifically request the Marine Department launches to control local traffic operations when necessary, should be adopted.

24. Berthing trials should be performed to validate the application of the present berthing guidelines for access to Shui Wing Steel Mill.

25. A wind speed limit of 25 knots should be adopted as a limit for normal operations at the PAFF and that, over the first year of operation; arrivals should be limited to slack water conditions only. Once experience has been accumulated in using the PAFF facility, these limits can be reviewed with a view to expanding arrival operations at all states of the tide. Departures need not be limited to slack water conditions.

26. Arrivals/departures at the PAFF should be curtailed when visibility is less than 1 nautical mile. Berthing aids such as doppler radar and current meters should be deployed at the PAFF jetty. These would assist in the controlled berthing of vessels both at the PAFF jetty and in the general vicinity of Urmston Road.

Western Waters

27. For HKSAR western waters traffic control from 2006 onwards:

- A formal traffic fairway scheme for HKSAR western waters is recommended for implementation, following the start of PAFF operations in 2006, to maintain existing marine risk levels within acceptable levels; and
- Appropriate navigation lights and aids will be installed on the jetty according to IALA guidelines.