



The Swire Institute of Marine Science

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**RE: Comments on the Environmental Impact Assessment (EIA) Report for the "Expansion of Hong Kong International Airport into a Three-Runway System" (EIA-223/2014): Comments on the Findings Pertinent to Chinese White Dolphins.**

As research scientists with knowledge, experience, and international expertise in cetacean ecology, and as concerned citizens of Hong Kong, we write to provide our professional view on the EIA Report for the proposed 3rd Runway project.

Upon reviewing this EIA, we are deeply concerned about the numerous inadequacies of both information given and protective measures recommended in the report as it pertains to the assessment of impacts on the Chinese White Dolphins. **Based on our professional judgment and careful consideration of the ecological impact assessment and mitigation measures, we strongly object to the acceptance of this EIA report. An environmental permit should not be granted to this project.**

We summarize below a number of deficiencies of the EIA-223/2014 pertinent to the assessment of impacts on the Chinese White Dolphins.

### Background

- (1) Chinese White Dolphins, known in scientific literature as Indo-Pacific humpback dolphins (*Sousa chinensis*), inhabit shallow coastal waters and rely exclusively on inshore coastal habitats for their daily needs. They never venture to the open sea. Several previous studies and the work currently underway in Hong Kong indicate that they are highly selective in habitat preference and their critical habitats are highly restricted.
- (2) In western Hong Kong waters, these dolphins are seen throughout the year and frequently engage in essential activities such as foraging. This indicates that this region of the Pearl River Estuary (PRE) represents an important area for their annual energetic requirements and other daily activities, such as socializing and reproduction.
- (3) Although the dolphins in Hong Kong waters have been observed and monitored for almost 20 years, their population parameters, size and structure remain poorly understood. It is known that the animals move across the administrative border and the dolphins from Hong Kong can be seen off the Macau-Zhuhai coast, but it is unknown how frequently they undertake such travel. We do know, however, that when in Hong Kong waters, they aggregate primarily in the area (i) off Northwest Lantau near the Lung Kwu Chau and Sha Chau islands, and (ii) off West and Southwest Lantau Island, extending into Soko Islands.



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- (4) The frequently cited estimate of the number of dolphins that inhabit Hong Kong waters remains debatable. Local abundance estimate, which represents the number of dolphins present in Hong Kong waters at the time of field surveys, is often confused with the population size estimate, which represents the number of animals that use Hong Kong waters at any given time. This misconception obscures the actual scale of the conservation issue. Direct comparison between some of the publicised estimates of dolphin numbers is simply incorrect and misleading.
- (5) Even though some estimates of population parameters remain debatable, there is a strong body of evidence that the Chinese White Dolphin population in PRE and Hong Kong is declining at an alarming rate of 2.5% annually. If nothing is done to slow down this trend, the population will decline by over 70% in a lifespan of just three generations of these animals (less than 60 years). Under the IUCN criteria, such population projection classifies it as Endangered.

### Comments specific on the EIA report

#### (1) Overall: The scientific quality of assessment does not meet international standards

Both the methodological design of the field work as well as the analytical and statistical treatment of the collected data are strikingly basic in the approach, with no inclusion of some of the known covariates that can influence the estimated parameters. In fact, most of the findings presented in this EIA report are not based on a robust dataset; some of the analyses are plainly inadequate (i.e. independent one-way ANOVAs) with small sample sizes which are insufficient to base any reliable conclusions on; while recommended actions are poorly supported and not substantiated with credible evidence. No effort was made to use standard modelling approaches designed specifically for EIAs, such as Population Consequences of Disturbance (PCOD) which addresses such issues in terms of bioenergetic consequence and could have been easily accomplished to produce a risk index. It is disturbing that no attempt was exerted to examine any disturbance or risk to determine if it is "acceptable." **This is by no means the use of 'best available science' and it does not meet international best practice.** This certainly does not keep with scientific standards expected from international experts.

#### (2) Area utilization: The EIA fails to determine the importance of the area to Chinese White Dolphins

- i. Even though the daylight sightings of Chinese White Dolphins were relatively low in the area under consideration during daytime, acoustic monitoring indicated that the animals use the area more frequently at night, potentially due to less anthropogenic activity including air traffic at the nearby runway. Daytime use of the area can be inhibited by many high speed vessels moving across these waters, while the recorded night time dolphin presence indicates the actual use of the area under lower level disturbance. **The report fails to present a sufficient evidence to quantitatively and conclusively determine the importance of the area to the dolphins and their pattern of habitat utilization. Consequently, the importance of this area to the Hong Kong dolphins remains unknown and the EIA has failed to support their claims.**
- ii. The EIA report claims the loss of the sea area due to the land reclamation for the 3rd Runway will be relatively small (ca. 650ha), approximately 2.5% of the overall habitat area in Hong Kong (26,500ha). However, the functional importance of the area to Chinese White Dolphins remains undetermined and could be a critical habitat for this population; it should not be underrated only because of its geographic size. Dr. Samuel Hung (2008) identified areas of



high dolphin density spanning the entire west coast of Lantau Island and waters around Lung Kwu Chau, the Brothers Islands and Siu Ho Wan. **It is possible and likely that the area of the intended 3rd runway construction carries an important ecological function in maintaining population integrity.**

(3) The EIA fails to address vessel impacts

- i. Boat strikes have been identified as a cause of considerable dolphin mortality in PRE, both Hong Kong and Mainland China waters (46% of known causes of death is given for China). The EIA report cites another study which illustrates that boats travelling at a speed of 9-15 knots can cause serious or even lethal injuries to large whales. Yet, the EIA report recommends a boat speed of 10 knots in the marine park area and 15 knots in shipping lanes. **Not only are the suggested speed limits within a range posing a threat to dolphins, but enforcement will likely prove impractical.**
- ii. The EIA report estimates that at the peak of the construction period, there will be 60-120 moving vessels and 120 stationary vessels located within the area of the construction work. This large volume of boat traffic and intense construction activity in close proximity to the Sha Chau and Lung Kwu Chau Marine Park will inevitably impact the dolphins and be a source of major disturbance. **The EIA has failed to address and quantify the temporary habitat loss and noise disturbance due to these activities.**
- iii. The EM&A Manual states that during the construction phase, vessel impact is expected to be at its peak (due to a high level of construction related vessels) and monitoring of vessel impacts will not be feasible because there will simply be too many boats. This is simply a very inadequate approach to address potential impact issues. The number of vessels do not make impact studies impossible. It has been shown in several previous studies that well designed underwater acoustic surveys and concomitant visual observations are effective in determining boat impact, regardless of the number of boats. **If the number of boats results in deficiencies to examine impact, this could lead to a situation where major coastal construction work goes unchecked and uncontrolled, setting a precedence to "ignore" any major construction activity which has serious implications for future construction and monitoring programmes. There are a number of technological and methodological approaches to address these issues, which the EIA has simply failed to address.**

(4) The mitigation measures for Chinese White Dolphins are highly inadequate.

- i. To address such major issues as (1) the loss of dolphin habitat, (2) reduction of carrying capacity, (3) habitat fragmentation, (4) ecological perturbation and behavioural disturbance, and (5) impacts on dolphin numbers and their habitat use during the construction phase, the only mitigation measure proposed is the designation of a new marine park. This new park is proposed for 2023, which is well after the construction phase is to be completed. In other words, **the EIA report has completely failed to propose any mitigation measure that could address the loss, disturbance and fragmentation of dolphin habitat during the construction phase.**

(5) The "effectiveness" of the suggested new marine park as the key "mitigation" measure is a major misconception.

- i. The proposed new marine park is not a mitigation measure and will not address any potential impact issues during the construction phase of this project. It is more likely to be an



"environmental compensation" measure. However, the timeline and, more importantly, the location of the suggested park are utterly inadequate to serve the very purpose for which it is proposed. The capacity of a habitat to accommodate and support a dolphin population cannot be simply "increased" by increasing the amount of designated "protected area" if it does not increase the type of habitat that provides vital behavioural functions and ecological services to the animals. Habitat quality is insufficiently addressed in the EIA report. **Based on our current knowledge, the proposed new marine park will not provide the ecological services to the animals hypothesised by the EIA.**

Furthermore, the EIA report estimates that during the operational phase, there will be an increase of marine traffic across the suggested marine park, which, even with imposed speed limits (which may be inadequate anyway), will intensify both direct and indirect vessel disturbance. A simple spatial expansion of the current Sha Chau and Lung Kwu Chau Marine Park, as the new proposed marine park is marketed, cannot guarantee any success in maintaining a viable population. **If designated, it will serve for a benchmark of scientific misinterpretation; a prime example of misguided management and "conservation on paper."**

- ii. The EIA report suggests that the dolphins which might be displaced from the area affected by the 3rd Runway construction will likely return to this area after the construction is completed. This is a highly optimistic assumption. The ecological features of areas adjacent to the reclamation and construction sites are inevitably affected and the only item that remains to be determined is the degree of impact and the scale of damage caused. Consequently, it is highly uncertain whether the area will provide the same ecological function to the dolphins or even comparable to what it does currently.

In a public forum on 28 June 2014, arranged as part of the campaign efforts related to the 3rd Runway EIA process, the overseas experts hired to conduct the EIA used bottlenose dolphins from Galveston Bay, Texas, as an example to support the hypothetical scenario of the dolphins "returning" once the construction project is completed. What the experts did not mention is that bottlenose dolphins are extremely adaptable; this is a dolphin species that inhabits the widest range of marine and coastal habitats and displays a broad range of ecological and behavioural adaptability far greater than any other dolphin species. Such direct comparisons are unjustified and inappropriate in relation to the Chinese White Dolphins in Hong Kong. Chinese White Dolphins are far more specialised to a distinctly narrower array of ecological requirements. They are not the "generalists" and "ecological opportunists" as bottlenose dolphins are. As such, they are highly selective in habitat preferences and far more susceptible to environmental change. **There is evidence from other studies, including ongoing work in Hong Kong, that for Chinese White Dolphins the habitat loss by land reclamation, with permanent alteration of coastlines, is irreversible and impacts can be severe.**

Admittedly, the example of bottlenose dolphins has not been cited in the EIA report. However, the notion of the dolphins "returning" once the work has been completed is repeatedly featured in the report. This issue has to be clearly addressed as there is no evidence across the species range of Chinese White Dolphins that supports this statement.

- iii. The construction of the 3rd Runway will take place in close proximity to the designated Brothers Islands Marine Park, which is to be established after the completion of the Hong Kong-Zhuhai-Macao Bridge project in 2016. The effectiveness of this marine park is already in question due to the impacts of the bridge construction. The construction work of the 3rd Runway will intensify and accumulate impacts further, affecting dolphin movements and their use of this part of Hong Kong territorial waters. **This will further compromise the**



**effectiveness of the proposed Brothers Islands Marine Park and seriously undermine its usefulness in protecting Chinese White Dolphins.**

- iv. As presented, the EIA report does not propose any measures that could provide a meaningful "environmental compensation" to the dolphins and offset the damage caused by the ongoing and proposed construction projects. From the perspective of the Hong Kong's iconic dolphin species, this is among the greatest failures of this EIA. It comes short not only in providing realistic mitigation measures for the impacts of the project, but it also fails to recognise the breadth of the Biodiversity Strategy Action Plan currently under development by the Hong Kong government as part of the implementation of the Convention of Biological Diversity. Sound and scientifically funded compensatory measures are absolutely essential not only for the proposed 3rd Runway project, but also in a broader context of securing sustainable presence of Chinese White Dolphins in Hong Kong waters.

Although this cannot be seen as a 'trade-off' for the habitat loss and 3rd Runway project, if implemented prior to the proposed construction work, such an "environmental compensation" strategy could function as an "off-site mitigation measure" providing the animals with a "refuge area" where they can concentrate their daily activities while the other regions of Hong Kong waters are not habitable to them anymore due to construction work and related anthropogenic impacts.

**For that reason, an immediate designation of West and Southwest Lantau and Soko Islands as Marine Park should be seen as top priority of a paramount importance.** Contrary to the area proposed by the EIA report, **the region off West and Southwest Lantau represents precisely the type of habitat that the dolphins depend on, and much of the area remains relatively unaltered. If designated as a development-free Marine Park with several specific sites within the park designated as Marine Reserves, the area of W-SW Lantau and Soko Islands could serve as a habitat refuge for the dolphins.** Such a marine protected area would provide a lasting contribution to the conservation of Chinese White Dolphins in Hong Kong and help preserve the population integrity when facing environmental challenges like those related to the proposed 3rd Runway.

## Summary

**The 3rd runway EIA has failed in developing protective measures towards potential impact and future consequences of the activity relative to Chinese White Dolphins that inhabit Hong Kong waters. The simplicity of the field work and subsequent analyses are highly insufficient to meet international best practice. Many conclusions are insufficiently and often inadequately rooted in the available evidence, while the major long-term recommendation completely misses the target. If implemented, it could serve for an explicit case of misguided management. This EIA should not be accepted and the environmental permit should not be granted to this project.**

Should you have any further inquiry, please do not hesitate to contact us. The contact details are as follows:

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Thank you for your consideration.

Sincerely,

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