Aircraft Noise

LegCo Panel on Environmental Affairs

Introduction

Aircraft generated noise is an important environmental concern associated with the operation of airports worldwide. Therefore, throughout the new airport master planning process, the Airport Authority in conjunction with Environmental Protection Department and Civil Aviation Department had conducted assessments to determine the effects of aircraft noise impacts on off-airport areas. The noise evaluation was conducted in accordance with the guidelines set out by International Civil Aviation Organisation (ICAO) and the U.S. Federal Aviation Administration (FAA). The FAA's Integrated Noise Model (INM), which is considered a state-of-the-art tool for assessing airport noise exposure, was used to generate noise contours.

2. The noise impact arising from aircraft operation can be represented by the Noise Exposure Forecast (NEF), a number which takes into account the duration of flyover, the peak noise level, the tonal characteristics and the number of aircraft movements in both the daytime and night-time period. For the new airport at Chek Lap Kok, the Hong Kong Planning Standards and Guidelines stipulate a more stringent criterion of NEF 25 contour (as against NEF 30 for Kai Tak Airport) for planning of noise sensitive land uses. This criterion is in line with the international standards adopted by many developed countries.

Aircraft Noise Assessment

3. The Environmental Impact Assessment (ELA) completed in 1991/92 and its update completed in 1997/98 indicated that all noise sensitive development (including residential development) were outside the coverage of the 25 NEF contour (which indicates that the exposure to aircraft noise in those areas are considered to be within internationally acceptable standards), with the exception of the small number of village residents in North Lantau, predominantly in Sha Lo Wan. The number of noise sensitive receivers is estimated to be under 200. Attached at Annex A is a drawing showing the 25 NEF contour for the new airport operating at design capacity.

Consultation

4. The Advisory Council on the Environment (ACE) was consulted in 1991 and earlier this year on the noise impact likely to be generated by the new airport. Both the EIA reports completed in 1991/92 and its update completed just before airport opening had been discussed by the ACE.

5. A briefing on the EIA results was also given to the Airport Consultative Committee (ACC) in 1992. The noise impact arising from the new airport had been discussed by the ACC and its sub-committee on Planning, Environment and People's Livelihood.

Complaints on Aircraft Noise Since Airport Opening

6. As at 22 July 1998, a total of 491 complaints have been received. A breakdown of these complaints by districts is given below: -

District	Number of Complaints
Shatin	233
Tsing Yi	47
Kwai Chung	25
Tsuen Wan	76
Sai Kung	50
Tuen Mun	19
Lantau Island	5
Others	36
Total	491

7. Most of the complaints related to noise generated by arrival aircraft using Runway 25, i.e. from the northeasterly direction. The main concern of the complaints is whether the flight path now overflying Shatin, Tsuen Wan and Tsing Yi can be changed, or if not whether the aircraft vertical profile could be raised to higher altitudes in order to reduce the noise impact.

Noise Measurement

8. Civil Aviation Department together with Environmental Protection Department have conducted noise measurements in areas under the flight path. The measured noise levels are summarized as follows :-

	Measured Maximum Noise Level	Flight Altitude (approximate)
Sai Kung	54.4 - 69.7 dB(A)	5000 ft
Shatin	61.2 - 72.1 dB(A)	4500 ft
Kwai Chung	60.7 - 71.6 dB(A)	4000 ft
Tsuen Wan	62.5 - 71.5 dB(A)	3500 ft
Tsing Yi	63.8 - 73.9 dB(A)	3000 ft

9. Based on the above results and the number of flights over these districts, it is considered that these districts, as forecast by the EIA, are outside the NEF 25 contour and the noise levels thereat are in compliance with international standards.

Change of Flight Paths

10. Approach and departure procedures for an airport are designed in accordance with international standards which shall ensure that adequate clearance from terrain is maintained in order to ensure flight safety. In addition, the location of the airport, the siting of ground navigational aids, aircraft operating criteria and

noise impact are additional parameters for consideration during the design, development and implementation of these flight procedures.

11. Hong Kong is generally a hilly territory. Operation of the new airport is significantly constrained by local terrain, and the hills in Lantau and the New Territories leave very little flexibility for the alignment of flight paths. Furthermore, to conform with international standards, aircraft landing on Runway 25 has to establish on the runway extended centreline and descend on a 3-degree glide to the airport (see Annex B). As a result, the flight path for Runway 25 overflies Shatin, Tsuen Wan and Tsing Yi. In response to the complaints and proposals from the public, CAD has conducted studies to see if this flight path could be adjusted to avoid overflying all residential locations. However, it is found that due to stringent requirements in regard to flight safety and design of flight procedures, the final straight approach overflying Shatin, Tsuen Wan and Tsing Yi cannot be adjusted. Any adjustment of the base legs, depicted in Annex B as track AB, will affect other centres of population, i.e. Sai Kung & Ma On Shan but will not reduce the noise level in Shatin, Tsuen Wan and Tsing Yi areas.

12. It should be noted that the time and frequency of using the Runway 25 approach track depend on the wind direction and strength. When the wind on the runway of the new airport is from the southerly or westerly direction, aircraft will have to use the Runway 25 approach. In summer when Hong Kong is under the influence of the southwest monsoon, the need for using Runway 25 is much greater. However, in winter and spring when the major wind direction is from the northeast and east, Runway 07 will mostly be used which will avoid overflying residential developments (see Annex C).

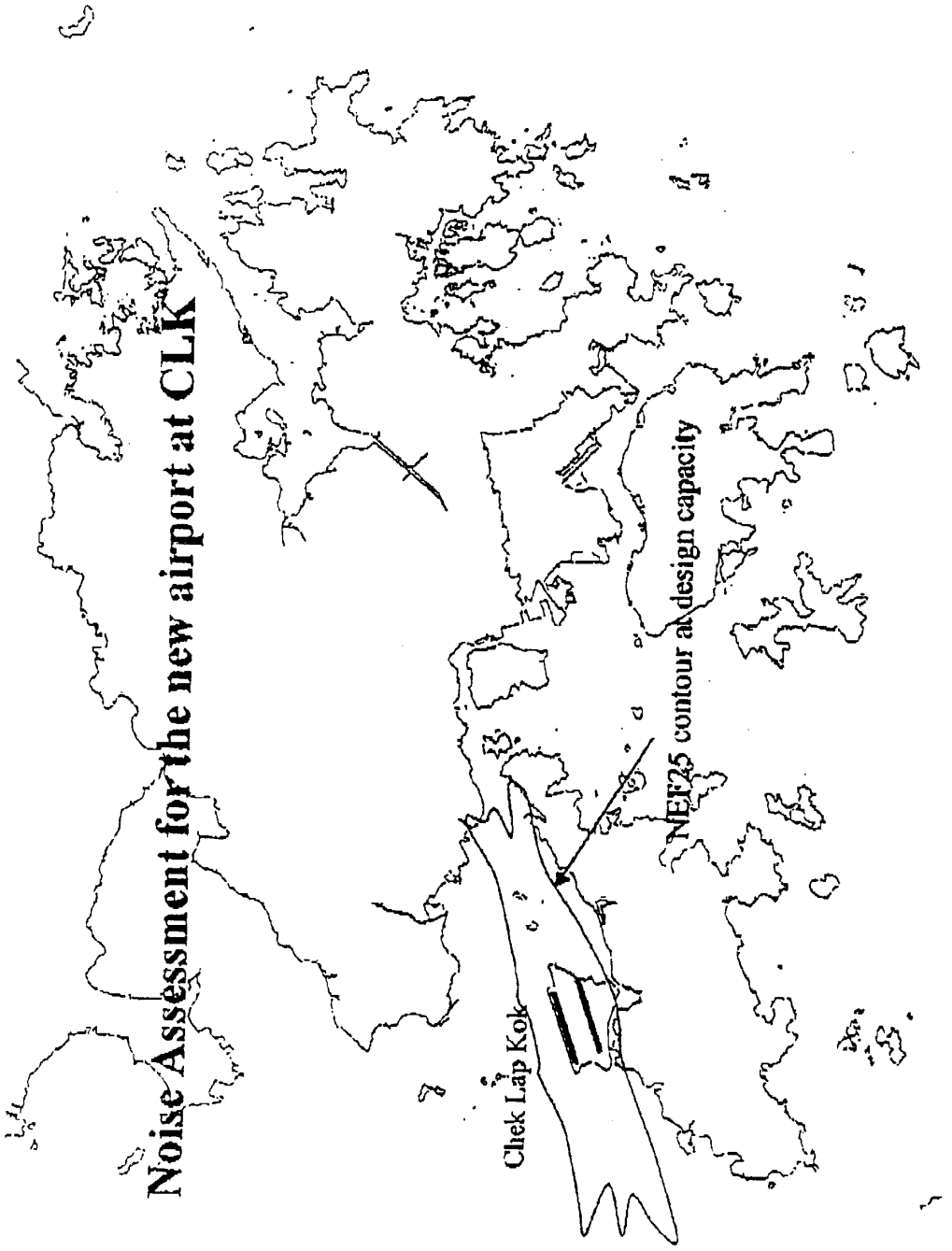
Mitigation Measures

13. For residents in North Lantau, predominantly in Sha Lo Wan, whose houses lie within the 25 NEF contour, grants will be provided to cover the installation of noise mitigation measures to their houses.

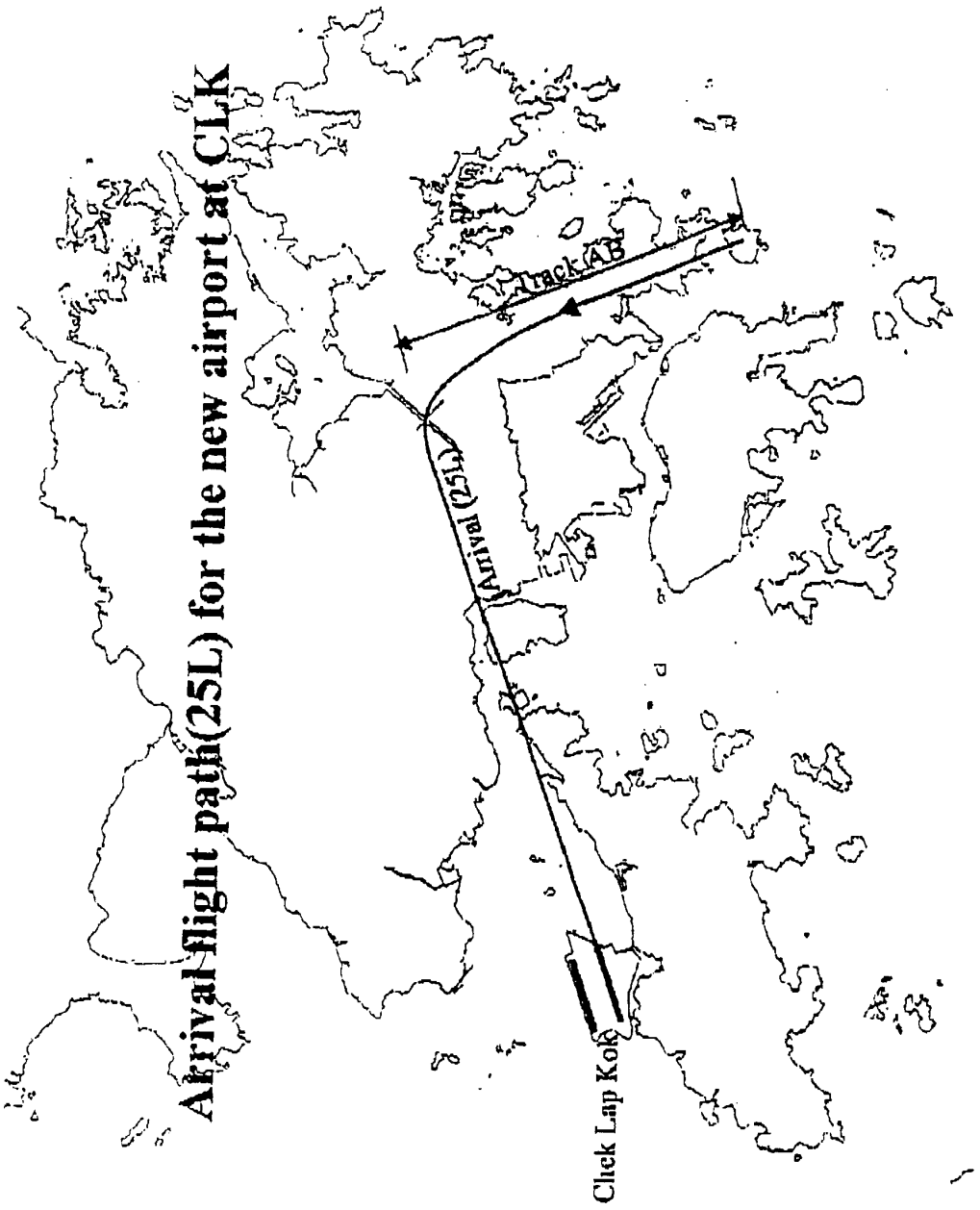
Aircraft Noise Monitoring

14. the Civil Aviation Department has installed a noise and flight track monitoring system at the new airport. This system will validate noise contours as well as to collect specific noise level readings from dedicated and mobile monitoring stations. The resulting noise and flight track data will be used to ensure aircraft do not deviate from their assigned routes, thus avoiding further noise exposure for residents.

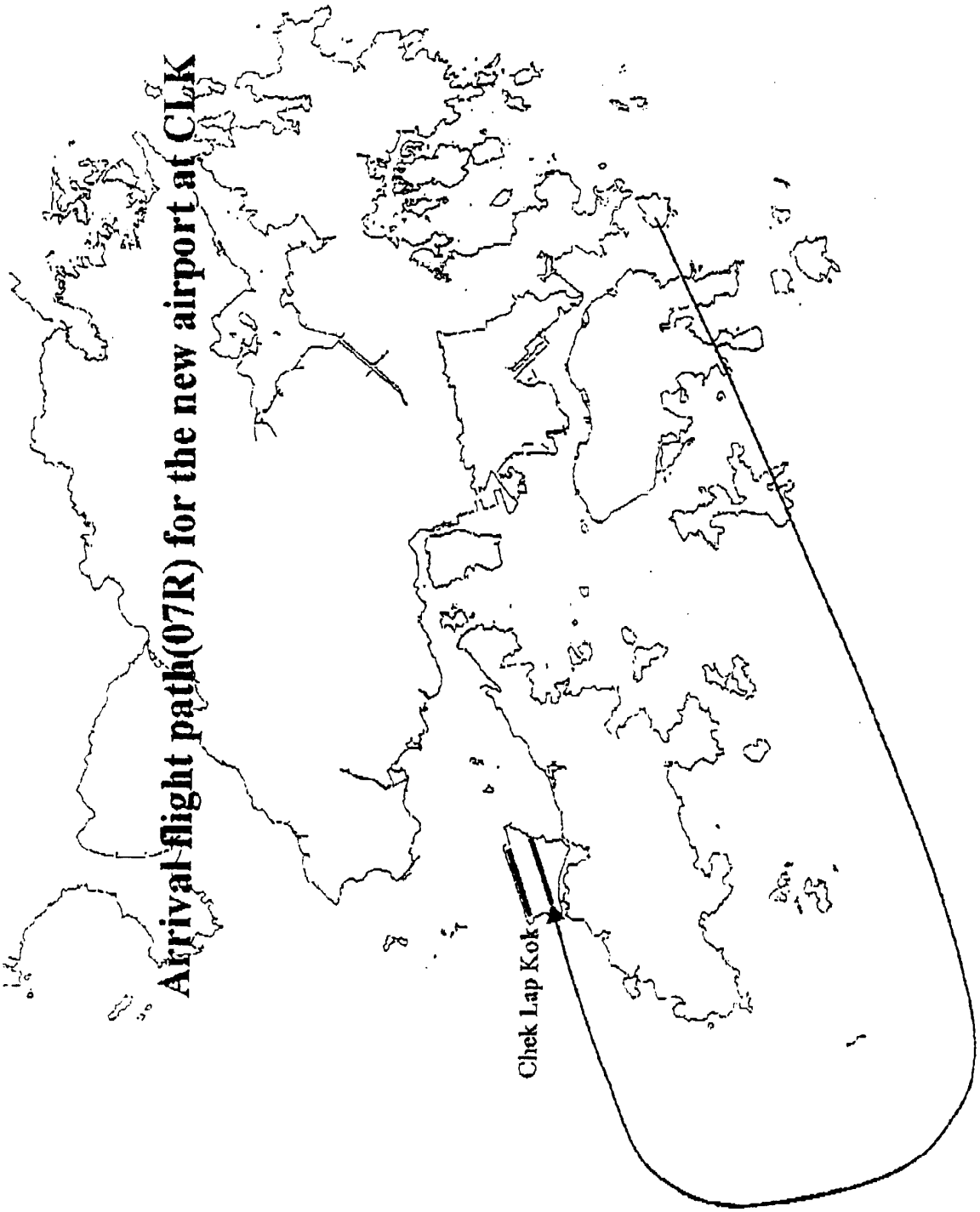
Annex A


Noise Assessment for the new airport at CLK
NEF25 contour at design capacity
Chek Lap Kok

Annex B


Arrival flight path(25L) for the new airport at CLK
Track(AB)
Arrival (25L)
Chek Lap Kok

Annex C


Arrival flight path(07R) for the new airport at CLK
Chek Lap Kok