

Rainfall records of Goa available from meteorological were reviewed over a long period and finally an hourly maximum rainfall intensity of 100mm/hr of a 10 years return period is considered for the estimation.

8.3.3.4. Drainage system

Depending upon the areas to be served various types of storm drains are considered for the complex and are given below.

Type I drains are envisaged for the main runway & taxiways. This will be open lined channels running parallel to the runway & taxiways sloping towards the western end of the runway. On southern part the channel will cross the taxiways with help of suitable diameter pipe culverts as per the peak flow condition.

Type II drains will be for the apron & other paved surfaces. These drains are proposed around the apron & paved areas to evacuate peak rainfall intensity. These drains will be of RCC covered channel with covers may be of RCC gratings as well. These drains will separately drain out the water from the area to the southwest part of the storm outfalls.

Type III drains are used for buildings such as terminal buildings, maintenance, cargo area, hotel & business centre etc. These drains will be of plain concrete base & brick side work with partly grating cover & partly open as per requirement will connect to the main outfall separately.

Type IV drains are for all access & other facility connecting roads. These open drains will collect water from roads & adjacent parts and carry it to main outfall

All box or pipes culverts and RCC covered channels will be designed to accommodate aircraft that have a weight up to 700 tons.

8.3.4. Rainwater harvesting

Provision has been made for storm water holding ponds with oil & sediment separation & harvesting arrangement to meet environmental restrictions. The holding ponds will have at least one day storage capacity at the peak rainfall intensity. The rainwater harvesting system has to be suitably designed to meet the requirements of groundwater recharge as well as storage for dry period.

It is expected that during a period of continuous rains extending over several days, the rainwater harvesting ponds will overflow. The overflow will be carried for a distance of 25 to 50 m in unlined gutters of not more than one meter depth at the beginning and decreasing, progressively increasing in cross sectional area until the gutter has zero depth. This will be achieved within the stipulated distance. Thereafter the overflow will follow the natural drainage pattern of the ground and flow through the numerous small water courses located all over the area.

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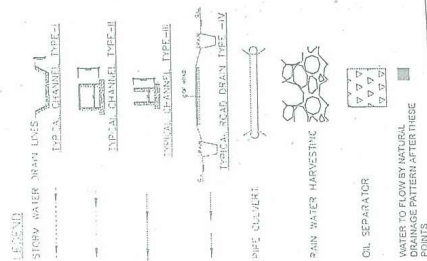
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8.3.5. Sewage collection & treatment

8.3.5.4. Disposal & reuse

It is envisaged that treated water will be fully utilized within the airport complex for irrigation, cooling or some washing facilities. Adequate treated water storage facilities will be provided at strategic locations to reuse the water as required.

8.3.5.1. Sewage collection system

The entire sewage collection system is envisaged to be on gravity based system. As per the layout the gravity main will originate somewhere near the main terminal building running westward upto sewage treatment plant. The main sewage will be contributed from terminal building, catering, hotels, housing & other business areas. At the end of gravity main a suitable capacity holding tank is proposed to collect the sewage to pump it to main sewage treatment plant. The aircraft sewage or the chemical sewage which will be of small quantity will be received or collected at the sewage treatment plant for further treatment.

8.3.5.2. Quantity of sewage

The total water requirement of the area calculated is 1000 cum per day. Out of which approx 800 cum per day water supply will produce sewage of various characteristics. Though the pattern of consumption of water and discharge of sewage may not be the same within various facilities it is still safe to assume 80% of the supplied quantity will return as sewage. Thus the total quantity expected at sewage treatment plant is 640 cum per day plus some small quantity for chemical sewage from aircrafts to be added to this facility. So a sewage treatment plant is planned with treatment capacity of say 650 cum per day. This treatment plant will have a 10 hour treatment capacity i.e. 65 cum per hour treatment facility at peak.

8.3.5.3. Treatment

The selection of sewage treatment scheme primarily depends on the local condition, incoming raw sewage quality & discharge standard stipulated by the pollution control board. The incoming raw sewage quality which will mainly generate from terminals, catering, hotels, housing & other facilities is likely to be weak in view of the airport being a public place. The chemical sewage originating from aircrafts which is of small quantity but of very high chemical loading will be separately chemically stabilised before being blended to main treatment stream. The discharge standard which is stipulated nowadays are of local surface water standards. The airport which may be run by private public partnership & a better treatment standard is expected to reuse the water in irrigation purpose. The treatment flowsheet as required will consist first a holding tank with at least one day storage capacity. This will ensure the equalization of the flow load to the plant. A screen & grit removal will be provided to remove floating as well settleable materials. A treatment process of activated sludge extended aeration will be cost effective as well as give a good end result for acceptance. The treated water will be finally polished by filtration, chlorination etc to make it useful for cooling system, irrigation purpose etc.

8.3.6. Solid waste management

The various airport facilities will produce a large amount of solid waste. According to the nature of source this waste will have various qualities & quantities to be handled properly to meet environmental stipulations. It is envisaged that the wastes will be assorted & segregated under various categories such as recyclable, combustible etc as per the classification. It is proposed to install a solid waste management station with appropriate collection and sorting facilities. The recyclable waste which will have higher value will be sorted & stored for appropriate agency to collect them for recycling. The solid waste management station will have one incineration plant to burn out the combustible variety sorted out at the solid waste handling facility. The remaining waste materials which are neither recyclable nor allowed to incinerate are compacted & eventually send for landfill agencies for final disposal. The waste management station will have all control systems to be operated by trained operators to continuously the waste handling facility.

8.4. *Electrical Network and Power Supply conceptual design*

8.4.1. Standards.

The installations and equipments shall comply with local and international standards (IEC). The lightning protection installation shall comply with the standard code of practice. The earthing system shall comply with local and international standards.

8.4.2. Power Balance

According to the program, preliminary power balance can be assessed as follows:

Commercial / Industrial Buildings	Essential (kW)	Non-Essential (kW)	Total (kW)
Passenger terminal	1 300	2 030	3 330
Car Park area		90	90
Cargo area	81	189	270
General aviation		42	42
Business aviation		32	32
Helicopters		25	25
Maintenance workshop		230	230
Fuel farm	59	0	59
Catering and aircraft cleaning		299	299
Ancillary Buildings			
Custom and police auxiliary facility		5	5
Security area vehicles control point	4	4	8
GSE storage		15	15
Technical Building			
Control Tower and technical block	500	0	500
Power supply	24	0	24
Fire protection	43	5	48
Utilities			
Water supply	17	9	26
Sewage	15	0	15
Dilaceration area+Tank		38	38
Aeronautical Equipments			
Visual Aids (incl. Aprons lighting mats)	275	0	275
Nav aids	75	0	75
Radar Station	75	0	75
Communication Equipments	32	0	32
MET Equipment	3	0	3
Airport city		1717	1 717
Sub-Total after correction factor 0.8 (kW)			5 786
HVAC Production for external buildings (except Terminal and Control Tower) (kW)			1 500
TOTAL (kW)			7286
Essential (kW)	2503		
Non-Essential (kW)		4783	

8.4.3. Power supply.

8.4.3.1. Incoming HV power.

The power links from local provider should include two underground lines connected to a 11 kV HV substation, in a loop type arrangement.

6 Transformers 11 kV / 11 kV - Up to 3 125 kVA, 2 sets of 3 on two separate busbars, tie-breaker coupled.

Secondary voltage : 11 kV - connected to a main general switchboard

A set of metering and measurement units will be provided.

Input Voltage : 11 KV

8.4.3.2. Distribution

Main characteristics

The main characteristics will be as follows:

High voltage rated	11 kV	3 phases, 50Hz
Low voltage rated	400/230V	4 wires, 50Hz
Estimated total power	7300 kW	8900 kVA

The total power need can be estimated at 8900 kVA with 2900 kVA that shall be secured by generators sets, connected to general switchboard via a transformer (cost effective solution) or locally installed in the nearing of the facilities/equipments substation to provide secondary supply to, connected to local switchboards (more reliable solution).

Generators

The main characteristics of each generator are:

Cos φ	0.8 at 100% load
Over load	10% per hour
Alternator	415V - 3 phases
Frequency	50 Hz
Time of works	more than 1000h per year
Load impact	80 %

Each generator will be able to take full load in 15 seconds.

The rate for each generator has to be calculated for each facility/equipment for which the generator set is the secondary supply source.

▪ Terminal:	1300kW
▪ Cargo:	80 kW
▪ Fuel Farm:	60kW
▪ Control TWR:	500kW
▪ Power supply:	25kW
▪ Fire Station:	20kW
▪ Water Supply:	20kW
▪ Sewage:	15kW
▪ Aeronautical Equipments :	500kW
▪ TOTAL :	2 500 kW

Rate in kVA to be found taking into account a 0.8 Cos ϕ correction factor, that is to say 2 900 kVA

Fuel supply

The combustible will be FOD.

Storage is to be scheduled to insure 96h at full power.

HV switchboard

The HV switchboard (11 kV, busbar current rate to be calculated upon foreseen possible expansion of the airport) will be an enclosure type with circuit breakers.

High voltage distribution.

The electrical distribution system will be 11 kV through the transformers substations 11 kV/400V - 230V - 50Hz.

The following substations shall be supplied by a loop circuit:

- Terminal substations (4 x 2 000kVA)
- ANA substation (2 x 630kVA)
- Control TWR and technical block substation (2 x 630kVA)
- Fuel farm substation (2 x 80kVA)

The following substations are directly supplied:

- Cargo substation (1 x 400kVA)
- Maintenance Workshop substation (1 x 315kVA)
- Rescue and Fire fighting services (1 x 60kVA)
- HVAC production (4 x 1000 KVA)
- General, business aviation and Helicopters substation (1x150 kVA)
- Catering, aircraft cleaning and GSE substation (1x400kVA)

- Airport maintenance, custom and police, sewage and incinerator (1x200 kVA)
- All electrical cables are put in cable tray or are protected by sleeves.
- Power supply and water supply (1x60 kVA)
- Hotel, Business Center substation and Employees accommodation (2 x 1250 kVA)

Neutral system

The neutral system (high/medium voltage) will be IT system.

The neutral system (low voltage) will be TN S system.

8.4.3.3. General principles for earthing and lightning protection.

The earthing principle for Buildings consists of a flat iron of 100 sq.mm minimal cross-sections included in the concrete foundation.

Outputs are installed in technical room, in order to connect: earth connection of electrical equipments, and transformers neutral,

The lightning protection will consist of ionisation system for the Terminal building.

The lightning protection will be connected separately to the earth.

8.5. IT & Telephone conceptual design

8.5.1. IT Infrastructural System

An Airport Community Network (ACN) including LAN and WAN shall be installed via broadband connection to VSNL or equivalent national network.

The network concept includes redundant optical fibre cables, copper cables and network equipment like Mux including necessary equipment redundancy in order to comply with a very high level of safety and availability required.

The ACN will cover the Terminal building, the ATC tower, the Cargo building, workshops, garages, stores and security gatehouses. This network shall be able to provide all users at the airport premises access to own applications and to central airport information systems depending on access levels granted.

8.5.2. Airport communication network

The airport communication network shall comprise the telephone system and the ground service radio system.

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8.5.3. Telephone System

It is envisaged that a satellite telephone exchange will be established connecting to national network by VSNL or other national network gateway with a minimum capacity of 1200 PABX based lines to serve the entire complex. The minimum level of features include voice mail, interactive voice response (IVR), music on hold, conference call capability, directory integration, PC based attendant services, call accounting to manage costs, IP and digital telephones,.... analogue capabilities for telephones, modems and fax machines and management from a single proven platform.

8.6. Landscaping conceptual design

As the site has shrub and tree cover, most of which will not be removed, the necessity of large scale arboriculture is not envisaged. Tree plantation will be carried out on both sides of the four lane road leading from parking lot of the passenger terminal to the round about and also on both sides of the two lane road from the foundation till it leaves the project area. Trees will also be planted around buildings like GSE storage and maintenance and catering building which are well outside the aircraft operating zones. A number of trees will be planted in the parking lots.

A wide median is provided on the road between the parking area and the round about. This median will be planted with shrub which does not grow thick trunks and can be trimmed periodically to maintain a height of about 1.5 m.

Grass lawns will be provided in the areas around the main passenger building, GSE storage, maintenance buildings and catering as also in selected areas of the parking areas.

Flowering trees and plants will be planted along the passenger building on the ground side.

All trees to be planted as a part of landscaping will meet the following criteria, in order to avoid bird strike hazards:

- There will be no fruit bearing trees.
- Certain species of trees have no attraction to birds as a food source or habitat. These will be preferred.

In general all trees, plants, shrubs bushes and grass will meet the following criteria:

- They will be easy to maintain with no requirement of watering when they grow beyond a certain point.
- They will be unattractive to birds and grazing animals.
- They will be local species already adapted to the climate and environment of Goa.

8.7. Project Implementation Schedule

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9. Preliminary Cost estimate

A preliminary Cost Estimate has been established in order to feed the Financial Model. Being a greenfield project, the total amount of 202 MUSD seems rather reasonable for the construction of such a medium-size airport.

The following table takes into account some expenditures that are usually not to be heard by a private investor. These expenditure are namely :

- ATC and meteorological equipment, normally under AAI responsibility and tenders,
- Connections to existing networks (Road, Power, Water, IT...), that could be integrated in preliminary site improvement held by public authorities.

Items	Amount
Studies and Preliminary Works	21 850 000 USD
Aeronautical Infrastructures	49 414 557 USD
Landside Infrastructures	4 238 900 USD
Security facilities	1 582 400 USD
GSE facilities	1 732 844 USD
Passengers Terminal	48 709 998 USD
Control tower & Technical Block building	3 161 163 USD
Maintenance workshop	1 973 449 USD
Power Supply	8 050 000 USD
Catering and cabin cleaning	4 572 722 USD
Fuel Farm	6 210 000 USD
Rescue & Fire Fighting facilities	8 351 381 USD
Meteorological station	260 130 USD
Custom and police auxiliary facilities	325 163 USD
	1 551 925 USD
Water Supply	
Storm Water Drainage and sewage, waste water, Garbage treatment	2 955 500 USD
Cargo Area	3 447 125 USD
General Aviation Area	2 784 438 USD
Business aviation area (inc.helicopters)	3 317 750 USD
Airfield Lighting System	4 715 000 USD
Nav aids, ATC, VHF & MET equipment	18 308 000 USD
Employees accommodations	2 300 000 USD
Connections to national network (Water, Power, Road)	5 050 800 USD
Total exc. Taxes and Custom fees	204 863 153 USD

This estimation doesn't take into account costs related to land acquisitions. The breakdown of investment amongst: the period 2006 – 2009 is 5% / 35% / 30% / 30%

The Airport city has been quoted separately, as far as it is not an expenditure directly related to airport operations.

Airport city	
Business hotel (200 rooms *****)	38 500 000,00 USD
International Conference Center	5 500 000,00 USD
Golf course	16 500 000,00 USD
Total cost estimate for airport city	60 500 000,00 USD

For the purposes of the economical study as well as for the analysis of the business plan, the capital expenditure (investments) to be made between 2014 and 2034 have been defined. They are given in the following table.

	Opening date CAPEX	Total Investment between 2014 and 2034
Project management, consultancy and work supervision	14 950 000 USD	13 381 049 USD
Major Infrastructures works, landside and airside	57 683 467 USD	28 856 490 USD
Airport facilities	50 160 888 USD	60 352 705 USD
Passenger Terminal Building	48 709 998 USD	63 486 834 USD
ATC, VHF, Radar and meteor Equipment	18 308 000 USD	17 064 000 USD
Connections (Water, Power, Access Road)	5 050 800 USD	2 222 400 USD
Total	204 863 153 USD	183 363 480 USD
Airport City	60 500 000 USD	3:00 USD

Year	Reparation of 2nd stage investment
2015	2%
2016	2%
2017	2%
2018	2%
2019	2%
2020	5%
2021	5%
2022	5%
2023	5%
2024	10%
2025	5%
2026	5%
2027	5%
2028	5%
2029	5%
2030	7%
2031	7%
2032	7%
2033	7%
2034	7%

10. Financial analysis

10.1. Analysis of Current Financial Situation at Dabolim

The Airport Director, on behalf of the Airports Authorities of India, provided a table with proforma financial results for the airport, for the periods 2001/2, 2002/3, 2003/4, revised figures for 2004/5 and budgeted prospects for 2005/6.

The following table (Table 10.1) presents the information received, in Lakhs (hundred thousand Rupees).

Table 10.1. - Dabolim Goa Airport - Revised Estimate - Proforma Financial Results

	actual 2001-02	actual 2002-03	actual 2003-04	revised 2004-05	budget 2005-06
Traffic Revenue *					
Route Navigational Facilities Charges	673.38	670.19	617.77	649.70	728.36
Parking & Housing	15.25	2.16	2.92	3.22	3.53
Passenger Service Fees	576.23	646.72	772.20	1133.57	1046.19
Terminal Navigational Landing Charges	232.70	276.64	160.11	305.32	333.67
Subtotal	1,497.56	1,595.71	1,553.00	2,091.81	2,111.75
Non Traffic Revenue *					
Trading concession	117.19	228.21	264.46	324.05	356.45
Rent & Services	121.01	96.45	124.78	137.48	151.23
Miscellaneous Income	42.57	55.60	77.52	48.16	52.97
Subtotal	280.77	380.26	466.76	509.69	560.65
Total Revenues	1,778.33	1,975.97	2,019.76	2,601.50	2,672.40
Expenditure **	1,233.06	1,324.05	1,084.99	1,618.26	1,607.80
Operating Results	545.27	651.92	934.77	983.24	1,064.60

Source: Prepared by consultant based on information received from the Airports Authority of India - Goa Airport - Airport

Directorship
→ Lakhs: 100,000 Rupees

* AAI's definition for "Aeronautical Revenues"

** AAI's definition for "Non-Aeronautical Revenues"

*** Expenditures were not presented - deducted here from Operating Results and Total Revenues

Note: Financial year ends March 31.

The information received is also presented in the following table (Table 10.2), in US dollars, using an arbitrary exchange rate of 42.7 Rs/USD.

Table 10.2. - Dabolim Goa Airport - Revised Estimate - Proforma Financial Results in USD*

	actual 2001-02	actual 2002-03	actual 2003-04	revised 2004-05	budget 2005-06
Traffic Revenue *					
Route Navigational Facilities Charges	1,577,002	1,559,532	1,446,763	1,521,546	1,705,761
Parking & Housing	35,714	5,059	6,838	7,541	8,267
Passenger Service Fees	1,349,485	1,514,567	1,308,431	2,654,731	2,450,094
Terminal Navigational Landing Charges	544,965	647,869	374,965	715,035	781,429
Subtotal	3,507,166	3,737,026	3,637,002	4,898,852	4,945,550
Non Traffic Revenue *					
Trading concession	274,450	534,450	619,344	758,899	834,778
Rent & Services	283,396	225,878	292,225	321,967	354,169
Miscellaneous Income	99,696	130,211	181,546	112,787	124,052
Subtotal	657,541	890,539	1,093,115	1,193,653	1,312,998
Total Revenues	4,164,707	4,627,564	4,730,117	6,092,506	6,258,548
Expenditure **	2,887,728	3,100,820	2,540,960	3,789,836	3,765,340
Operating Results	1,276,979	1,526,745	2,189,157	2,302,670	2,493,208

Source: Prepared by consultant based on information received from the Airports Authority of India - Goa Airport - Airport

Directorship
→ Exchange rate: 42.7 Rs/USD

* AAI's definition for "Aeronautical Revenues"

** AAI's definition for "Non-Aeronautical Revenues"

*** Expenditures were not presented - deducted here from Operating Results and Total Revenues

Note: Financial year ends March 31.

10.1.1. Aeronautical Revenues

A preliminary analysis on the trends in the financial results shows an erratic change in the composition of the revenues. The following table (Table 10.3) presents the relative changes for the last two years, the current revised budget and the estimated results for 2004/2005:

Table 10.3 - Dabolim Goa Airport - Relative change in financial results

	02/01	03/02	04/03	05/04 Est.
Aeronautical Revenues	6.55%	-2.68%	34.69%	0.95%
Passenger Service Fees →	12.23%	19.40%	46.80%	-7.71%
Non Aeronautical Revenues	35.43%	22.75%	9.20%	10.00%
Total Revenues	11.11%	2.22%	28.80%	2.73%
Operating Results	19.56%	43.39%	5.19%	8.27%

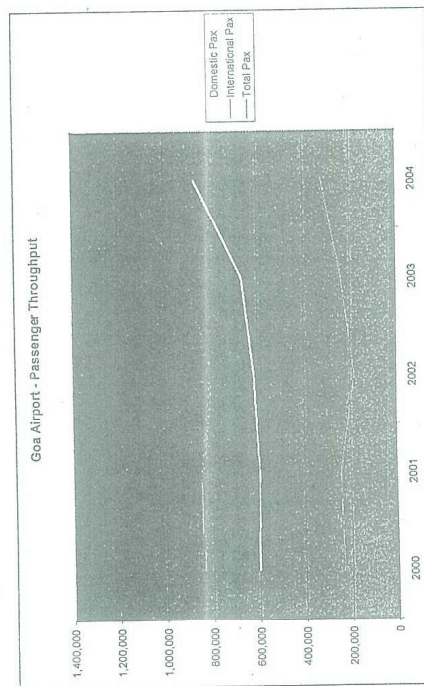
Source: Prepared by consultant based on financial information received from Airports Authority of India

→ Included in Aeronautical Revenues

Note: Financial years end March 31 of following year.

These figures should be contrasted with the traffic throughput, as an initial attempt to explain if changes are due to traffic fluctuations or to accrual accounting inconsistencies. The following table (10.4) presents the historic traffic of passengers and aircraft movements, for the last registered five years.

Graph 10.4 - Dabolim Passenger Throughput



A second table (10.5) was produced to compare traffic with financial information, by rearranging throughput consistently with the periods of financial reports. Thus, statistics were bundled reflecting throughput from April 1st through March 31st of each year, compatible with the financial year.

Table 2.5 - Dabolim Goa Airport - Traffic Throughput Financial years →

	2000-2001	2001-2002	2002-2003	2003-2004
international passengers	287,400	200,543	213,584	279,189
domestic passengers	608,831	591,085	629,215	710,602
total passengers	876,231	791,628	839,799	989,791
relative change		-9.66%	6.09%	17.86%
international aircraft movements	1,459	1,448	1,770	2,228
domestic aircraft movements	6,494	6,364	7,834	9,242
total aircraft movements	7,953	8,112	9,604	11,470
relative change		2.00%	18.39%	16.43%

Source: Data collected and processed by Nigel Brownlow

→ Financial years: April 1st through March 31st

A relevant comparison should look at the relationship between passenger traffic and revenues from Passenger Service Fees. While passenger traffic increased 6.09% from year ending March 31 2003 to year 2002, revenues from Passenger Service Fees were reported higher by 12.23%. The following year, traffic grew by 17.86%, while fees increased by 19.4%. These results reveal a slight discrepancy between changes in traffic and fees, in particular for the year ended 2003.

When comparing changes in aircraft movements with their associated revenues (Route Navigation Facility Charges, Parking & Housing and Terminal Navigational Landing Charges), fees were reported higher by 3% for year ended 2003, while traffic grew by 18.39%. The following year, fees decreased by -17.72%, while traffic increased by 19.43%. These discrepancies could probably be the result of accounting accruing inconsistencies.

The Airport Authority of India provided a complete list of airport fees and charges applicable to all airports in the country. Same fees and charges should apply for the New Goa Airport. Projected revenue build up for the feasibility study will be based initially on these fees. In turn, these fees will be compounded with the projected traffic based on the prepared forecasts.

The following tables (10.6, 10.7, 10.8 and 10.9) show the current structure of fees and charges, applicable to Goa:

Table 10.6 - Route Navigation Facilities Charges (RNFC)

Calculation method	Abbreviations used
RNFC for Landing Flights in Indian Rupees = VC	VC = Variable Charges
RNFC for Overlying Flights in Indian Rupees = VC + FC	FC = Fixed Charges
Where VC = R x D x W	R = Service Unit Rate
R = 4020	D = Distance Factor
D = $\frac{O(GCD/100)}{W}$ with GCD cap as 1200 NM	W = Weight Factor
W = $\frac{O(AUW/50000)}{FC}$ with AUW cap as 2,00,000 Kilograms	GCD = Great Circle Distance in NM
FC = 4000	AUW = All Jp Weight of Aircraft in Kilograms

Source: Airports Authority of India - Airport Charges

Table 10.7 - Landing & Parking Charges per single landing - in Rupees per MT

MTOW	International Flight	Other than International Flight
Upto 100 MT	227.70	170.80
Above 100 MT	22,770	17,080
	306 per MT in excess of 100	229.50 per MT in excess of 100 MT

Source: Airports Authority of India

Notes:

Airport Charges shall be calculated on the basis of nearest MT (i.e. 1000 kgs)

A minimum fee of Rs. 1000/- shall be charged per single landing.

A surcharge of 25% will be levied on landing charges for super sonic aircraft.

Table 10.8 - Housing Charges for International and Domestic Flights

Total Weight	Rate per hour
Upto 100 MT	Rs 7.40 per hour per MT
Above 100 MT	Rs. 740/- + Rs. 9.80 per MT in excess of 100 MT

Source: Airports Authority of India - Airport Charges

Parking: First two hours free

Table 10.9 - Terminal Navigational Landing Charges (TNLC)

Weight of Aircraft	For each landing / Domestic flights / International flights
Below 10,000 kgs.	989
10,000 kgs and above	5,951

Source: Airports Authority of India - Airport Charges

10.1.2. Non - Aeronautical Revenues

During the meetings held at the Airport Authority of India in Goa, each one of the revenue categories of the airport was analyzed in order to understand its main parameters and generation drivers.

The following are the categories that were studied in detail:

Commercial, aeronautical related revenues

- Revenues from fuel providers
- Revenues from Land rentals (within and outside the terminal building)
- Revenues from Ground Handling Services providers

- Revenues from Catering providers
- Revenues from Cargo Handling providers
- Revenues from Courters to airlines
- Revenues from other services provided to airlines
- Revenues from Office spaces

Purely commercial revenues

- Duty Free Shoppers
- Other retailers
- Shops (per different category)
- Car Parking
- Advertising
- Food & Beverage
- Utilities
- Ground transportation

Each revenue category was broken down in traffic drivers and unit prices. Market values for commercial sales were validated using benchmarking prices in the area. Prices from merchandizes and articles that could be sold at the airport (including food & beverage, goods, souvenirs, etc.) were benchmarked with prices in the city of Panjim. Prices for these articles were verified at major hotels applicable to similar markets, while they will also be referred to international benchmarks for comparable goods.

10.1.3. Operating costs

During the meetings held at Goa Airport, financial information with regard to the cost structure of the airport was collected. It should be stressed that the operating expenditures at the airport today are restricted to the landside and, in a minor extent, to the airside when related to the apron. Since the airport is operated by the Navy, all relevant information regarding the airside is not recorded by the financial department of the Airport in Goa.

The following were the cost items revised:

- Payroll (with detail of headcount, salary levels, benefits, etc.)
- Maintenance
- Security (including personnel)
- Service Contracts
- Finance & Administration
- Overhead
- Taxation

- Projected Cash Flow
- Control Panel

10.2.1.1. Control Panel

The Control Panel spreadsheet allows the review in a summarized manner of the impact on the key financials of two sorts of variables: the expected traffic scenario and the commencement of each one of the investment phases.

At this sheet, it can be seen the impact on the NPV (Net Present Value) and the IRR (Internal Rate of Return) calculation. It also presents five key graphs: the Net Earnings per year, the passenger projection based on the selected traffic forecast scenario, the cash flow situation on a yearly basis, the NPV function of the project, explained by the discount rate and the accumulated cash flow situation.

The following is the printout of the Control Panel, for a specific given scenario.

Given the peculiar situation that the cost structure was incomplete, since it did not include the airside, it becomes essential to look for relevant benchmarks.

During the meetings held at the Airports Authority of India in New Delhi, comparable data was obtained that could be used as reference benchmarks for cost estimation. This information has been used to estimate the operating costs of a new airport, by the use of the financial simulation modeling. Financial information for a set of 20 airports was obtained. This information is taken into consideration with relation to their respective traffic operating volumes as well as their physical dimensions, both drivers for the main items of operating expenditures. A preliminary list including the most relevant airports for comparison was suggested by the AAI officials.

10.2. Projected Financial Situation

10.2.1. Methodology

For the purpose of the financial analysis of the New Goa International Airport, a financial simulation model was developed, allowing multiple scenario management and evaluation of the feasibility of the new project, under different business parameters and assumptions.

The model incorporates the relevant projections for revenues and cost structures. It uses the traffic projections of passengers, aircraft movements and cargo as the main activity drivers. Traffic was segregated by international and domestic, while aircraft movements by weight category (fleet mix) and by type of flight (international or domestic).

As secondary drivers, many operating costs and revenues are dependent of physical characteristics of the facilities. From the revenue point of view, the sizes of the terminal building that will be allocated to commercial exploitation, for example, will have an impact on the level of expenditures per passenger. In a similar fashion, the areas incorporated into the airport will also have an impact on the expenses (i.e. maintenance, security, insurance, etc.).

The model basically incorporates the following main sheets:

- Control Panel
- Parameters
- Traffic
- Revenue build up
- Payroll
- Operating costs
- Capital expenditures (investments)
- Depreciation calculation
- Projected Income Statement

Control Panel page. Each scenario can be set as a combination of any growth, for each traffic driver.

★ **Fees and Charges:** presents the fees and charges applicable today at Dabolim. For the RNFC (Route Navigation Facilities Charges) it assumes that the new airport would not be a civil enclave and that applicable charges would be those existent at the international airports. The model allows to switch-on and switch-off each one of the individual revenue sources (i.e. RNFC).

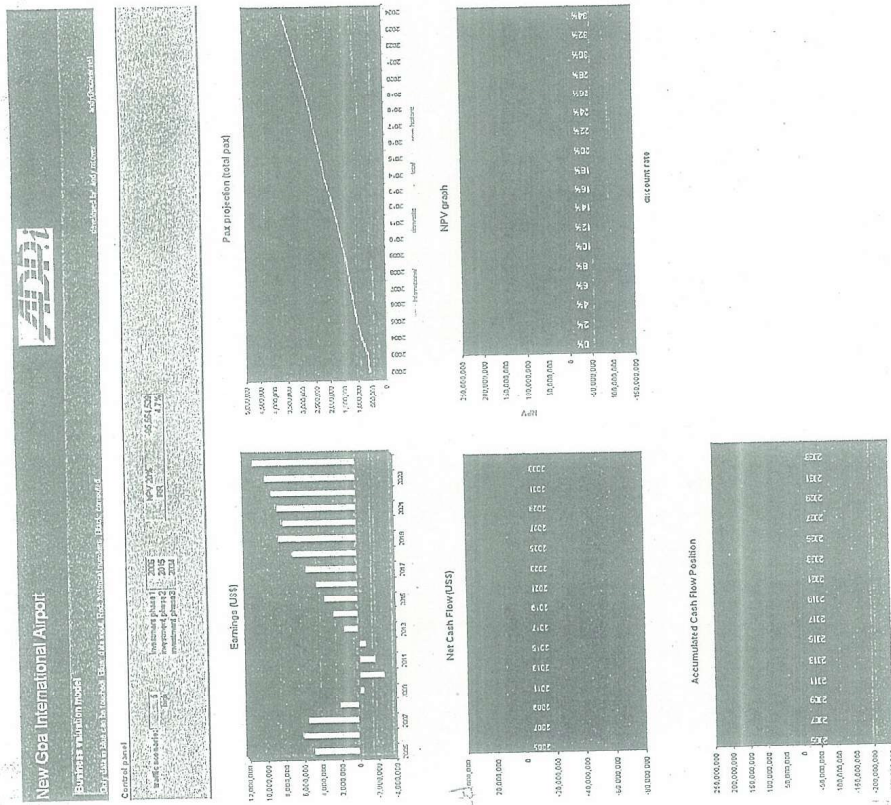
★ **Aeronautical use of spaces:** considers the renting that could be charged on a per square meter basis.

★ **Consumption patterns:** allows the estimation of the average consumption per passenger processed (includes greater and meters in the calculation).

★ **Capital Expenditures:** this allows the consideration of the different added areas, related to the capital expenditure program. It will affect revenues and expenditures that are related to physical areas.

★ **Yield per area:** Based on areas, it is intended for the calculation of revenues, based on rental fees and on royalties per sales.

The following three images are the printouts of the Parameters spreadsheet¹⁵.



10.2.1.2. Parameters

The parameters sheet presents a basic series of variables that defines the business. It is divided in the following:

- ★ **Global Parameters:** presenting global variables, such as year of opening, first year of analysis, taxation issues, etc.
- ★ **Traffic Patterns:** defines a medium (expected), low and high traffic growth, for each traffic driver, per year. It then allows the definition of 9 scenarios than can be articulated from the

¹⁵ For illustration purposes, it only depicts the figures here up to the year 2020, although the model does it until 2034.

10.2.1.3. Traffic

The traffic spreadsheet calculates the total traffic figures based on the chosen scenario (on Control Panel). It considers the estimations defined for the fleet mix composition along the horizon of the project. It also reproduces the figures from the first three years. Chosen scenario for the sake of this financial analysis considers the Base Line scenario as per presented in Chapter 5, with a slight homogeneous increase. This additional traffic places the considered scenario between base line and optimistic scenario of Traffic Forecasts.

The following is a sample printout of this sheet¹⁶:

New Goa International Airport Traffic forecast

USD	2002	2003	2004	2005	2006	2007	2008	2009	2010
total passengers	distribution by sex								
	international								
	domestic								
	total								
	323 385	324 564	323 385	323 385	323 385	323 385	323 385	323 385	323 385
average (tons)	international								
	domestic								
	total								
	131 631	131 631	131 631	131 631	131 631	131 631	131 631	131 631	131 631
	131 631	131 631	131 631	131 631	131 631	131 631	131 631	131 631	131 631
total loadings	international								
	domestic								
	total								
	131 631	131 631	131 631	131 631	131 631	131 631	131 631	131 631	131 631
	131 631	131 631	131 631	131 631	131 631	131 631	131 631	131 631	131 631
average (tons)	international								
	domestic								
	total								
	131 631	131 631	131 631	131 631	131 631	131 631	131 631	131 631	131 631
	131 631	131 631	131 631	131 631	131 631	131 631	131 631	131 631	131 631
total loadings	international								
	domestic								
	total								
	131 631	131 631	131 631	131 631	131 631	131 631	131 631	131 631	131 631
	131 631	131 631	131 631	131 631	131 631	131 631	131 631	131 631	131 631
average (tons)	international								
	domestic								
	total								

¹⁵ Again, only a few years are here presented, due to formatting reasons

10.2.1.4. Revenue build up

The information that was obtained from Dabolim was validated against a wide set of benchmarks, assuring consistency and validity for the relevant market. Aeronautical revenues, commercial revenues-aeronautical related and purely commercial ones were studied individually. Relevant commercial parameters were also collected at Goa, from restaurants, shops, other food retailers and hotels. That information on revenues was crosschecked with benchmarks in India as well as with other airports around the world. For service providers at the airport, such as catering, ground handling, fuelling, etc. revenues were estimated for each business, considering industry practices around the world, including typical royalty payments.

For calibration purposes, the model was used to replicate the current situation at Dabolim, in terms of revenue generation. Based on that starting point, and by considering factors such as the physical dimensions of the new airport, and relevant revenue indicators from other places, the same data of Dabolim was projected. The upside was reflected in the improvement of the revenue generation capabilities that a new operator could achieve at the new airport.

The spreadsheet for revenues build up looks as follows:

New Goa International Airport
Revenues build-up
USD

Aeronautical revenues:										
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Route Navigation Facilities Charges RNFC										
international	317,034	719,813	760,360	781,528	813,597	849,133	894,577	934,141	973,723	1,013,305
domestic	229,312	332,870	333,003	335,354	337,815	340,276	342,737	345,198	347,659	350,120
total	546,346	1,052,683	1,093,363	1,116,882	1,151,412	1,189,409	1,237,314	1,279,339	1,321,382	1,363,425
Landing fees TMLC										
international	250,167	529,375	551,852	574,761	598,200	621,639	645,078	668,517	691,956	715,395
domestic	137,655	215,940	216,631	217,322	218,013	218,704	219,395	220,086	220,777	221,468
total	387,822	745,315	768,483	792,083	816,213	840,343	864,473	888,603	912,733	936,863
Housing Charges - PHC										
international	35,270	511,446	533,231	555,016	576,801	598,586	620,371	642,156	663,941	685,726
domestic	33,339	102,440	111,782	121,124	130,466	139,808	149,150	158,492	167,834	177,176
total	68,609	613,886	645,013	676,140	697,267	718,394	739,521	760,648	781,775	802,902
Lighting										
international	0	0	0	0	0	0	0	0	0	0
domestic	0	0	0	0	0	0	0	0	0	0
total	0	0	0	0	0	0	0	0	0	0
Boarding bridges										
international	0	0	0	0	0	0	0	0	0	0
domestic	0	0	0	0	0	0	0	0	0	0
total	0	0	0	0	0	0	0	0	0	0
International operations										
revenues from boarding bridge usage	0	0	0	0	0	0	0	0	0	0
international	0	0	0	0	0	0	0	0	0	0
domestic	0	0	0	0	0	0	0	0	0	0
total	0	0	0	0	0	0	0	0	0	0
Fees on passengers										
international	757,813	945,571	1,015,612	1,087,548	1,161,485	1,235,422	1,309,359	1,383,296	1,457,233	1,531,170
domestic	2,032,422	2,440,810	2,563,401	2,686,992	2,810,583	2,934,174	3,057,765	3,181,356	3,304,947	3,428,538
total	2,790,235	3,386,381	3,579,013	3,774,540	3,972,068	4,169,597	4,367,124	4,564,651	4,762,180	4,959,708
total aeronautical	3,793,032	5,728,055	6,224,556	6,573,771	6,944,136	7,314,505	7,684,874	8,055,243	8,425,612	8,795,983
Aeronautical related revenues										
ground handling	3,988	173,518	188,513	204,357	220,201	236,045	251,889	267,733	283,577	299,421
catering	0	15,524	15,916	16,308	16,700	17,092	17,484	17,876	18,268	18,660
aircraft fuelling	0	903,115	982,800	1,062,485	1,142,170	1,221,855	1,301,540	1,381,225	1,460,910	1,540,595
VIP lounges	0	2,179	2,359	2,539	2,719	2,899	3,079	3,259	3,439	3,619
airline offices	23,868	726,482	769,240	812,000	854,758	897,516	940,274	983,032	1,025,790	1,068,548
hangars	109,500	175,200	175,200	175,200	175,200	175,200	175,200	175,200	175,200	175,200
total aeronautical related	377,356	2,393,335	2,575,597	2,759,097	2,941,657	3,124,217	3,306,777	3,489,337	3,671,897	3,854,457
Commercial revenues										
space rentals	8,000	7,560	7,560	7,560	7,560	7,560	7,560	7,560	7,560	7,560
duty free shop	135,464	126,464	126,464	126,464	126,464	126,464	126,464	126,464	126,464	126,464
food & beverage	0	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200	1,200
car parking	183,393	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000	184,000
shops	0	0	0	0	0	0	0	0	0	0
ground transportation	0	0	0	0	0	0	0	0	0	0
car rental	0	0	0	0	0	0	0	0	0	0
bank	0	0	0	0	0	0	0	0	0	0
cellular providers	0	0	0	0	0	0	0	0	0	0
total commercial	286,857	299,224	299,224	299,224	299,224	299,224	299,224	299,224	299,224	299,224
total revenues	4,079,889	6,027,279	6,524,153	6,912,868	7,285,860	7,643,729	8,014,098	8,384,567	8,754,936	9,125,307
Revenues from concessions										
duty free shop	0	0	0	0	0	0	0	0	0	0
food & beverage	0	0	588,635	619,274	649,913	680,552	711,191	741,830	772,469	803,108
car parking	91,174	91,174	91,174	91,174	91,174	91,174	91,174	91,174	91,174	91,174
shops	8,075	8,075	8,075	8,075	8,075	8,075	8,075	8,075	8,075	8,075
ground transportation	0	0	0	0	0	0	0	0	0	0
car rental	0	0	0	0	0	0	0	0	0	0
bank	0	0	0	0	0	0	0	0	0	0
cellular providers	0	0	0	0	0	0	0	0	0	0
total concessions	99,249	99,249	687,884	708,523	739,162	769,801	800,440	831,079	861,718	892,357
total revenues	4,179,138	6,126,528	7,212,037	7,621,391	8,025,022	8,413,530	8,814,538	9,215,645	9,616,654	10,017,665

10.2.1.5. Payroll

Payroll is calculated in the model by estimating the total headcount per salary level, and the total cost involved in each salary level category. The model escalates automatically the number of employees required per each type, based on preset parameters related to traffic or physical characteristics of the facilities.

This spreadsheet estimates then the total payroll costs, including social charges and salary benefits. Its results derive into the Operating Costs sheet.

10.2.1.6. Operating costs

The operating expenditures of the model were based on the current structure at Dabolim, but with the incorporation of all cost relevant to the airside, currently not present at the financial structure of Dabolim since they are being covered by the Navy. The information received at the headquarters of Airports Authority of India in New Delhi is essential for the modeling of the cost structure.

The model was once again calibrated for expenses generation, based on the current information received for Dabolim. Adjusting the information with the benchmarks received from other airports of similar size in India, the model replicated the cost structure of an airport cost structure involving landside and airside responsibilities. Full running costs of other airports of similar size (and comparable traffic patterns) were used as valid benchmarks. Officials from the AAI were able to point out relevant comparisons and usable indicators to assume the hypothetical financial structure of the New Airport of Goa.

The international operating expenditures based on similar airports in India was then adjusted to meet the international best practices and financial indicators as benchmarks. It was here where the upside becomes relevant, by achieving better results than those currently found, and according to indicators from comparable facilities.

This category includes personnel costs, maintenance, general expenses as well as those related with overhead expenses, like professional services and administration, marketing and corporate expenses.

Ultimately, this sheet is prepared in case some kind of compensation has to be paid for the government, depending on the concession structure. It allows the definition of a variable or fixed canon, an upfront payment, or a variable amount, or any combination of them.

The following figure is a printout of the Opex Sheet, for a sample of 6 years (plus the historic values for 2004).

New Goa International Airport

Operating costs

USD

	2004	2005	2006	2007	2008	2009	2010
Payroll							
based on headcount or historic values							
payroll management/administration	107,762	127,412	179,169	203,614	220,595	246,163	276,600
per shift	107,762	127,412	179,169	203,614	220,595	246,163	276,600
payroll vehicles	139,742	187,008	187,008	187,008	187,008	187,008	187,008
per shift	139,742	187,008	187,008	187,008	187,008	187,008	187,008
total shifts	0	0	0	0	0	0	0
bonuses	0	0	0	0	0	0	0
cost of overtime	269,24	269,04	269,04	269,04	269,04	269,04	269,04
based on previous year results	269,24	269,04	269,04	269,04	269,04	269,04	269,04
other staff related costs	725,231	90,117	1,054,350	1,105,559	1,249,022	1,253,272	1,350,212
% on costs	725,231	90,117	1,054,350	1,105,559	1,249,022	1,253,272	1,350,212
other expenses (incl. soc. sec.)	0	0	0	0	0	0	0
global (alternatively above calculation)	598,025	1,254,537	1,981,167	1,932,231	1,657,787	1,730,771	1,949,823
total personnel	598,025	1,254,537	1,981,167	1,932,231	1,657,787	1,730,771	1,949,823
Maintenance							
civil works budget	81,555	81,555	81,555	81,555	81,555	81,555	81,555
0.4	81,555	81,555	81,555	81,555	81,555	81,555	81,555
civil works outside	0	0	0	0	0	0	0
0.3	0	0	0	0	0	0	0
machinery & electrical	245,522	109,523	109,523	109,523	109,523	109,523	109,523
0.3	245,522	109,523	109,523	109,523	109,523	109,523	109,523
vehicles	5,335	5,335	5,335	5,335	5,335	5,335	5,335
0.4	5,335	5,335	5,335	5,335	5,335	5,335	5,335
cleaning	55,203	55,203	55,203	55,203	55,203	55,203	55,203
0.4	55,203	55,203	55,203	55,203	55,203	55,203	55,203
security	59,402	59,402	59,402	59,402	59,402	59,402	59,402
0.4	59,402	59,402	59,402	59,402	59,402	59,402	59,402
service contracts	0	0	0	0	0	0	0
0.4	0	0	0	0	0	0	0
environmental & others	0	0	0	0	0	0	0
1.0	0	0	0	0	0	0	0
total maintenance	489,751	635,755	635,755	635,755	635,755	635,755	635,755
General expenses							
telephony & communications	12,499	13,055	13,055	13,055	13,055	13,055	13,055
0.4	12,499	13,055	13,055	13,055	13,055	13,055	13,055
security	324,915	564,403	564,403	564,403	564,403	564,403	564,403
0.3	324,915	564,403	564,403	564,403	564,403	564,403	564,403
rentals	983,507	1,180,328	1,180,328	1,180,328	1,180,328	1,180,328	1,180,328
0.2	983,507	1,180,328	1,180,328	1,180,328	1,180,328	1,180,328	1,180,328
office supplies	50,100	57,103	57,103	57,103	57,103	57,103	57,103
0.4	50,100	57,103	57,103	57,103	57,103	57,103	57,103
insurance	6,250	10,000	12,800	12,800	15,945	16,932	18,952
0.2	6,250	10,000	12,800	12,800	15,945	16,932	18,952
travel	55,203	55,203	55,203	55,203	55,203	55,203	55,203
1.0	55,203	55,203	55,203	55,203	55,203	55,203	55,203
total general	1,502,457	1,719,534	1,719,534	1,719,534	1,719,534	1,719,534	1,719,534
Professional services & administration							
external consultants	0	0	0	0	0	0	0
0.4	0	0	0	0	0	0	0
legal	0	5,000	5,000	5,000	5,000	5,000	5,000
0.4	0	5,000	5,000	5,000	5,000	5,000	5,000
accounting	0	5,000	5,000	5,000	5,000	5,000	5,000
0.4	0	5,000	5,000	5,000	5,000	5,000	5,000
total professional	0	10,000	10,000	10,000	10,000	10,000	10,000
Marketing							
advertising	0	0	0	0	0	0	0
0.4	0	0	0	0	0	0	0
corporate	0	0	0	0	0	0	0
0.4	0	0	0	0	0	0	0
PR & associations	0	0	0	0	0	0	0
0.4	0	0	0	0	0	0	0
total marketing	0	0	0	0	0	0	0
Corporate							
board of directors salaries	0	0	0	0	0	0	0
0.4	0	0	0	0	0	0	0
board expenses	0	0	0	0	0	0	0
0.4	0	0	0	0	0	0	0
administrative	0	0	0	0	0	0	0
0.4	0	0	0	0	0	0	0
total corporate	0	0	0	0	0	0	0
Payments to Government							
fixed canon	0	0	0	0	0	0	0
0.4	0	0	0	0	0	0	0
variable canon	0	0	0	0	0	0	0
0.4	0	0	0	0	0	0	0
upfront amount	0	0	0	0	0	0	0
0.4	0	0	0	0	0	0	0
total payments to gov	0	0	0	0	0	0	0
Total Opex	0	2,955,072	3,893,323	3,893,323	3,893,323	3,893,323	3,893,323

10.2.1.7. Capital expenditures (investments)

The capital expenditure sheet considers the diverse streams of investment cash flow, depending on the commencement day of each investment phase. Based on the year set in the Control Panel, this worksheet allocates the investments in the proper year. Investments for the first phase are not considered into books until the phase is not complete. This prevents from these assets to generate running costs or associated revenues.

However, for the second phase, assuming the works will be opened gradually, associated costs and revenues will become relevant on a yearly basis.

This sheet also considers investments in equipment. The following figure depicts the layout of the capex sheet from the model (for a sample of years only).

10.2.1.11. Indicators

The model also proves its consistency by the use of a wide set of key performance indicators and benchmarks of other airports.

The following are the indicators used to compare the results with a vast set of other airports¹⁷.

10.2.1.8. Depreciation calculation

The depreciation calculation spreadsheet works on a very straightforward manner. It calculates depreciation costs based on a straight line method, depending on the investments carried out every year.

10.2.1.9. Projected Income Statement

The model then summarizes all the revenues and operating costs in a Profit and Loss statement, based on the previously described spreadsheets.

10.2.1.10. Projected Cash Flow

The Cash Flow is projected by adjusting the projected Net Income, based on the non cash expenses (i.e. depreciation) and the changes in working capital (changes in accounts payables, receivables, etc.).

It includes the analysis of the free cash flow based on the cash flow from operating activities, cash flow from financing activities and the cash flow from investing activities. The bottom line figure represents the free cash flow that defines in great measure, along other indicators, the feasibility of the project.

The Cash Flow spreadsheet also calculates the Net Present Value and the Internal Rate of Return for the project, based on the forecasted cash flow.

¹⁷ Only a few airports are shown here.

New Goa International Airport Investment Program

Investment Program

[illegible]

New Goa International Airport

1000

	2010	2009	2008	2007	2006	2005	2004	2003	2002	2001	2000	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990	1989	1988	1987	1986	1985	1984	1983	1982	1981	1980	1979	1978	1977	1976	1975	1974	1973	1972	1971	1970	1969	1968	1967	1966	1965	1964	1963	1962	1961	1960	1959	1958	1957	1956	1955	1954	1953	1952	1951	1950	1949	1948	1947	1946	1945	1944	1943	1942	1941	1940	1939	1938	1937	1936	1935	1934	1933	1932	1931	1930	1929	1928	1927	1926	1925	1924	1923	1922	1921	1920	1919	1918	1917	1916	1915	1914	1913	1912	1911	1910	1909	1908	1907	1906	1905	1904	1903	1902	1901	1900	1899	1898	1897	1896	1895	1894	1893	1892	1891	1890	1889	1888	1887	1886	1885	1884	1883	1882	1881	1880	1879	1878	1877	1876	1875	1874	1873	1872	1871	1870	1869	1868	1867	1866	1865	1864	1863	1862	1861	1860	1859	1858	1857	1856	1855	1854	1853	1852	1851	1850	1849	1848	1847	1846	1845	1844	1843	1842	1841	1840	1839	1838	1837	1836	1835	1834	1833	1832	1831	1830	1829	1828	1827	1826	1825	1824	1823	1822	1821	1820	1819	1818	1817	1816	1815	1814	1813	1812	1811	1810	1809	1808	1807	1806	1805	1804	1803	1802	1801	1800	1799	1798	1797	1796	1795	1794	1793	1792	1791	1790	1789	1788	1787	1786	1785	1784	1783	1782	1781	1780	1779	1778	1777	1776	1775	1774	1773	1772	1771	1770	1769	1768	1767	1766	1765	1764	1763	1762	1761	1760	1759	1758	1757	1756	1755	1754	1753	1752	1751	1750	1749	1748	1747	1746	1745	1744	1743	1742	1741	1740	1739	1738	1737	1736	1735	1734	1733	1732	1731	1730	1729	1728	1727	1726	1725	1724	1723	1722	1721	1720	1719	1718	1717	1716	1715	1714	1713	1712	1711	1710	1709	1708	1707	1706	1705	1704	1703	1702	1701	1700	1699	1698	1697	1696	1695	1694	1693	1692	1691	1690	1689	1688	1687	1686	1685	1684	1683	1682	1681	1680	1679	1678	1677	1676	1675	1674	1673	1672	1671	1670	1669	1668	1667	1666	1665	1664	1663	1662	1661	1660	1659	1658	1657	1656	1655	1654	1653	1652	1651	1650	1649	1648	1647	1646	1645	1644	1643	1642	1641	1640	1639	1638	1637	1636	1635	1634	1633	1632	1631	1630	1629	1628	1627	1626	1625	1624	1623	1622	1621	1620	1619	1618	1617	1616	1615	1614	1613	1612	1611	1610	1609	1608	1607	1606	1605	1604	1603	1602	1601	1600	1599	1598	1597	1596	1595	1594	1593	1592	1591	1590	1589	1588	1587	1586	1585	1584	1583	1582	1581	1580	1579	1578	1577	1576	1575	1574	1573	1572	1571	1570	1569	1568	1567	1566	1565	1564	1563	1562	1561	1560	1559	1558	1557	1556	1555	1554	1553	1552	1551	1550	1549	1548	1547	1546	1545	1544	1543	1542	1541	1540	1539	1538	1537	1536	1535	1534	1533	1532	1531	1530	1529	1528	1527	1526	1525	1524	1523	1522	1521	1520	1519	1518	1517	1516	1515	1514	1513	1512	1511	1510	1509	1508	1507	1506	1505	1504	1503	1502	1501	1500	1499	1498	1497	1496	1495	1494	1493	1492	1491	1490	1489	1488	1487	1486	1485	1484	1483	1482	1481	1480	1479	1478	1477	1476	1475	1474	1473	1472	1471	1470	1469	1468	1467	1466	1465	1464	1463	1462	1461	1460	1459	1458	1457	1456	1455	1454	1453	1452	1451	1450	1449	1448	1447	1446	1445	1444	1443	1442	1441	1440	1439	1438	1437	1436	1435	1434	1433	1432	1431	1430	1429	1428	1427	1426	1425	1424	1423	1422	1421	1420	1419	1418	1417	1416	1415	1414	1413	1412	1411	1410	1409	1408	1407	1406	1405	1404	1403	1402	1401	1400	1399	1398	1397	1396	1395	1394	1393	1392	1391	1390	1389	1388	1387	1386	1385	1384	1383	1382	1381	1380	1379	1378	1377	1376	1375	1374	1373	1372	1371	1370	1369	1368	1367	1366	1365	1364	1363	1362	1361	1360	1359	1358	1357	1356	1355	1354	1353	1352	1351	1350	1349	1348	1347	1346	1345	1344	1343	1342	1341	1340	1339	1338	1337	1336	1335	1334	1333	1332	1331	1330	1329	1328	1327	1326	1325	1324	1323	1322	1321	1320	1319	1318	1317	1316	1315	1314	1313	1312	1311	1310	1309	1308	1307	1306	1305	1304	1303	1302	1301	1300	1299	1298	1297	1296	1295	1294	1293	1292	1291	1290	1289	1288	1287	1286	1285	1284	1283	1282	1281	1280	1279	1278	1277	1276	1275	1274	1273	1272	1271	1270	1269	1268	1267	1266	1265	1264	1263	1262	1261	1260	1259	1258	1257	1256	1255	1254	1253	1252	1251	1250	1249	1248	1247	1246	1245	1244	1243	1242	1241	1240	1239	1238	1237	1236	1235	1234	1233	1232	1231	1230	1229	1228	1227	1226	1225	1224	1223	1222	1221	1220	1219	1218	1217	1216	1215	1214	1213	1212	1211	1210	1209	1208	1207	1206	1205	1204	1203	1202	1201	1200	1199	1198	1197	1196	1195	1194	1193	1192	1191	1190	1189	1188	1187	1186	1185	1184	1183	1182	1181	1180	1179	1178	1177	1176	1175	1174	1173	1172	1171	1170	1169	1168	1167	1166	1165	1164	1163	1162	1161	1160	1159	1158	1157	1156	1155	1154	1153	1152	1151	1150	1149	1148	1147	1146	1145	1144	1143	1142	1141	1140	1139	1138	1137	1136	1135	1134	1133	1132	1131	1130	1129	1128	1127	1126	1125	1124	1123	1122	1121	1120	1119	1118	1117	1116	1115	1114	1113	1112	1111	1110	1109	1108	1107	1106	1105	1104	1103	1102	1101	1100	1099	1098	1097	1096	1095	1094	1093	1092	1091	1090	1089	1088	1087	1086	1085	1084	1083	1082	1081	1080	1079	1078	1077	1076	1075	1074	1073	1072	1071	1070	1069	1068	1067	1066	1065	1064	1063	1062	1061	1060	1059	1058	1057	1056	1055	1054	1053	1052	1051	1050	1049	1048	1047	1046	1045	1044	1043	1042	1041	1040	1039	1038	1037	1036	1035	1034	1033	1032	1031	1030	1029	1028	1027	1026	1025	1024	1023	1022	1021	1020	1019	1018	1017	1016	1015	1014	1013	1012	1011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10.2.2. Results

The financial output of the model shows that the airport could not generate enough cash flow to afford the projected capital investment program.

The following is the full projected Income Statement, assuming a moderate expected traffic growth.

New Goa International Airport Projected Income Statement

USD	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Revenues														
Aeronautical revenues	3,793,062	5,798,065	6,224,965	6,673,772	7,117,874	7,698,570	8,190,130	8,779,458	9,503,511	10,222,826	10,984,361	11,552,895	12,092,008	12,650,731
Route Navigation Facilities Charges RNFC	546,336	1,052,464	1,113,366	1,176,882	1,236,922	1,302,591	1,380,851	1,471,932	1,580,055	1,694,022	1,800,253	1,884,732	1,960,467	2,037,959
Landing fees TNL	367,823	745,315	787,493	831,390	873,123	918,825	973,547	1,037,547	1,113,580	1,186,612	1,268,524	1,328,154	1,381,334	1,435,704
Housing Charges - P&H	88,669	613,686	645,063	677,270	708,723	743,380	785,855	836,220	897,346	955,291	1,021,282	1,069,679	1,111,799	1,154,693
Lighting	0	0	0	0	0	0	0	0	0	0	0	0	0	0
boarding bridge	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fees on passengers	2,790,234	3,386,361	3,679,013	3,988,230	4,298,105	4,633,772	5,009,878	5,433,666	5,912,530	6,396,900	6,894,302	7,270,130	7,638,407	8,022,375
Aeronautical related revenues	372,366	2,393,335	2,575,597	2,769,037	2,941,867	3,138,042	3,340,243	3,559,418	3,799,001	4,050,339	4,316,392	4,595,053	4,886,614	5,189,804
ground handling	0	392,306	424,570	458,827	489,041	521,530	557,669	597,663	642,246	686,921	734,208	787,623	834,313	886,514
catering	30,968	173,518	188,513	204,357	220,266	237,434	256,706	278,431	302,958	327,777	353,264	373,521	391,392	411,066
aircraft handling	0	15,524	15,916	16,324	16,751	17,240	17,790	18,395	19,055	19,769	20,539	21,365	22,248	23,189
VIP lounges	0	908,115	982,800	1,062,100	1,132,040	1,207,245	1,286,950	1,369,680	1,456,880	1,548,095	1,639,955	1,736,905	1,832,695	1,931,280
counters	0	2,179	2,359	2,549	2,717	2,897	3,098	3,320	3,568	3,815	4,079	4,265	4,446	4,635
airline offices	231,868	726,492	786,240	849,680	905,632	965,786	1,032,720	1,106,820	1,189,344	1,272,075	1,359,644	1,421,524	1,482,156	1,545,024
hangars	129,500	175,200	175,200	175,200	175,200	175,200	175,200	175,200	175,200	175,200	175,200	175,200	175,200	175,200
Commercial revenues	537,472	638,232	1,281,698	1,386,119	1,579,303	1,701,490	2,090,161	2,253,034	2,426,544	2,609,555	2,799,004	2,993,363	3,193,041	3,397,320
rental fee shop	411,759	411,319	441,226	471,986	503,505	537,146	578,078	617,201	659,518	706,509	756,172	808,473	864,313	922,083
food & beverage	126,464	126,464	126,464	126,464	126,464	126,464	126,464	126,464	126,464	126,464	126,464	126,464	126,464	126,464
car parking	91,174	92,374	99,306	118,856	138,333	157,640	176,850	195,965	214,984	233,909	252,736	271,465	290,094	308,623
shops	8,075	8,075	24,383	26,318	28,276	30,278	32,295	34,327	36,374	38,434	40,504	42,584	44,674	46,774
ground transportation	0	0	0	0	0	0	0	0	0	0	0	0	0	0
cellular providers	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operating costs	2,943,244	3,850,826	4,065,254	4,743,445	5,017,544	5,211,066	5,542,807	5,854,361	6,202,521	6,592,133	6,998,330	7,420,784	7,858,813	8,315,930
Payroll	988,025	1,264,537	1,461,167	1,582,521	1,667,797	1,728,474	1,849,828	1,995,780	2,117,134	2,263,037	2,384,441	2,505,795	2,691,070	2,712,424
Maintenance	469,751	606,755	606,755	1,158,835	1,344,222	1,474,472	1,680,145	1,680,145	1,680,145	1,680,145	1,680,145	1,680,145	1,680,145	1,680,145
General expenses	1,505,467	1,978,534	1,997,333	1,992,089	1,995,525	1,998,120	2,002,834	2,008,435	2,013,242	2,018,901	2,023,744	2,028,436	2,031,861	2,036,596
Professional services & administration	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Payments to Government	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operating margin	1,359,646	4,978,906	6,017,005	6,085,483	6,621,300	7,227,036	8,377,728	9,307,549	10,348,534	12,710,587	13,901,427	14,833,337	15,843,850	17,136,837
Marketing	12,828	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500	40,500
Corporate	0	0	0	0	0	0	0	0	0	0	0	0	0	0
EBITD	1,846,818	4,936,306	5,974,505	6,042,983	6,578,800	7,164,536	8,335,228	9,255,049	10,306,034	12,668,087	13,858,927	14,790,837	15,801,350	17,094,337
Depreciation	833,764	0	0	557,928	4,463,423	7,810,990	11,158,558	11,158,558	11,158,558	11,158,558	11,158,558	11,158,558	11,158,558	11,158,558
EBIT	1,013,054	4,936,306	5,974,505	5,485,055	2,115,377	-636,454	-2,823,330	-1,893,508	-852,523	1,509,529	2,700,370	3,632,279	4,442,365	5,626,465
Financing expenses	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pre-tax income	1,013,054	4,936,306	5,974,505	5,485,055	2,115,377	-636,454	-2,823,330	-1,893,508	-852,523	1,509,529	2,700,370	3,632,279	4,442,365	5,626,465
Income tax	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Income	1,013,054	4,936,306	5,974,505	5,485,055	2,115,377	-636,454	-2,823,330	-1,893,508	-852,523	1,509,529	2,700,370	3,632,279	4,442,365	5,626,465