APPENDIX 7.3.3: DETAILS OF COMPUTATIONAL MODEL

INM contains the latest and largest aircraft noise database and its calculation methodologies and output metrics are not limited to standards and conditions specific to a particular country or geographic area. INM's core computation modules are based on and compliant with internationally accepted methodologies for computing noise levels around airports including:

- ICAO Doc 9911: Recommended Method for Computing Noise Contours Around Airports;
- SAE-AIR-1845: Procedure for the Calculation of Airplane Noise In the Vicinity of Airports;
- SAE-AIR-5662: Method for Predicting Lateral Attenuation of Airplane Noise;
- SAE-ARP-866A: Standard Values of Atmospheric Absorption as a function of Temperature and Humidity; and
- ECAC Doc 29: Report on Standard Method of Computing Noise Contours around Civil Airports.

INM is designed to estimate long-term average effects using average annual input conditions. INM is capable of calculating aircraft noise in three kinds of noise families: A-weighted, which are metrics that approximate the frequency response of the human ear; C-weighted, which are metrics generally used for low-frequency analysis; and perceived tone-corrected noise metrics, which are the basis of the NEF metric used for noise assessment at HKIA. In addition, INM is capable of calculating exposure, maximum level, and time above noise metrics.

INM utilizes mathematical grids to perform all noise computations. Multiple grids can be defined in a study giving INM the capability of estimating multiple noise metrics, deriving noise contours, and estimating a set of noise metrics at specific locations.

INM is capable of exporting data generated from the calculation process in geographic information system (GIS) data formats. This facilitates overlay of noise contours or grids over other data such as land use data and NSR locations. The abovementioned computer modeling and assessment methodology are well established and in accordance with relevant guidelines and requirements of ICAO and FAA. Also, these are primarily intended to be applied to civil commercial airports where operations consist mostly of jet-engine powered or propeller-driven heavy aeroplanes and widely adopted for assessing aircraft noise of a number of international airports, which operations are similar to the HKIA. Therefore, the said are considered suitable for the use of assessing aircraft noise for the Project.