

29 July 2014

## **Wrong approach taken on airport noise**

Text: Dr Bill Fehring (URS Corporation)

In response to an opinion piece written by Designing Hong Kong which proposes an alternative approach to assess aircraft noise of the planned three-runway system (3RS) based on the number of events where aircraft noise exceeds certain level, we would like to point out that no major international airport has been found to use such approach for assessing the noise impact of aircraft operations.

The aircraft noise impact assessment presented in the Environmental Impact Assessment (EIA) for the proposed expansion of Hong Kong International Airport (HKIA) into 3RS was undertaken based on the Noise Exposure Forecast (NEF), an internationally accepted noise metric. It also complies with the requirements set out in the Technical Memorandum on EIA Process and the EIA Study Brief.

NEF is a criterion that takes into account not only the peak noise level, but also the duration of fly-over, the tonal characteristics and the number of aircraft movements in the daytime and nighttime period. It also includes a parameter that weighs aircraft noise generated at night almost 17 times heavier than noise produced during the daytime, therefore acknowledging the more significant impact of aircraft noise at night compared to daytime. Such an approach provides a more holistic view on the potential impact of aircraft noise over a period of time.

Similar to Hong Kong, most international airports have adopted cumulative average noise energy metrics for planning. Hong Kong currently adopts NEF 25 as the aircraft noise standard, which is comparable to, or even more stringent than the standards adopted in many other places, such as Singapore, Canada and the U.S. We cannot and should not rely on the instantaneous maximum decibel levels of individual flights recorded at the existing aircraft noise monitoring stations as the indicator for airport planning assessment, since such an approach is considered inadequate and non-comprehensive.

As stated in the EIA report, all major populated residential areas in Tung Chung, Ma Wan, Sam Tseng, Tsuen Wan, Tsing Yi, Gold Coast and Tuen Mun are located outside the NEF 25 contour of the 3RS and that of the existing two-runway system operations.

In undertaking the aircraft noise impact assessment as part of the EIA process, we are conscious of the potential noise impact that airport operations, especially during nighttime, may have on local communities and have recommended a number of noise mitigation measures to address the potential impact of the 3RS project. For example, the existing South Runway, which is located relatively closer to neighbouring residential areas, will remain on standby mode at night between 11:00pm and 6:59am when

practicable in 3RS operation. This measure can help shift the NEF contour northwards over the waters, thus significantly reducing the noise impact on North Lantau including Tung Chung and villages such as Sha Lo Wan.

Moreover, the closure of South Runway during nighttime in 3RS operation would have a positive effect on the health impact of nearby residents. The health impact assessment in the EIA report showed that under the 3RS operation, the overall number of people in major residential areas located close to the predicted NEF25 contour that might be subject to high annoyance and sleep disturbance would be reduced by about 10% and 50% respectively as compared with the two-runway system operation in the same year.

In addition, the Airport Authority Hong Kong (AA) has been working closely with the Civil Aviation Department to formulate a series of direct measures for reducing aircraft noise under the existing airport operation. These include the banning of Marginally Compliant Chapter 3 aircraft for landings and take-offs at HKIA during nighttime since the end of March this year. Besides, under the 3RS operation, a new over-water arrival flight path (Track 6) via West Lamma Channel for preferential use during nighttime will also be introduced to minimise the noise impact on populated areas. The new departure flight paths going to the northeast will only be used during daytime hours between 7:00am and 11:00pm. A preferential runway use programme will also be implemented when wind conditions allow west flow to be used when departures dominate while east flow is used when arrivals dominate during nighttime.

The AA will also update the NEF contours every five years, and will conduct a review every year to compare the operations forecast made in the EIA report with the actual operating data to ensure that the migration measures are in place.

Table: Noise metric standards comparison with other airports

Regions / Airports	Noise Metric	Criteria	Corresponding NEF Value*
U.K.	Leq(16hr)	57	22
Chek Lap Kok	NEF	25	25
Australia	ANEF	20	26
Kai Tak	NEF	30	30
Canada	NEFcan	30	26
U.S.	Ldn	65	30
Switzerland	NNI	45	35
Singapore	NEF	35	35

\*A smaller corresponding NEF value indicates a more stringent standard of noise assessment.