



Airport Master Planning

Introduction

All airports should develop a master plan in order to guide future infrastructure development programs in a logical, sustainable and efficient manner.

Airports that lack a master plan or vision of the future risk developing capacity enhancements that are incompatible, misconceived, incorrectly sized and poorly located, resulting in wasteful capex or restrictions in overall capacity.

Master plans should be designed and planned as cost-efficiently as possible and aligned with industry best practices to achieve the ultimate development potential of the airport.

Master plans should be fully consulted upon with stakeholders and agreed with the airline community before proceeding. This is in recognition of the fact that the success of airlines will ensure the economic benefits for all parties are maximized.

Successful Master Plan

A successful plan guides the orderly and timely development of the airport to meet current and future air traffic demand. It should define a development program that meets the needs of the airport and airlines. A successful master plan:

- Outlines a phasing plan detailing the incremental expansion of facilities until the ultimate capacity is met, with minimum disruption to existing operations.
- Satisfies all planning regulations and overcomes environmental constraints.
- Documents and mitigates issues facing the airport.
- Is based on a process of consultation and transparency resulting in a master plan agreed between all key stakeholders.
- Is aligned and informed by airline strategies.
- Guides land use in the surrounding area of the airport:
 - Protects the airport from encroachment by incompatible land uses.

- Provides guidance to stakeholders on airport access requirements and connectivity with landside access.
- Airport master plans should be prepared by specialized teams with global experience, and a proven history of delivering plans that enable all stakeholders to expand their operations in a profitable manner.
- Applies best practice design and planning guidelines will help to inform master plan concepts and options. Refer to IATA's Airport Development Reference Manual 12th Edition and IATA World Class Airports Position Paper.
- Is able to accommodate changes in traffic type and the business environment over time e.g. expansion based on modular, incremental design principles.
- Master plans should be reviewed every 5 years or more regularly as required by market developments.

Managing Constraints

Airport Master Plans need to manage constraints early in the planning process. Some of the most common constraints include:

- Past developments that impact future planning.
- Surrounding terrain or human infrastructure.
- Environmental regulations that restrict runway use, and operating hours.
- Inadequate land in reserve or is too expensive or difficult to acquire.
- A lack of political support for the role of aviation.

Master Planning Process

A structured planning process is essential to develop a viable and credible master plan that is informed by stakeholder inputs throughout.

IATA has developed a best practice, comprehensive step by step master plan process (see Appendix A – IATA Master Plan Process for an overview).



The proposed steps and the key activities undertaken during those steps include:

Pre-Planning

- Identifying objectives.
- Scoping the effort and determining the scale and requirements of the master plan.
- Determining consultant terms of reference
- Establishing financial thresholds and funding, including the maximum level of affordable investment.

Air traffic/Demand

- Forecasting future aircraft movements, passenger and cargo traffic.
- Reviewing historical activity.
- Identifying trends.

Site Evaluation/Inventory

- Inventory of existing physical and operational characteristics.
- Assessment of current facility in terms of their capacity, constraints and condition.

Requirements Analysis

- Determines airlines strategic and functional needs including growth plans, operational and passenger needs.
- Compares existing facilities to current and forecast demand.
- Identifies floor areas/footprint/plot sizes to inform incremental expansion and the ultimate development.
- Establishes demand levels that will trigger facility expansion.
- Considers relative priorities for expansion.
- Checks compliance with industry safety and design standards.

Strategic Choices

Identifies primary strategic choices including:

- Government aviation policy.
- Environmental constraints.
- Home base airline / alliances / partnerships strategies.

- Fleet development, aircraft types and impacts
- Airport market position e.g. origin and destination, transfers, catchment areas.

Development of Options

- Identifies options for each major airport component e.g. airspace, airfield, passenger and cargo terminals, support facilities, access.
- Develops evaluation criteria to assess options.
- Shortlists alternatives.
- Conducts a detail financial and requirements analysis of options.
- Refines concepts.
- Selects preferred, optimized master plan option.
- Prepares the development plan based on the recommended alternative for the short, medium and long term.
- Establishes a preliminary 10-year capital investment program.
- Develops a phasing plan.

Financial Assessment

- Estimate capital costs and how these will be financed and funded.
- Ensure airport charges are affordable based on a positive business case for investment supported by airport users.

Reporting and Deliverables

- Finalize and publish the written master plan report including all necessary graphic support.

Related documentation

- Appendix A – Master Plan Process (Airport Development Reference Manual 12th Edition).
- IATA Airport Development Reference Manual 12th Edition
- [IATA World Class Airports position paper.](#)
- ICAO Document 9184 Airport Planning Manual.
- ICAO Annex 14, Vol. 1 Aerodrome Design and Operation.