

#### 4.3.5 Impact on Noise Levels

During the operational phase, aircraft movements will be the main source of noise pollution from the proposed project. Noise will also be generated from the traffic and standby DG sets, but will be very less and localized in comparison to the noise from the aircraft, which cannot be felt at longer distance also. Hence, noise from the aircraft movement at the airport has been considered for the noise dispersion modeling.

The noise emanating from aircraft operations depends upon a number of factors including type of aircraft, daily takeoffs and landings, specific flight procedures, number of runways, topography, weather conditions etc.

To predict the impact on the existing noise levels in the study area due to the proposed expansion project, the model **Integrated Noise Model (INM), Version 7.0d** developed by **Federal Aviation Administration (FAA), Office of Environment and Energy, USA** is used. This model has inbuilt information on the various latest new generation aircraft and has capability of assessing changes in noise impact resulting from new or extended runways or runway configurations, new traffic demand and fleet mix, revised routings and airspace structures, alternative flight profiles and modifications to other operational procedures like reverse thrust.

In the prediction of noise levels due to expansion project, operation of four runways has been considered. Proposed new runway is adjacent to the existing runway 11R-29L. Total annual ATMs of 726,400 operations have been considered in the prediction of noise levels by 2033-34. For the noise modeling exercise, it is assumed that the aircraft will follow standard procedures of flying for approaches and departures as defined in the model, INM 7.0.

The following input is given to the model:

- Runway orientation;
- Aircraft fleet mix; and
- Terrain features.

##### 4.3.5.1 Model Results

The model is run to estimate values of A-weighted exposure based noise metrics viz., LAEQD (Audible Range Weighted Daytime Average), LAEQN (Audible Range Weighted Night time Average) and LAEQ (Audible Range Weighted 24 hr Average).

The outputs of the modeling exercise are presented in scaled contours in **Figure-4.10** and **Figure-4.11** and the area of influence of the predicted incremental noise levels are given in **Table-4.10**.

**TABLE-4.10**  
**NOISE LEVELS AND AREA OF INFLUENCE DURING THE ULTIMATE PHASE**

Sr. No	Noise Levels in dB(A)	Area of Influence in km <sup>2</sup>	
		LEAQD (Day Time)	LEAQ (Night Time)
1	85	0.758	0.286
2	80	2.090	0.966
3	75	5.084	2.486
4	70	10.194	5.694
5	65	22.955	11.440

Sr. No	Noise Levels in dB(A)	Area of Influence in km <sup>2</sup>	
		LEAQD (Day Time)	LEAQ (Night Time)
6	60	54.186	27.928
7	55	126.788	68.756

**Source: Output data of INM Model**

The areas which are likely to be impacted by the future air movements are more or less the same as the existing ones. Due to addition of new runway the noise load will be distributed and intensity/impact will be less. As seen from the simulation, it can be practically inferred that the magnitude of change in noise impacts in terms of the existing and future flight frequency is unlikely to be of any significant consequence to the already affected population. However, the additional runway will create exposure to aircraft noise falling under the runway funnel area.

The noise modeling has been executed based on the assumption that even in the year 2034 the same type of aircrafts will be operated which may not be the case. There will be a scope for some further modest improvement in takeoff/landing noise from future aircrafts/engine designs which will further reduce the noise levels. Current aircrafts are more fuel efficient and 70% quieter as compared to the older aircrafts. As per ICAO, the new and larger aircraft will reduce the noise intensity and its exposure. In coming days, aircrafts operating in India will be more advanced and quieter. Use of mixed mode operation and other mitigation measures will further reduce the noise exposure.

#### Noise Level Management

The specifications for procuring major noise generating machines/ equipment will include built in design requirements to have minimum noise levels meeting Occupational Safety & Health Association (OSHA) requirement. Appropriate noise shields, silencers will be provided, wherever feasible.

Some of the practices proposed for noise attenuation are as follows:

- Strict adherence to DGCA/ICAO prescribed environmental guidelines & circulars on airport operations;
- Use of mixed mode operation and runway use plans at night for effective distribution of noise around airport;
- Restricted usage of ground engine run-ups to reduce noise;
- Restricted use of thrust reversal while landing of aircraft to minimize noise in lateral direction;
- Use of bridge mounted equipment's for noise reduction and restriction on use of GPU/APU;
- Restriction of Chapter-2 aircraft at night operation from IGI airport;
- Adoption of continuous descent approach and low power low drag approaches and other navigational improvements of SID and STARs;
- Dedicated noise complaint cell is managing the noise complaints;

- Proper scheduling of the aircrafts so as to minimize the noise levels;
- Switching off as many engines as possible during idling and taxiing;
- Aircraft Noise Monitoring System (ANMS) systems and tracking at all runway funnels to monitoring the noisy aircrafts as per DGCA aircraft noise standards;
- Aircraft noise mapping will be performed as per DGCA & MOEF&CC requirements
- Proper maintenance of ground servicing equipment;
- Use of damping materials such as thin rubber/ lead sheet for wrapping the work places like compressor room, DG room etc;
- Maintenance of vehicles to reduce noise levels;
- Personnel working in noisy areas will be provided with ear plugs/mufflers to reduce the noise impacts;
- The DG set will be provided with acoustic enclosures and exhaust mufflers for effective noise reduction
- Sources of intermittent noise generating equipment such as compressors will be provided with appropriate acoustic barriers so that the noise level within 100 m of these facilities when in operation will be less than 70 dB(A); and
- Noise attenuating green belt / green cover shall be developed for effective reduction in noise wherever feasible taking local meteorology into consideration.
- Use of vehicular signage's at airport to create awareness regarding noise levels.