For information

Hong Kong International Airport (HKIA)
Undertakings in respect of Conservation of Chinese White Dolphins in HKIA Environmental Impact Assessments – Implementation Status

Purpose

1. To provide information on the undertakings in respect of conservation of Chinese White Dolphins (CWDs) in the Environmental Impact Assessments (EIAs) done in conjunction with the development of HKIA and to update on the implementation status.

Background

2. Prior to the enactment of the Environmental Impact Assessment Ordinance (EIAO) in 1998, environmental assessments were guided by "administrative" procedures laid down by the Environmental Protection Department. The (Provisional) Airport Authority completed an administrative EIA in 1991 with the aim of "describing construction and operation related environmental impacts, as well as recommended mitigation methods and monitoring programmes designed to ensure that impacts associated with the airport project are within acceptable levels".

3. Due to subsequent engineering and cost considerations, the airport layout was modified in 1991/1992 resulting in the shifting of portions of the airport platform from east to west. The changes in environmental impact resulting from these modifications were assessed and documented in a 1992 EIA Supplement.

4. A further Administrative EIA was done in March 1995 for a temporary Aviation Fuel Receiving Facility near the island of Sha Chau. As this location for the facility was not considered in the 1991 EIA, further detailed environmental assessment was required.

5. The EIAO came into effect on 1 April 1998. HKIA was exempted from the need to obtain an environmental permit under the EIAO because construction was underway long before 1 April 1998. The airport was qualified as an "exempted designated project" in the EIAO.

Undertakings

<u>1991 EIA Undertakings</u>

6. Assessments were made of potential impacts on cetaceans arising from reclamation and borrow operations. Data on live sightings and strandings of CWDs were obtained from the Agriculture, Fisheries and Conservation Department (AFCD) and the World Wide Fund for Nature HK. The undertaking and status are detailed in Appendix A.

1992 EIA Supplement Undertakings

7. The east to west shift of portions of the airport platform resulted in the need to remove a small headland near Sha Lo Wan to safeguard water flows through sea channel between the airport and the north Lantau coastline. Undertakings related to minimizing potential impacts on CWDs during headland excavation. The undertakings and status are detailed in Appendix B.

Aviation Fuel Receiving Facility at Sha Chau Conceptual Design EIA (1995) and Supplementary (Detailed Design) EIA (1996)

8. During the design development of the Aviation Fuel Receiving Facility (AFRF), it was determined that the location immediately north of the airport platform as proposed in 1991 was not practical. The Government agreed alternative was for a temporary AFRF to be built near the island of Sha Chau. The Authority prepared a detailed EIA in 1995, supplemented in 1996 when detailed designs were completed. The undertakings and status are summarised in Appendix C.

9. A key issue identified during the 1995 AFRF EIA process was the potential for impacts on CWDs. Given the uncertainties and lack of Hong Kong based expertise, AA retained the services of an internationally renowned cetacean expert who gave advice on the potential effects of the AFRF on CWDs in North Lantau Waters. The expert also recommended specific mitigation measures in a report entitled "*Health and Survivability of the CWDs: Recommended Mitigation and Research Needs Relative to a Proposed Aviation Fuel Receiving Facility at Sha Chau, Northwest Hong Kong*". The undertakings and status are summarised in Appendix D.

Conclusion

10. In summary, all undertakings that are practicable have been implemented. There were altogether 22 undertakings directly relevant to CWDs. Of these, 18 have been fully implemented according to the original commitment in agreement with AFCD, two were dropped following advice from an internationally recognized cetacean expert (namely the use of "seal bombs" and radio-tracking), one was found impractical (namely the use of silt curtains) and one was found unnecessary (namely propeller shrouding on dedicated fuel supply vessels, which were subsequently found to have achieved the corresponding noise criteria already).

Airport Authority Hong Kong
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Appendix A

1991 EIA – CWD Undertaking and Status

	Recommendation	Mitigations Implemented	Status
1.	Contractors should be advised of the possible presence of dolphins in the area and the need for their protection.	Dolphin Sighting Forms were provided to vessels operating during the airport construction phase; contractors mobilizing for airport construction were advised on dolphin presence during site induction programmes.	**Completed**

Appendix B

1992 EIA Supplement – CWD Undertakings and Status :

	Recommendation	Mitigations Implemented	Status
	Commitments made with the intention to minimise potential impacts on CWDs during Sha Lo Wan headland removal:		
1	In the event that blasting is required, efforts will be made to minimise pressure wave transmissions by containing the explosive in drill holes.	- Construction methodology was adopted designed to shield all below sea-level blasting from surrounding waters; below sea-level blasting only required to remove some rock 'high spots' in the headland footprint.	**Completed**
2	- To further minimise impacts to dolphins and pelagic fish species, small non-lethal "seal bombs" will be utilised to scare marine fauna from the construction area, prior to a blasting event. - If a dolphin or other marine mammal species is observed in the construction area, blasting will cease until the animal leaves the area.	- Use of small "seal bombs" to scare marine fauna from the blasting zone was ruled out further to recommendations from the HKU Swire Institute of Marine Science research team. Instead, prior to each blast, vessels were deployed, in radio contact with the blast co-ordinator, to patrol the 500m area around the blast site 30 minutes preceding each blast. AA also deployed a vessel to patrol the area for 40 minutes prior to each blast - if dolphins were sighted, firing was delayed until the dolphins left the area. - The methodology adopted was reviewed, approved and observed by an internationally renowned marine mammal expert.	**Dropped as advised by expert**

Appendix C

1995 Aviation Fuel Receiving Facility at Sha Chau EIA – CWD Undertakings and Status

	Recommendation	Mitigations Implemented	Status
1.	Low impact dredging techniques should be used (turning basin and access channel and submarine pipeline trench excavation)	The lower impact closed-grab method of dredging was adopted for all dredging works	**Completed**
2.	Use of silt curtains during dredging activity should be investigated to assess practicality	Use of silt curtains investigated and determined impractical due to high and shifting current velocities around Sha Chau; a water quality monitoring programme was agreed with EPD and implemented, with Suspended Solids levels during all dredging activities monitored with an *action response plan* developed in case of measurement of exceedances. All results reported to EPD.	**Impractical**
3.	Assure that good waste management procedures are strictly enforced and monitored	A zero discharge policy for solid and liquid wastes was drawn up and enforced by AA during both AFRF construction / operations and construction contractor / sub-contractors were monitored / audited regularly by AA as was the operator. *Liquid wastes (e.g. sewage)* – during construction, chemical toilets were used on all vessels / barges / temporary Sha Chau site office, with all sewage extracted and transported to the Pillar Point sewage treatment facility; during operations toilet and pantry wastes discharged to a holding tank - regularly emptied and disposed of to Pillar Point. *Solid Wastes* – Solid wastes contained at the AFRF with regular collection and disposal per relevant requirements (e.g. Waste Disposal Ordinance)	**Completed**
4.	Piled structure for AFRF preferred over blockwork structure	Piled structure for the AFRF adopted. A four member cetacean expert panel further recommended that percussive piling was preferred over bored piling due to shorter duration, but that percussive piling should be further mitigated. A bubble curtain underwater noise mitigation was subsequently developed and implemented during all piling activity, with noise measurements demonstrating that the bubble curtain significantly reduced piling noise to surrounding waters.	**Completed**

5.	In order to minimise noise disturbance (i.e. to CWDs), all AFRF construction activities should be considered, wherever practicable, such that: - they are as short in duration as possible - work effort is regular - activities are continuous, without short breaks or unpredictable outbursts at random intervals - activity should cease for a period of 4 to 6 hours each day - use of quiet construction vessels and plant where practicable - scheduling of construction works during wet season period - vessel movements should be minimised	Working methodologies were developed in consultation with an internationally recognised cetacean expert and implemented as follows: - percussive piling (with noise mitigation) adopted to minimise duration of this potentially higher impact work phase; - working methodologies were designed to be regular and predictable; - prior to piling commencing a "dolphin exclusion zone" around the works was observed for a period of 30 minutes; any observation of dolphins delayed piling until dolphins cleared the exclusion zone; - efforts taken to de-couple noisy plant on vessels / barges from metal structures of vessels/ barges (e.g. compressors on inflated rubber tyres, rubber matting between generators and steel structures, etc); - work was scheduled during times agreed with the internationally recognised cetacean expert; and - vessel movements were minimised and based on regular schedules rather than on an *ad hoc* basis.	**Completed**
6.	Conduct CWD monitoring for one month in the vicinity of the AFRF at Sha Chau and one month prior to the commencement of construction, to establish baseline CWD numbers.	Programme of CWD abundance monitoring developed and implemented in coordination with an internationally renowned cetacean expert. Monitoring was intended to determine the effect of AFRF construction on the use of the area by CWDs. Boat based line-transect abundance monitoring was implemented for "pre-construction", "during construction" and for an "operations" period.	**Completed**
7.	Maintain a dolphin monitoring programme during construction works	See previous item.	**Completed**
8.	The Indo-Pacific Humpbacked Dolphin monitoring programme should be continued during the operation of the AFRF at a tentative frequency of every six months.	In agreement with AFCD an AFRF operations phase monitoring programme was undertaken for a period of one year after operations commenced. The operational monitoring indicated that CWD abundance in the North Lantau area in particular around the AFRF appeared to have stabilised to levels similar to those found before AFRF construction commenced.	**Completed**

9.	The use of larger dedicated fuel vessels is preferable to minimise the number of daily trips, hence minimising sediment re-suspension, noise and physical harm potential.	Fuel delivery to Kai Tak had made use of multiple 1,000 dead weight tonnes (DWT) fuel barges whose continued use was not acceptable at the AFRF (inefficient and too many visits). Dedicated fuel vessels were procured for delivering fuel to the AFRF sized at just under 5,000 DWTs – the maximum size able to navigate the turning circle / access channel – to minimise vessel trips / CWD disturbance.	**Completed**
10.	Fuel delivery vessel crew training to minimise impact on dolphins.	Dolphin awareness and guidance on vessel handling around CWDs was undertaken with dedicated fuel delivery vessels crews with input on content from the internationally recognised cetacean expert.	**Completed**

Appendix D

Recommended Mitigation and Research Needs Relative to a Proposed Aviation Fuel Receiving Facility at Sha Chau – CWD Undertakings and Status

	Recommendation	Mitigations Implemented	Status
1.	The AFRF is to be temporary	The AFRF was used for airport fuel delivery until a permanent facility near Tuen Mun was commissioned at the end of 2010. The AFRF is now maintained only as an emergency backup facility.	**Completed**
2.	Create a marine sanctuary	The Sha Chau and Lung Kwu Chau Marine Park was designated by Government on 22 November 1996.	**Completed**
3.	Create an artificial reef	An Artificial Reef in the Marine Exclusion Zone to the North East of the airport platform was created in early 2000.	**Completed**
4.	Conduct a land based Sha Chau dolphin monitoring study, conduct a boat based Sha Chau dolphin monitoring study, and conduct aerial surveys	An internationally recognised cetacean expert was employed by AA from 2005 to 2006 who helped develop land based / boat based monitoring procedures. Boat based dolphin abundance monitoring was undertaken at 'pre-construction', 'during construction' and 'operations' stages with some land based surveys done in conjunction with near Sha Chau marine works. Monitoring data was provided to AFCD for their development of a CWD abundance database. The cetacean expert's view was that air surveys were not vital for the AFRF construction monitoring programme, although limited air surveys were undertaken.	**Completed**
5.	Assess CWDs reaction to development	The pre/ during/ post-construction dolphin abundance monitoring programme facilitated an analysis of the reaction of CWDs to development by the internationally renowned cetacean expert. Findings were reported in full to AFCD.	**Completed**
6.	Conduct Radio-tracking	The internationally renowned cetacean expert's view was that capturing animals for radio-tracking studies had the potential for serious harm to individual dolphins so this was not pursued.	**Dropped as advised by expert**

7.	Assure that fuel delivery vessel propellers or associated noise of tankers and other support vessels <300 Hz	AA specified that dedicated vessels were required to comply with this noise specification. A paper was completed by underwater acoustics experts and published in a reputable scientific journal and this confirmed that the specification was achieved.	**Completed**
8.	Provide propeller shrouding to reduce noise.	Propeller shrouding was not incorporated in the dedicated fuel supply vessel design due to the specified noise criteria being achieved already via other means (see 7 above).	**Unnecessary**
9.	Assure that solid and liquid wastes are properly contained	A zero discharge policy for solid and liquid wastes was drawn up and enforced by AA during both AFRF construction and operations as reported in Appendix C, item 3 above.	**Completed**