

TYPICAL AIRPORT MASTER PLAN OUTLINE

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Typical Master Plan Outline

- ❖ The main purpose of a master plan is to develop a well-balanced airport development that could accommodate the existing and future aviation demand
- ❖ The future airport expansions/ improvements should not significantly affect regular operations of the airport
- ❖ It is vital to provide a good balance of the airside, terminal, landside and ancillary facilities to ensure the proper operation of the airport
- ❖ The proposed development should be based on the expected levels of aviation demand, taking into account socioeconomic impacts. The plan should be financial feasible to be implemented. At the same it should provide some flexibility if the traffic patterns change at the airport.
- ❖ Safety, security and efficiency/levels of service are the main criteria when proposing new development

Typical Tasks of a Master Plan

- ❖ Inventory of the airport and associated communities
- ❖ SWOT Analysis
- ❖ Demand/ Capacity
- ❖ Facility Requirements
- ❖ Development Alternatives
- ❖ Airport Layout Plan
- ❖ Cost Estimates
- ❖ Financial Assessment
- ❖ Socio-environmental impacts

Inventory



- ❖ Description of the main airport facilities and equipment and aviation activity
- ❖ Description of the characteristics of the community that the airport serve, including main socioeconomic activities and sources of employment
- ❖ Land use regulations that could affect the future development of the airport

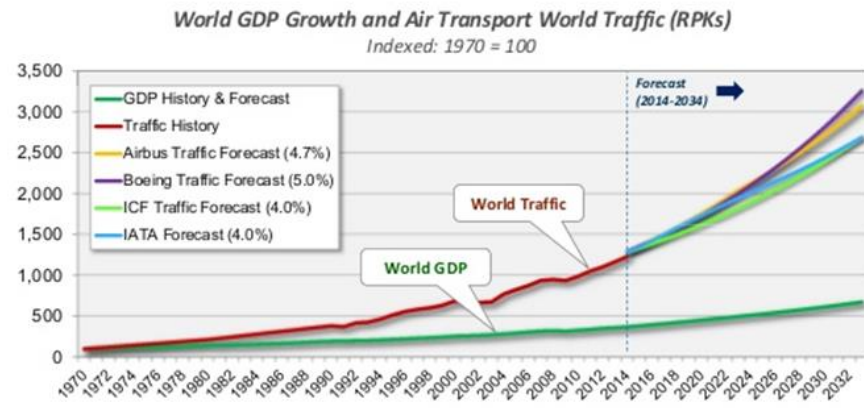
SWOT Analyses



- ❖ Strengths
- ❖ Weaknesses
- ❖ Opportunities
- ❖ Threats
- ❖ SWOT Analyses is associated with strategic planning, and it has become more common in the last few years as part of a master plan

Aviation Forecasts

World air traffic growth has outpaced GDP growth – a trend that is forecast to continue well into the future



ICF's traffic forecast allows for lumpy economic growth and a weakening of the low-cost carrier cycle

Note: RPK (Revenue Passenger Kilometer): number of paying passengers x kilometers flown
Source: Airline Monitor, February 2015; Oxford Economics; World Economic Outlook; Airbus/Boeing/Embraer Market Outlook; ICF 2014

- ❖ Prepare aviation forecasts for next 15-20 years
- ❖ Estimate annual aviation forecasts for the following variables
 - Commercial Passengers
 - Air Cargo
 - Aircraft movements (passengers, air cargo)
 - General Aviation (based aircraft and operations)
 - Military
 - Others
- ❖ Typically commercial passenger and air cargo activities relate to regional socioeconomic data (GDP, population, employment, etc.)

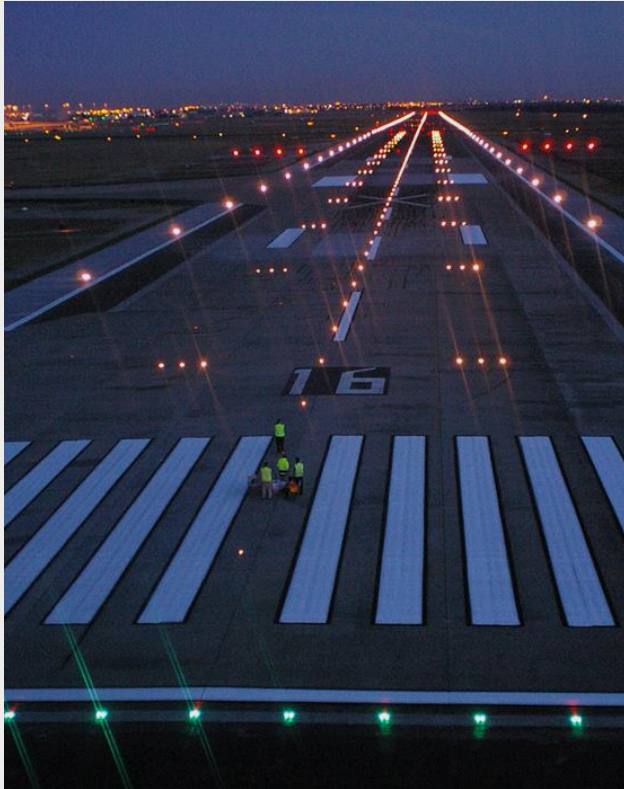
Aviation Forecasts Continued

- ❖ Prepare mathematical, statistic and econometric models with socioeconomic data to determine if there are good correlations (passenger and cargo)
- ❖ Check accepted aviation forecasts for the region prepared by Airbus, Boeing as a benchmark
- ❖ Estimate air passenger and cargo forecasts
 - Domestic
 - International
- ❖ Define typical aircraft fleet mix
- ❖ Estimate aircraft movements (i.e., commercial air passengers are calculated taking into consideration aircraft fleet mix, load factors)
- ❖ Estimate general aviation forecasts



Aviation Forecasts -Continued

- ❖ Taking into account the typical traffic patterns throughout the year, the analysis should estimate the peak hours for the following items
 - Passengers (international and domestic separately)
 - Aircraft operations (commercial passenger, cargo, general aviation, military, others)
- ❖ The peak hour estimates help in many cases to determine the types and sizes of facilities required to accommodate existing and future demand



Demand/ Capacity and Facility Requirements

- ❖ Demand/ Capacity deals with the capacity of existing facilities to handle the demand
- ❖ Facility Requirements addresses the types and size of facilities that are required in the future
 - Airside (Runways, taxiways, aircraft parking apron, navigational and visual aids, ATCT, Obstacle Limitation Surfaces – OLS, PANS-OPS)
 - Landside (passenger terminal, cargo facilities, ground access and car park, general aviation facilities)
 - Ancillary facilities (ARFF, fuel farm, airport maintenance, MRO, utilities, secure service roads, catering, fencing and perimeter security)
- ❖ Accepted industry standards should be used to determine the types and size of facilities and equipment

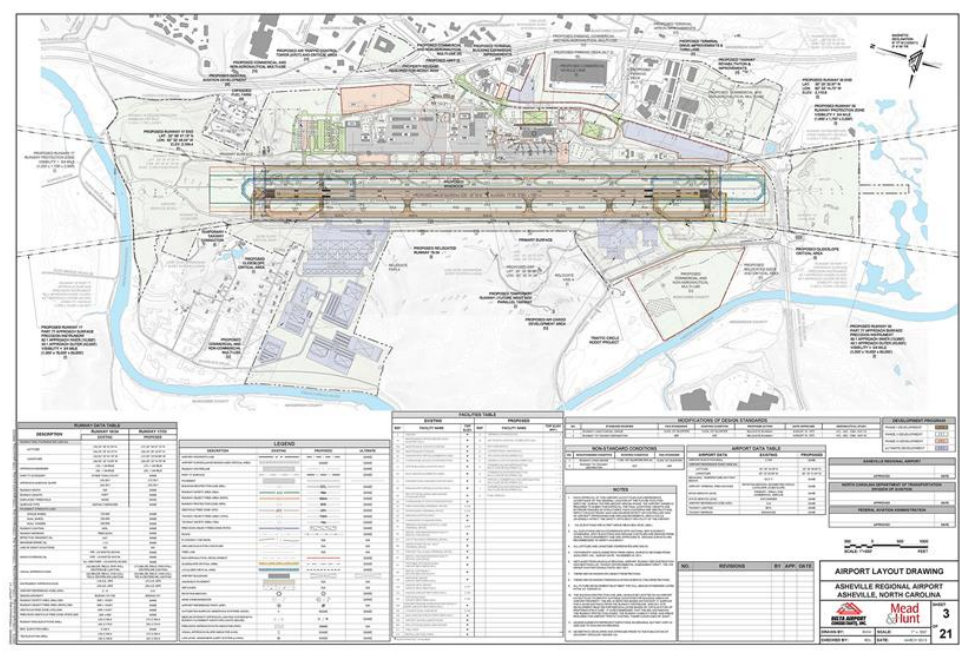


Development Alternatives

- ❖ Consider alternatives how the airport could be developed in the future
- ❖ Evaluate the pros and cons of every alternative, and how different airport elements work with each other
- ❖ Recommend the alternative that provides the best balanced development of the airport and provide opportunity to expand beyond the planning period
- ❖ It is important to consider technical, socioenvironmental and financial/ cost issues when considering alternatives
- ❖ It is vital to get feedback from airport stakeholders when evaluating the alternatives

Airport Layout Plans

- ❖ They depict the development of proposed major facilities and equipment to be implemented at the new airport
 - Airport Layout Plan
 - Obstacle Limitation Surfaces
 - Terminal Area Plan
 - Ground Access
 - Land use plan
- ❖ There should a set of drawings showing different development phases (short-, medium- and long-term). In some cases, there could be an ultimate development



Cost Estimates

Cost Estimate							Page 2
	Description	Qty	Price	UM	Draw	Me	Total
51	SITE PREPARATION						
52	• Rough Stake	1	125.00	Lump Sum	0.00	125.00	125.00
53	• Clearing, Grading, Hauling	6	115.00	Hour	0.00	690.00	690.00
54	• Fill Dirt	5	75.00	Load	375.00		375.00
55	• Locate Corners	1	275.00	Lump Sum	275.00		275.00
56					0.00		0.00
57	TOTAL SITE PREP (LINES 52-55)				650.00	815.00	1,465.00
58							
59	FOOTINGS						
60	• Layout, Dig, and Pour	225	1.10	LF	247.50		247.50
61	• Steel	45	5.40	EA	243.00		243.00
62	• Concrete	15	115.00	CY	1,725.00		1,725.00
63	• Drains				0.00		0.00
64	TOTAL FOOTINGS (LINES 60-63)				2,215.50	0.00	2,215.50
65							
66	FOUNDATIONS						
67	• Concrete	20	115.00	CY	2,300.00		2,300.00
68	• Brick				0.00		0.00
69	• Block				0.00		0.00
70	• Mortar				0.00		0.00
71	• Sand	5	85.00	CY	425.00		425.00
72	• Steel	75	5.40	EA	405.00		405.00
73	• Vents				0.00		0.00
74	• Damp Proofing	1	375.00	Lump Sum	375.00		375.00
75	• Backfill				0.00		0.00
76	• Labor	1	1,000.00	Lump Sum	0.00	1,000.00	1,000.00
77	• Foundation Survey	1	475.00	Lump Sum	475.00		475.00
78					0.00		0.00
79	TOTAL FOUNDATIONS (LINES 67-77)				3,980.00	1,000.00	4,980.00
80							
81	PAGE TOTALS (LINES 57-79)				6,845.50	1,815.00	8,660.50

- ❖ Using local construction costs, the master plan should estimate the cost estimates to build the proposed facilities and install the suggested equipment
- ❖ The cost estimates should include Contingency Engineering Management Administration costs (CEMAC)
- ❖ The development costs will be included in the financial assessment to ensure the proposed developments are financially feasible

Financial Assessment

- ❖ Develop a financial model that considers the following:
 - Operation and Maintenance Costs
 - Cost estimates of the proposed improvements/expansions, including the financing expected to be used to pay for the projects
 - Aeronautical and non-aeronautical revenues. The rates and charges should be set up based on accepted industry standards and to cover the costs associated to the airport development
- ❖ This assessment will help to determine how the airport could be developed in a timely manner based on levels of aviation demand and that could be financially feasible
- ❖ There are some cases where the airports are located in remote locations, and they provide access to the communities

<i>All numbers are in \$ Millions except per share data</i>					
	FY 07	FY 08	FY 09	FY 10	FY 11
Deferred Lease Obligations	(3)	16	131	2	(25)
Deferred Gains related to aircraft transactions	(30)	(28)	(26)	(22)	(21)
Other Liabilities	11	99	(26)	(13)	3
Total Cash Flow from Operating	2,383	2,117	82	2,485	3,128
Cash Flow from Investing					
Aircraft and Related Equipment	(982)	(572)	47	(1,522)	(1,506)
Package Handling and Ground Support Equipment	(331)	(928)	(143)	(233)	(398)
Computer and Electronic Equipment	(354)	(355)	760	62	(190)
Vehicles	(358)	(193)	(324)	(92)	(124)
Facilities and Other	(991)	(167)	(295)	(257)	(166)
Goodwill	(672)	332	936	29	(126)
Pension Assets	1,349	(827)	516	311	-
Intangible and Other Assets	44	319	(252)	138	(198)
Total Cash Flow from Investing	(2,295)	(2,391)	1,245	(1,564)	(2,708)
Cash Flow from Financing					
Long Term Debt	415	(501)	424	(262)	(1)
Common Stock	-	-	-	-	1
Additional Paid-in capital	221	233	131	208	223
Accumulated Other Comprehensive Loss	(1,006)	605	(948)	(1,067)	(110)
Treasury Stock	(4)	-	-	(3)	(5)
Deferred Compensation and Treasury Stock, at cost	32	-	-	-	-
Adjustment to opening balances for SFAS	-	-	(44)	-	-
Foreign currency translation adjustment	-	-	-	-	-
Minimum pension liability adjustment	-	-	-	-	-
Retirement plans adjustment	-	-	-	-	-
Cash dividends	(114)	(93)	(137)	(137)	(152)
Employee incentive plans and other	-	-	-	-	-
Total Cash Flow from Financing	(456)	244	(574)	(1,261)	(44)
Net Change in Cash Flow	(368)	(30)	753	(340)	376
Cash Balance					
Opening Balance	1,937	1,569	1,539	2,292	1,952
Additions in the Year	(368)	(30)	753	(340)	376
Closing Balance	1,937	1,569	1,539	2,292	1,952

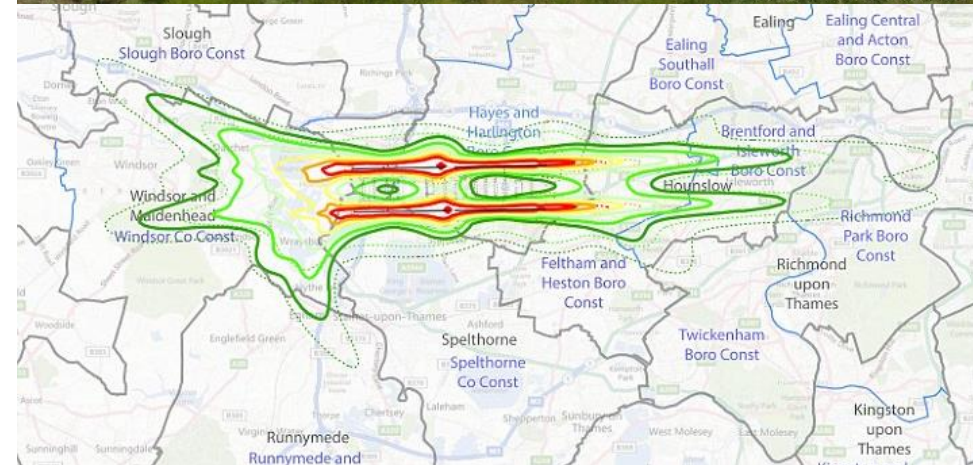
Image 5: Cash flow statement of Apple showing the cash flow analysis

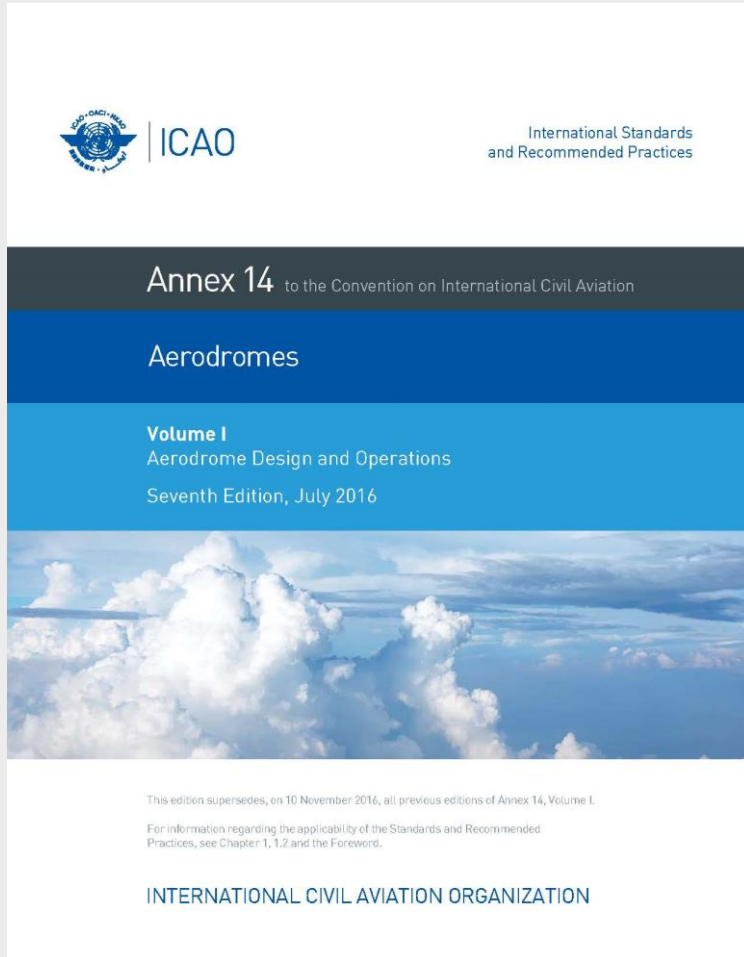
Environmental Assessment

- ❖ It is vital the proposed airport development plans are compatible with the surrounding environment and development
- ❖ The assessment should follow national environmental laws and regulations
- ❖ If the proposed development affects the environment some mitigation measures should be planned and implemented
- ❖ One of the issues that is particular to airports is noise.
- ❖ Other relevant issues are hazardous waste and air quality generated by the aircraft operations
- ❖ It is critical to set up land use planning around the airport to ensure that the airport could be a “good neighbor”



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References

- ❖ ICAO Annexes, Manuals and other relevant references
- ❖ IATA Airport Development Reference Manual (ADRM)
- ❖ United States FAA Advisory Circulars and Orders
- ❖ Airport Cooperative Research Program (ACRP) of the United States Transportation Research Board (TRB)
- ❖ National Aviation and Transportation Regulations
- ❖ NFPA
- ❖ Other accepted industry standards

Thank you very much

Muchas gracias

Muito obrigado

Merci beaucoup