APPENDIX B

Preliminary Design of Access Road and Intersection

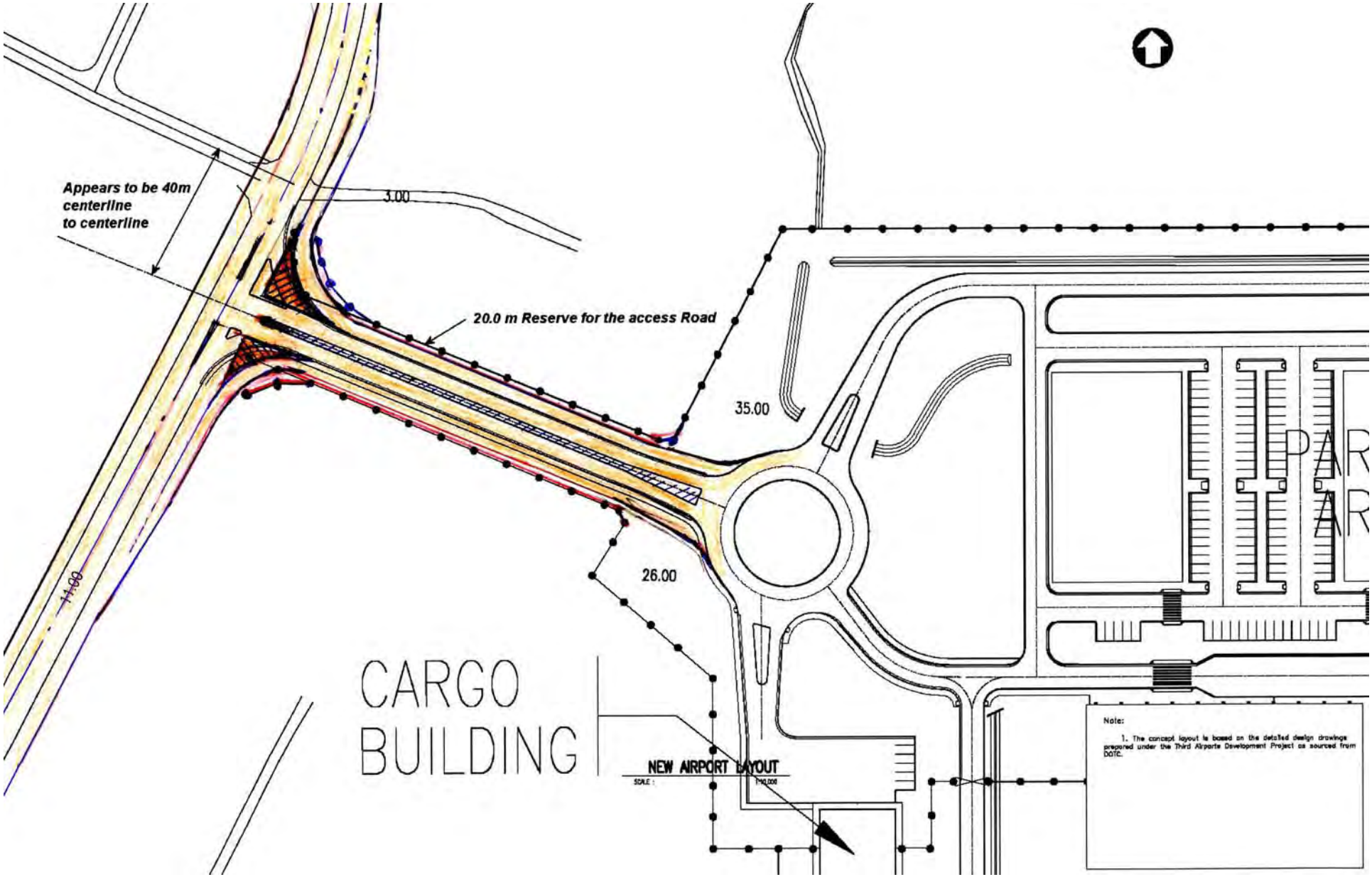

Figure 1: Access to Puerto Princesa Airport

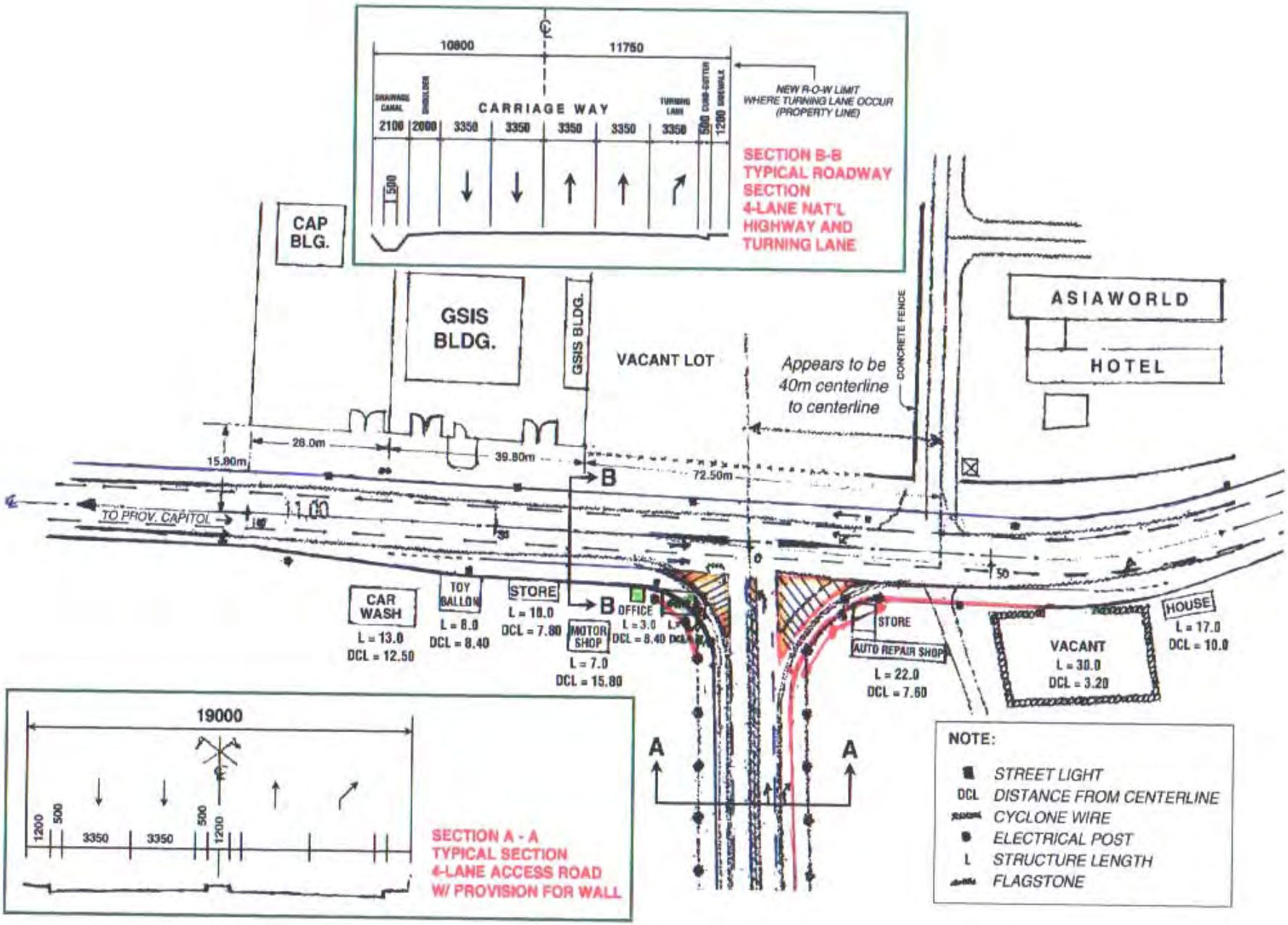

Figure 2: Puerto Princesa Airport Access Road Intersection with Highway

APPENDIX C

Copy of Environmental Compliance Certificate (ECC)

Republic of the Philippines
Department of Environment and Natural Resources
Visayas Avenue, Diliman, Quezon City 1110
Tel Nos.: (632) 929-66-26 to 29 • (632) 929-65-52
929-66-20 • 929-66-33 to 35
929-70-41 to 43

ENVIRONMENTAL COMPLIANCE CERTIFICATE

0210-757-215

The Department of Environment and Natural Resources (DENR), through the Environmental Management Bureau (EMB) hereby grants this Environmental Compliance Certificate (ECC) to the proposed **Puerto Princesa Airport Expansion, Improvement and Rehabilitation Project** of the **Department of Transportation and Communications (DOTC)** to be located in Puerto Princesa City, Palawan, after complying with the Environmental Impact Assessment (EIA) requirement as prescribed in the promulgated guidelines implementing Section 3 (b) of P.D. 1121 and 1586.

This Certificate is being issued subject to the following conditions:

1. This Certificate is valid only for the corollary improvements of the airport that cover parts of Puerto Princesa City with the following components:
   a. Upgrading of the runway and its strip,
   b. Construction of new apron and connecting taxiways,
   c. Removal of various obstacles,
   d. Upgrading of airport facilities (e.g. navigational aids, airfield lighting, etc.),
   e. Construction of a new terminal building (e.g. passenger terminal building, cargo facilities, etc.) and support structures (e.g. ATC control tower, administrative and operations, etc.)
   f. Development of new access roads and drainage canals, and
   g. Improvement and upgrading of utility systems (e.g. water, sewerage, power and communication).

2. The proponent shall secure PCSD clearance/endorsement prior to implementation of the project.

3. A Memorandum of Agreement (MOA) between the proponent and the affected residents/landowners on the resettlement/relocation/compensation scheme shall be executed and a copy of the MOA shall be submitted to EMB for approval prior to relocation activities;

4. All commitments, mitigating measures and monitoring requirements, especially those contained in the Environmental Impact Statement (EIS) particularly in the Environmental Management and Monitoring Plans, including all its modifications and additional information as approved by the EMB shall be instituted to minimize any adverse impact of the project to the environment throughout the project implementation including the following;

   4.1 Noise levels, effluents and emissions generated during all project phases shall conform with the prescribed DENR standards;

   4.2 Concrete livelihood projects other than the temporary employment that will be provided by the proponent, in coordination with the LGU, shall be provided to relocated/resettled residents/landowners;

   4.3 Installation of sewage treatment facilities, storm and wastewater drainage and fuel storage facilities.

   4.4 Formulation and implementation of a detailed Waste Management Program for all solid, liquid and hazardous wastes, including spoiled and confiscated items to

be generated by the airport project shall be done by the proponent in coordination with the concerned Local Government Units and the Air Transportation Office (ATO);

4.5 The comprehensive Road Network and Traffic Management Program shall be submitted and approved by the EMB prior to any construction activity. The program to be developed in coordination with relevant government agencies shall include an in-depth study of the primary and secondary impact of the traffic generated by the construction and operation of the airport on the existing infrastructure and socio-economic status of the surrounding municipalities, specific alternative routing plan, and traffic schemes (i.e.-posting of road signs, warning lights);

4.6 Construction of airport facilities in accordance with the standards and recommended practices set by the International Civil Aviation Organization (ICAO) under the supervision of the DOTC;

4.7 Construction of adequate drainage facilities and shore protection measures to minimize siltation/sedimentation of water bodies;

4.8 Construction spoils, stripped vegetation, discarded construction materials and debris shall be collected, stockpiled and stored at a pre-designated site before disposal;

4.9 Proper handling, collection/storage and disposal of oil/lubricants, worn-out tires and other spare parts used/discarded by the heavy equipment shall be strictly effected;

4.10 Implementation of a site-specific Contingency Response Plan/Risk Management and Aircraft Emergencies Communication Program to address accidents i.e. explosion/leaks particularly during the operation of the fuel supply system (fuel tank farm and fuel hydrant), and other related aviation facilities;

4.11 The proponent shall ensure that its contractors and subcontractors properly comply with the relevant conditions of this Certificate;

4.12 Implementation of a continuing Information, Education and Communication (IEC) Program including environmental risks of project operations shall be undertaken by the proponent;

4.13 Quarterly submission of monitoring reports to the EMB Central and Regional Offices shall be undertaken on the compliance with the ECC conditions, the EMP and the DENR effluent standards;

An Environmental Unit (EU) shall be established by the proponent to competently handle the environment-related aspects of the project. In addition to the monitoring requirements as specified in the Environmental Monitoring Plan, the EU shall also a) Monitor actual project impacts vis-a-vis the predicted impacts and management measures in the EIS, b.) Recommend revisions to the EMP as necessary especially prior to implementation of phases 2 and 3 and submit the updated/revised EMP to EMB, c.) Ensure that the appropriate post-assessment permits are in place, d.) Ensure that monitoring and reporting are carried out as required, and e.) Submit to EMB Environmental Compliance Audit reports once every two (2) years after the start of operation; f.) Conduct air quality and aircraft noise impact measurements and model verification studies yearly for the first five years. The initial results shall be submitted to EMB six (6) months after the start of commercial operations and yearly thereafter. Further studies shall be undertaken every five years thereafter during the operational life of the project. The results of the study shall be used by the MMT for action planning and intervention and g.) Comply with the conditions of the ECC

5 The proponent shall set up the following:

5.1 A readily available and replenishable Environmental Guarantee Fund (EGF) to cover the following: expenses for further environmental assessment; compensation/indemnification for whatever damages to life and property that may be caused by the project; rehabilitation or restoration of areas affected by the project's implementation and decommissioning;

5.2 A Multipartite Monitoring Team (MMT) composed of representatives from the proponent, DENR, local environmental NGOs, the surrounding stakeholder-communities (women, youth, indigenous people, senior citizens and other basic sectors) and the LGUs (Barangay, Municipal and Provincial) shall be organized. The MMT shall primarily oversee the compliance of the proponent with the EMP and the ECC conditions; and

5.3 An Environmental Monitoring Fund (EMF) to cover all costs attendant to the operation of the MMT.

The amount and mechanics of the EGF, EMF and the establishment of the MMT shall be determined by the DENR and the proponent in consultation with DENR-Region IV-B and the stakeholder communities, through a MOA which shall be implemented within sixty (60) upon receipt of this Certificate;

6. This Certificate shall be considered automatically revoked if the project is not commenced within five (5) years from the date of its issuance or if the project operation is suspended or stopped for a period of more than three (3) years such that significant changes in land and resource uses have occurred in the project area and its vicinities;

7. The transfer of ownership of this project carries with it the responsibility of complying with all the conditions in this ECC for which written notification to the EMB shall be made within fifteen (15) days from such transfer; and

8. A Decommissioning Plan shall be submitted to the EMB for approval at least one (1) year prior to the project's abandonment. The plan shall include among others, an assessment of possible soil and groundwater contamination and recommendation of proposed alternative land use for the project site.

Non-compliance with any of the conditions shall be sufficient cause for the suspension or cancellation of this Certificate and/or imposition of a fine in an amount not to exceed Fifty Thousand Pesos (PhP 50,000.00) for every violation thereof, at the discretion of the EMB in accordance with Section 9 of P.D. 1586.

Given this

Elisea G. Gozun

ELISEA G. GOZUN
Secretary

CONFORME:

DELIA P. CAPICONIO 2/12/05

Signature over Printed Name/Date

cc: EMB Region IV-B

APPENDIX D

Cost Estimates

Appendix D
Puerto Princesa Airport Base Cost Estimate in PhP'000

	Units	Quantity	Unit Cost	Component Cost, PhP
I. Base Cost				
A. Civil Works				
1. General				
1.1 Mobilization	LS			
1.2 Temporary Facilities	SM		Included in External Works below	
1.3 Engineer's Facilities	SM			
2. External Works				
2.1 General				
General requirements	LS	1	73,875,052	73,875,052
Demolition of structures				
Demolition of Air Defense Alert Center	m^2	300	339	101,810
Demolition of Permanent parts of structural Hangar	m^2	10,000	255	2,545,261
Dismantle and Relocation of Structural Steel Hangar	m^2	2,400	4,242	10,181,042
Removal of facilities				
Removal of Windcones	no	2	9,922	19,845
Removal of Water Tank	no	2	12,200	24,401
Removal of Airfield Ground Lighting	no	114	522	59,520
Removal of PAPI 09 & PAPI 27	no	2	3,446	6,892
Removal of Neteo Sensor	no	2	5,001	10,001
Removal of ATO boundary fence	lm	5,902	91	539,256
Removal of VOR	ls	1	102,243	102,243
Removal of Simple Approach Lighting	ls	1	59,213	59,213
Removal of pavements				
Removal of Runway Overrun Pavement	m^2	10,621	39	415,896
Removal of Access Road Pavement	m^2	3,146	39	123,191
Removal of Existing Concrete Pavement	m^2	70,572	131	9,211,493
Demolition of drainage structures				
Demolition of Riprap Channel & Structure	lm	738	114	83,806
Demolition of Concrete Lined Drainage Channel	lm	3,865	77	297,646
Clearing and Grubbing				
Clearing	LS	1	483,966	483,966
Grubbing	ha	127	203,588	25,855,703
Sub-total				***123,996,234***
2.2 Earthworks				
Excavation of Top Soil (For Re-use)	m^3	34,628	128	4,429,463
Excavation of Top Soil (For Spoil)	m^3	5,194	191	989,811
Unclassified excavation	m^3	2,164	192	415,214
Muck excavation	m^3	866	192	166,163
Drainage excavation (Swale)	m^3	5,250	163	856,578
Fill from Excavation	m^3	173,138	292	50,621,855
Fill from Borrow Pits (category A)	m^3	55,218	453	25,009,660
Subgrade Preparation for Airside Pavements	m^3	165,035	40	6,677,830
Subgrade Preparation for Landside Pavements	m^3	40,307	38	1,525,724
Rock Excavation	m^3	432	898	387,944
Structural excavation and Backfill	LS	1	1,408,547	1,408,547
Trenching	LS	1	6,385,555	6,385,555
Sub-total				***98,874,344***

	Units	Quantity	Unit Cost	Component Cost, PhP
2.3 New Pavements				
Runway				
Turning eave at runway end 27, asphalt concrete	m^2	2,700	2,121	5,726,836
Blast pads at both runway ends, asphalt concrete	m^2	7,200	863	6,210,436
Runway shoulders, asphalt concrete	m^2	35,000	863	30,189,618
Taxiway				
Taxiway to military apron	m^2	6,700	2,121	14,211,038
Apron maneuvering area and taxiways, AC	m^2	37,000	2,121	78,478,867
Taxiway shoulders	m^2	20,000	863	17,251,211
Apron				
Apron, concrete	m^2	20,100	2,687	54,001,945
Military apron	m^2	11,700	2,687	31,433,968
Airside roads				
R&FF roads	m^2	6,000	1,046	6,278,309
Service roads	m^2	9,700	1,046	10,149,934
Maintenance roads, gravel	m^2	4,800	184	882,357
Landside pavements				
Landside roads, asphalt concrete	m^2	15,000	1,216	18,241,034
Parking	m^2	18,200	1,216	22,132,455
Walkways, concrete	m^2	6,500	792	5,147,082
Curb and Gutter	lm	4,700	650	3,057,141
Concrete Barrier Curb	lm	1,700	396	673,080
Sub-total				***304,065,311***
2.4 Rehabilitation of Pavements				
Runway overlay, asphalt concrete	m^2	122,000	1,230	150,085,531
Grooving	m^2	110,000	622	68,439,229
Cracking and seating	m^2	122,000	141	17,251,211
Sub-total				***235,775,970***
2.5 Drainage				
Lined and rip rap channels	LS	1	57,472,726	57,472,726
2-300mm dia. RCPC with Granular bedding	m	45	1,308	58,855
450mm dia. RCPC, Class I with Granular bedding	m	230	1,337	307,415
610mm dia. RCPC, Class I with Granular bedding	m	877	2,096	1,838,412
760mm dia. RCPC, Class I with Granular bedding	m	469	2,771	1,299,633
910mm dia. RCPC, Class I with Granular bedding	m	235	4,123	968,981
1070mm dia. RCPC, Class I with Granular bedding	m	210	4,814	1,010,900
1220mm dia. RCPC, Class I with Granular bedding	m	45	5,948	267,664
5120mm dia. RCPC, Class I with Granular bedding	m	15	10,214	153,205
Excavation, backfill and Class B bedding	LS	1	985,900	985,900
Box Drain & Line Gutter	lm	240	25,985	6,236,325
Box culvert	LS	1	35,719,053	35,719,053
Drainage Outlet sructure	no	2	219,934	439,868
Sewage Outlet structure	no	1	238,778	238,778
Drop structure	no	2	205,904	411,808
Sump pit	no	1	34,785	34,785
Manhole, Inlets and Catch Basins	LS	1	1,672,074	1,672,074
Sub-total				***109,116,380***

	Units	Quantity	Unit Cost	Component Cost, PhP
2.6 Civil Works for Utilities				
Cable ducts	LS	1	8,883,842	8,883,842
Manholes	no	23	20,044	461,003
Bases of airfield ground lighting	LS	1	4,307,451	4,307,451
External utilites mechanical	LS	1	62,224,638	62,224,638
External utilites eletrical	LS	1	15,056,053	15,056,053
Power supply	LS	1	11,685,461	11,685,461
Streetlighting	LS	1	7,557,970	7,557,970
Communication lines	LS	1	7,300,232	7,300,232
Sub-total				***117,476,650***
2.7 Miscellaneous				
Airfield perimeter fence and gates	lm	8,376	2,097	17,560,656
Grassing and landscaping				
Topsoiling	LS	1	3,367,575	3,367,575
Mulching	m1	850	94	79,882
Sodding Airside Areas	m1	27,253	80	2,169,911
Grass Seeding Airside Areas	m1	1,065,849	64	68,169,389
Lanscaping landside	LS	1	5,015,978	5,015,978
Marking				
Runway marking	m^2	9,096	950	8,643,298
Taxiway marking	m^2	1,661	565	938,761
Apron marking	m^2	702	565	396,755
Road markings	m^2	490	950	465,613
Temporary markings	LS	1	1,639,906	1,639,906
Signage	no	47	7,706	362,168
Sub-total				***108,809,891***
2.8 Intermodal Transport Component				
Access road improvement, including channelization, etc.	LS	1	20,000,000	20,000,000
Sub-total				***20,000,000***
TOTAL for External Works				***1,118,114,781***
3. Buildings				
3.1 Building Structures				
Control Tower	m^2	276	66,979	18,486,147
Admin & Operation Bldg	m^2	713	44,643	31,830,565
Maintenance Building	m^2	726	53,398	38,767,279
Cargo Terminal Bldg	m^2	466	55,052	25,654,272
Rescue & Fire Fighting Bldg	m^2	466	41,494	19,336,009
Passenger Terminal Bldg	m^2	9,492	52,885	501,986,262
Pump room	m^2	155	158,503	24,568,007
Sub-Station	m^2	52	29,736	1,546,257
Chiller Pump house incl chiller pumps	m^2	136	265,907	36,163,318
Sub-total				***698,338,117***

	Units	Quantity	Unit Cost	Component Cost, PhP
3.2 Terminal Special Systems				
Security equipment				
X-ray unit for hold baggage screening 1000x1000	nr	2	4,915,534	9,831,069
X-ray unit for cabin baggage screening 700x700	nr	2	4,551,421	9,102,842
Metal detectors	LS	1	11,489,023	11,489,023
Access control system	LS	1	899,269	899,269
Information equipment				
Master clock	LS	1	410,600	410,600
Signages	-	-	-	-
Public Address Sustem	LS	1	2,336,040	2,336,040
Flight Information Display System	LS	1	8,865,850	8,865,850
Sub-total				***42,934,693***
3.3 Terminal Equipment				
Generators	LS	1	19,329,387	19,329,387
Baggage handling	LS	1	36,855,373	36,855,373
Furniture	-	-	-	-
Sub-total				***56,184,760***
TOTAL for Buildings				***797,457,570***
4. Navigational & Traffic Control Equipment				
4.1 Navigational Aids				
DVOR Equipment and antenna	LS	1	24,745,589	24,745,589
DME Equipment and antenna	LS	1	8,130,693	8,130,693
Miscellaneous for DVOR/DME				
Shelter	LS	2	3,535,084	7,070,168
Miscellaneous for DVOR/DME				
Spareparts/Test Equipment	LS	1	3,535,084	3,535,084
Installation	LS	1	5,656,135	5,656,135
Training/Manuals etc.	LS	1	3,535,084	3,535,084
Remote controls	LS	1	1,060,525	1,060,525
Power supply				
Uninteruptable Power Supply	LS	1	1,414,034	1,414,034
Localizer equipment and antenna	LS	1	17,675,421	17,675,421
Glide Path equipment and antenna	LS	1	9,898,236	9,898,236
DME Equipment and antenna\Shelters	LS	1	14,140,336	14,140,336
Shelters	no	3	3,535,084	10,605,252
Remote Control System	LS	1	1,414,034	1,414,034
Power Supply System				
Uninteruptable Power Supply	LS	1	1,414,034	1,414,034
Miscellaneous for ILS System				
Spareparts/Test Equipmrnt	LS	1	3,535,084	3,535,084
Installation	LS	1	4,242,101	4,242,101
Training/Manuals etc.	LS	1	3,535,084	3,535,084
Removal of existing equipment VOR/DME	LS	1	353,508	353,508
Flight check	LS	1	1,767,542	1,767,542
Sub-total				***123,727,944***

	Units	Quantity	Unit Cost	Component Cost, PhP
4.2 ATC & Communications Equipment				
TWR/APP Type II				
ATC Console with 3 Positions	No	1	1,767,542	1,767,542
VHF Transmitter				
TWR	No	2	2,121,050	4,242,101
EMR	No	2	2,121,050	4,242,101
APP	No	2	2,121,050	4,242,101
GND	No	2	2,121,050	4,242,101
VHF Receiver				
TWR	No	2	1,060,525	2,121,050
EMR	No	2	1,060,525	2,121,050
APP	No	2	1,060,525	2,121,050
GND	No	2	1,060,525	2,121,050
VHF Tx/ Rx Antennas	No	2	63,632	127,263
VHF Transceiver	No	2	1,626,139	3,252,277
VHF Handheld tranceivers	No	5	70,702	353,508
VCCS System	No	1	14,140,336	14,140,336
Voice Recorders	No	1	3,181,576	3,181,576
Masterclock System	No	1	1,414,034	1,414,034
UPS System	No	1	2,121,050	2,121,050
Installation	%	10%	49,689,142	4,968,914
Internal Cabling System	No	1	5,656,135	5,656,135
Training	No	1	1,414,034	1,414,034
Miscellaneous Equipment	No	1	1,414,034	1,414,034
Manuals etc	No	1	353,508	353,508
Special Tools	No	1	353,508	353,508
Spare Parts	No	1	1,767,542	1,767,542
FSS Type IIA				
ATC Console with 2 Positions	No	1	1,272,630	1,272,630
HF Transceiver	No	1	4,242,101	4,242,101
HF Antenna	No	1	3,181,576	3,181,576
Internal Cabling System	No	1	2,828,067	2,828,067
Installation	%	10%	8,696,307	869,631
Training	No	1	494,912	494,912
Manuals etc	No	1	353,508	353,508
Spare Parts	No	1	707,017	707,017

	Units	Quantity	Unit Cost	Component Cost, PhP
Meteo Equipment				
Wind Sensor incl Mast, obstruction lights wind speed	No	2	353,508	707,017
Data collection platform and modern equipment shelte	No	2	388,859	777,719
Temperature and Humidity sensor	No	1	56,561	56,561
Pressure sensor	No	1	106,053	106,053
Ceilometer	No	1	1,414,034	1,414,034
Transmission meter	No	1	5,302,626	5,302,626
Central Processing Server Dual configuration	No	1	3,181,576	3,181,576
Data display tower	No	1	565,613	565,613
Spare parts etc	No	1	707,017	707,017
Installation + Training	No	1	989,824	989,824
Training/ Manuals	LS	1	70,702	70,702
Cabling				
Control Cabling	LS	2	141,403	282,807
Power Cabling	LS	2	141,403	282,807
Special Tools	LS	1	282,807	282,807
UPS Systems	No	1	353,508	353,508
Miscellaneous	%	15%	15,080,669	2,262,100
Sub-total				***99,030,079***
4.3 Airfield Ground Lighting				
Approach Lighting				
Precision Approach Lighting System 27	No	136	132,981	18,085,420
Simple Approach Lighting System 09	No	6	827,434	4,964,601
Relocation PAPI System, approach 27	No	4	277,045	1,108,178
Relocation PAPI System, approach 09	No	4	277,045	1,108,178
Runway Lighting				
Runway Edge Lighting System	No	86	74,802	6,432,934
Runway Threshold Lighting System	No	36	74,802	2,692,886
Runway End Lighting System	No	16	74,802	1,196,838
Taxiway Lighting				
Taxiway Edge Lighting System	No	70	55,409	3,878,624
Signage	No	20	310,288	6,205,769
Support and miscellaneous				
Apron Flood Lighting System	m^2	28000	277	7,757,247
Obstruction lights	No	10	138,519	1,385,187
Rotating Beacon	No	1	664,879	664,879
Lighted Windcones	No	3	997,365	2,992,095
External Cabling System	LS	1	5,263,811	5,263,811
Remote Control System	No	1	5,540,891	5,540,891
Training/Spare parts/Test equipment	LS	1	11,081,782	11,081,782
Dismantling existing installation	LS	1	4,432,713	4,432,713
Sub-total				***84,792,033***

Appendix D
Puerto Princesa Airport Base Cost Estimate in PhP'000

	Units	Quantity	Unit Cost	Component Cost, PhP
5. Mitigating Measures				
5.1 Environmental Impact Mitigating Measures	LS	1	960,000	960,000
Sub-total				***960,000***
B. Equipment Package				
1. Maintenance Equipment				
1.1 Tractor/mower combination	No	1	1,484,735	1,484,735
1.2 Utility vehicle	No	1	975,683	975,683
Sub-total				*2,460,419*
2. Rescue & Fire Fighting Equipment				
2.1 CFR Vehicle (4x4, capacity 6,000 liters)	No	3	35,350,841	106,052,524
2.2 Inflatable Sea Rescue Craft	No	1	3,535,084	3,535,084
Sub-total				*109,587,608*
Total of Base Cost				**2,336,130,433**

APPENDIX E

Proposed Tariff Structure Based on MIAA, MCIAA and SBMA Rates

AIRPORT FEES AND CHARGES FROM MIAA, MCIAA AND SBMA

I. Aeronautical Fees & Charges

1. Landing & Take-Off Fees

Fees are based on the maximum take off weight in the aircraft's certification and per aircraft cycle (landing and take-off)

Aircraft Weight	Rates in U.S. Dollar ($)	Domestic Operations Rates in Phil. Peso
Up to 50,000 kg.	$ 1.84 / 500 kg. or a fraction thereof.	P 26.87 / 500 kg. or fraction thereof
From 50,001 to 100,000 kg.	$ 184 plus $ 1.95 / 500 kg. or fraction thereof in excess of 50,000 kg.	P 2,687 plus P 24 / 500 kg. or fraction thereof in excess of 50,000 kg.
From 100,001 to 150,000 kg.	$ 398.75 plus $ 2.25 / 500 kg or fraction thereof in excess of 100,000 kg.	P 6,039 plus P 24 / 500 kg. or fraction thereof in excess of 100,000 kg
From 150,001 kg. and over	$ 646.25 plus $ 2.40 / 500 kg. Or fraction thereof in excess of 150,000 kg.	P 7,772 plus P 24 / 500 kg. or fraction thereof in excess of 150,000 kg

2. Parking Charges

Fees are based on the maximum take-off weight in the aircraft's certification and the number of hours after the first two (2) hours and one (1) hour free parking period for international and domestic operations, respectively

Aircraft Weight	International Operations Rates in U.S. Dollars ($)	Domestic Operations Rates in Phil. Peso
Up to 50,000 kg.	1st half-hour $ 3.00	1st half-hour P 20.40
	Each additional half hour thereafter or fraction thereof $ 3.00	Each additional half hour thereafter or fraction thereof P 17.00
From 50,001 to 100,000 kg.	1st half-hour $17.00	1st half-hour P195.50
	Each additional half hour thereafter or Fraction thereof $5.00	Each additional half hour thereafter or fraction thereof P45.90
From 100,001 and over	1st half-hour $21.00	1st half-hour P195.50
	Each additional half hour thereafter or fraction thereof $7.00	Each additional half hour thereafter or fraction thereof P59.50

3. Lighting Charges

Fees are based on the maximum take-off weight in the aircraft's certification and the number of hours after the first two (2) hours and one (1) hour free parking period for international and domestic operations, respectively

Landing/Take-off	(Domestic) P300/landing and/or take-off
	(Int'l) $12.00 per landing and/or take-off
Parking	Additional 15% of the rate for daytime parking

II. Air Navigational/Communication Facilities Fees & Charges

1. Operational Charges

Operational charges for the use of the enroute and airport/terminal navigation facilities and services provided exclusive of telecommunication services for Class "B" messages shall be based on each arrival, departure or overflight, regardless of the type of flight or its duration.

1.1 Overflight

A charge of US$100.00 or its equivalent in pesos at the time of payment, shall be imposed for every aircraft utilizing the enroute navigation facilities and services without landing at this airport

1.2. Departing or Arriving International Flight

For each departing or arriving flight at this airport a charge of US$225.00 or its equivalent in pesos at the time of payment, shall be imposed for the use of the enroute and airport/terminal navigation facilities and radar services of this.

1.3. Domestic and General Aviation Flights

For each flight under instrument flight rules at this airport, a charge of P600.00 for domestic and P200.00 for general aviation shall be imposed regardless of the number of air navigational facilities used, type of flight and its duration.

III. Other Airport Fees & Charges

1. Passenger Service Charges

International Passengers	P550.00 or US dollar equivalent per passenger
Domestic Passengers	P200.00 or US dollar equivalent per passenger

The following shall be exempted:

Children of two (2) years & below

Transit passengers

Pilgrims & others with authority from the Office of the President of the Philippines

Refugees

Extra crew of the air carrier

Other passengers authorized by the CAAP Administrator or his duly authorized representative within the guidelines approved by the CAAP Board of Directors

2. Use of CIP Lounge

CIP space rental	Php 250 / sq.m. / month
VIP room rental	P2,500 / hour

3. Check-In & Concession Counters

Check-in Counters	US$10/hour (Intl) and P250/hour (Dom)
Concession Area	P150.00 to 200 / sq.m. / month

4. Concession Privilege Fee

Passenger Service	P1,000 / month
Food Service	P1,000 / month
Transport Service	P500 / month
Other Utilities or Business	P800 / month

5. Rental of Floor Space

Bare floor area	P150 to 250 / sq. m. / month

6. Rental of Land Space

Developed Area	P50 / month
Undeveloped Area	P25 / month

7. Advertising

Lighted signboard or display	P250 / sq. m. / month
Unlighted signboard or display	P100 / sq. m. / month
Circulars and posters	P50 / sq. m. /month

h. Aviation Fuel, Oil and Lubricant Services

Royaly Fee:

Aviation fuel	P0.50 / liter
Oil	P0.50 / liter
Grease	P0.50 / liter

PART III

Updated Cotabato Airport Subproject Feasibility Study

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SECTION 1

Introduction

1 INTRODUCTION

1.1 Overview Project Description

1.1.1 The Asian Development Bank (ADB) extended technical assistance to the Government through the Department of Transportation and Communications (DOTC) to prepare an intermodal transport development program for Southern Philippines (Mindanao and Palawan). Improving the intermodal transport system of the country is consistent with the development policies and strategies for the transportation sector under the Medium-Term Philippine Development Plan, 2004-2010. The focus on Mindanao and Palawan reflects the government's commitment to pursue a "*peace and development*" agenda for Mindanao, and to revitalize the transport and trade linkages under the Brunei Darussalam, Indonesia, Malaysia, and the Philippines-East ASEAN Growth Area (BIMP-EAGA). The improvement/upgrading of the Cotabato Airport is included in the approved priority list of intermodal transport projects for further project preparation under Phase 2 of the Intermodal Transport Development Project (TA No. 4344-PHI).

1.1.2 The Government previously secured capital assistance from the ADB and the European Investment Bank (EIB) to finance the upgrading of the Cotabato Airport to international civil aviation standards under the Third Airports Development Project (TADP), which was terminated in 2003 after loan closing. Failing to implement the programmed investment in this airport, the ADB and DOTC carried out the review of the airport master plan and the updating of the airport feasibility study based on a reduced scale of investment in 2004 under the proposed Southern Philippines Airport Development Project (SPADP). However, with the budget deficit problem of the Government, the implementation of improvement works was deferred.

1.1.3 This report on the updating of the feasibility study on Cotabato Airport presents the associated traffic forecasts, concept design, scope of work, environmental and social issues, cost estimates, financial and economic analyses, and project risk assessment associated with the proposed airport project. The study recommendations are outlined in Section 16.

1.1.4 The project is located in Central Mindanao as shown in **Figure 1.1-1** and the existing and proposed layout plans are presented in **Appendix A**.

1.1.5 Cotabato Airport is the gateway to Central Mindanao and the administrative center of the ARMM. Its improvement will directly support the peace and development objectives of the Government in this conflict-affected area and will be supportive of the pending peace agreement between the Government and the Moro Islamic Liberation Front (MILF). The airport's zone of influence (the second largest among the airports studied) includes Cotabato City, Cotabato (North), Lanao del Sur and Maguindanao provinces. The population within this ZOI is 2.4 million (2005 Population Forecast). In terms of passenger traffic, the airport ranks 9th in the country.

1.1.6 Improvements recommended include building a new passenger terminal and access road across the runway from the existing terminal and extending and upgrading of the runway pavement.

1.1.7 All updated airport feasibility studies include additional facilities relevant to improving safety (to meet International Civil Aviation Organization (ICAO) standards), security, passenger and cargo movement efficiency, and operational efficiency generally.

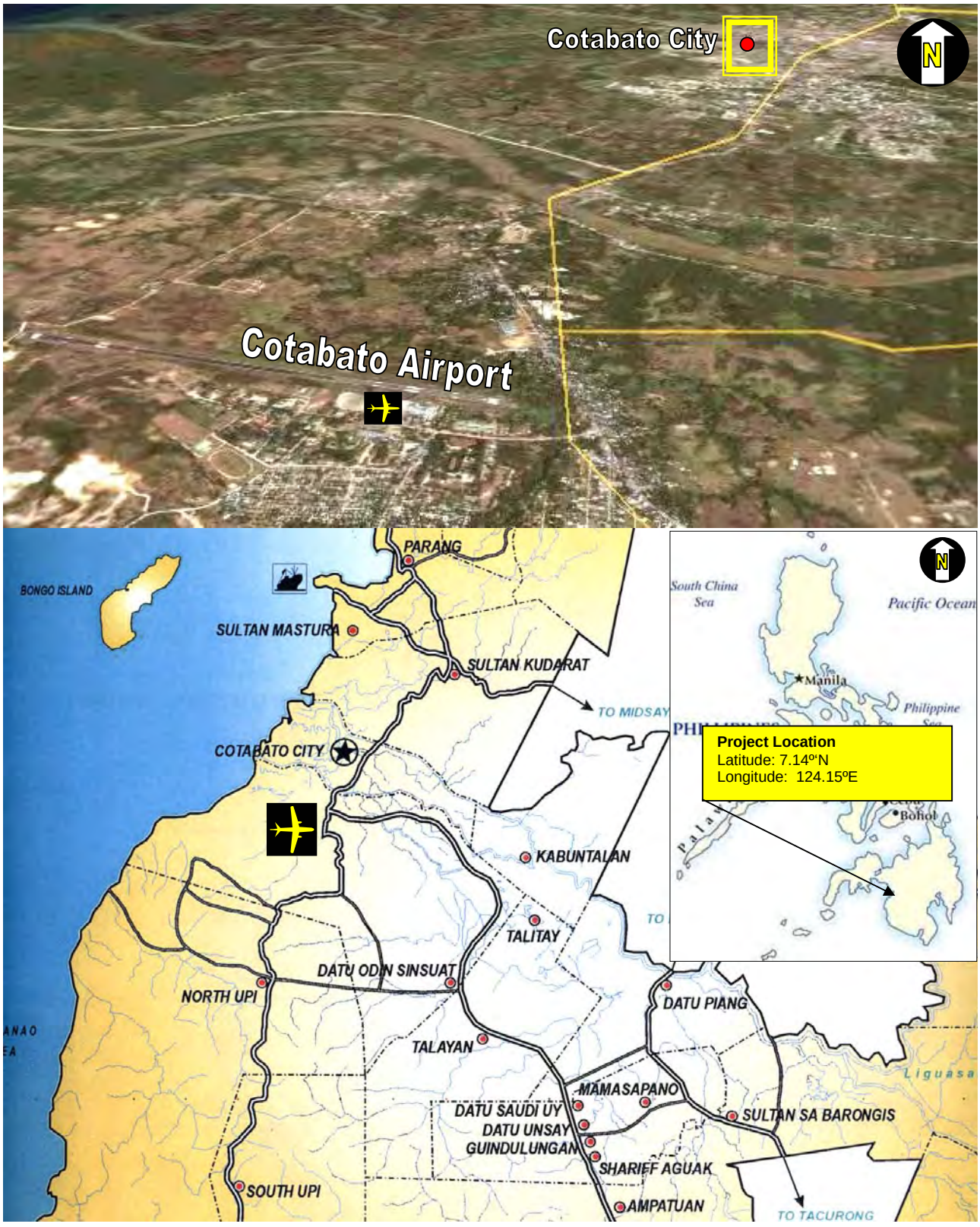


Figure 1.1-1: Location Map of Cotabato Airport

1.1.8 The scopes of work of studies completed for each of the three airport subprojects were agreed to at the Tripartite Meeting following Phase 1 and reconfirmed at the Steering Committee Meeting to review the Phase 2 Inception Report. These scopes of work for can be found in **Table 1.1-1**.

Table 1.1-1: ITDP Airport Subproject and Scope of Work

Subproject	Present Status	Phase 2 SOW: Technical Studies	Phase 2 SOW: Environmental / Social Safeguards	
			Environmental Safeguards	Social Safeguards
Cotabato	Feasibility Study	• Updated Feasibility Study • Due Diligence Review	• Due Diligence Review of Designs • Assist DOTC to extend issued Environmental Compliance Certificate (ECC)	• Due Diligence Review of Designs • External RAP Monitoring by DOTC • Analyze cargo for inputs to PSA • Supplementary LARP

DOTC - Department of Transportation and Communications
ECC - Environmental Compliance Certificate
PSA - Poverty and Social Analysis
RAP - Resettlement Action Plan

1.2 Study Process

1.2.1 As Cotabato Airport had previously been scheduled for upgrading based on earlier master planning, feasibility studies, and detailed design work, the feasibility study process covered the review and limited updating of the previous TADP and SPADP works. The study process has followed the following basic steps:

- Data gathering of actual passenger, aircraft and cargo statistics;
- Review of previous plans, designs and reports prepared under the TADP and SPADP. Review of the recent 2006 Japan International Cooperation Agency (JICA) sponsored National Airports Master Plan Study;
- Assessment and comparison of previous forecasts and preparation or adoption of new forecasts;
- Site inspections and determination of site and implementation issues;
- Review of the status of land acquisition, environmental issues, environmental approvals, affected persons and properties;
- Preparation of planning and design parameters, including target design capacity;
- Assessment of the project (first phase development) demand requirements in terms of scope of the project and comparison of the capacity of the major airport elements (passenger terminal, cargo terminal, parking aprons) as previously designed under the TADP and SPADP, and adjustment of the previous designs in such a way as to preserve the integrity of the earlier designs and minimize any redesign impacts/costs;
- Assessment of future implementation issues relating to any second phase development leading towards the master plan design;

- Assessment of institutional strengthening proposals and the potential incorporation of PSP components;
- Reassessment of costs and schedules using up-to-date financial assumptions and unit rates;
- Reassessment of financial and economic impacts and evaluation results; and
- Assessment of risks and other factors relating to successful project implementation.

1.3 Limitations of the Study

1.3.1 As outlined in the above Section, this Study is an update of previous studies and detailed designs. As such, available resources have been limited with the expectation that there would be no significant changes to the scope and layout of earlier designs.

1.3.2 There are limited recent air passenger profile surveys, cargo profile surveys, topographic surveys, geotechnical surveys, pavement condition surveys, pavement strength testing, instrument testing, and surveys of the condition of existing airport equipment and facilities; although data records were accessed from relevant agencies and observations and notations were made during airport site inspections.

1.3.3 Agreements with land owners, including the Philippine Air Force and the Philippine Army, significant land acquisition and relocation of affected persons and buildings have already occurred under the TADP. This tended to define the basic configuration of the design concepts in line with the master plan as it delineates the available land area for development.

1.3.4 With the detailed airside, terminal area and passenger terminal layouts and designs, the Project Team's approach also involved preserving the integrity and details contained within the previous designs. However, it should be recognized that some of the previous designs required some modification. In addition, further modifications may be recommended as the ITDP sector loan project progresses to subsequent implementation phases. Previous designs prepared by the TADP consultant would need to be reworked to establish design liability under the new loan project.

1.3.5 Updated design demand parameters (such as updated busy hour passengers) were calculated and applied, and resulted in some modifications to concept designs, particularly for the passenger terminal building. These modifications are described in the following sections of this Report. Otherwise, there has been no "detailed" critique of the previous designs, although overall capacity needs and operational integrity were noted as being adequate.

1.3.6 It should also be noted that traffic levels are relatively low and schedules are relatively undeveloped compared to regional domestic airports in many other countries. As a result, the forecast traffic levels and forecast busy hour demand (both passengers and also aircraft stand demand) are difficult to predict and actual future traffic levels and busy hour demand may vary significantly from the results of the analysis in the Study. For example, it should be remembered that Cotabato Airport has realized erratic growth over the last 10 years and future growth may also not be steady. However, if future growth is not smooth, the basic fundamentals relating to Cotabato as an airport destination should be remembered and airport capacity should be available for the "rapid rebounds" that do often occur in aviation.

1.3.7 The assessment of environmental issues has been limited to a review of previous (TADP) and current design proposals, field investigations to verify that baseline environmental conditions have not changed, and a due diligence review of the Environmental Impact Statement (EIS) already submitted to, and approved by, DENR along with a review of compliance with the Environmental Compliance Certificate (ECC). It is noted that a valid ECC exists for Cotabato Airport. The project for Cotabato as defined in this Study includes minor modifications from the original proposals under TADP, and none of these affected the findings or the recommendations of the EIS. Therefore no additional environmental studies were required and no additional community consultation has been undertaken. Dialogue with the community regarding land acquisition issues has been on-going and should continue until completion.

1.3.8 Experienced judgment was applied by the Project Team to provide conservative estimates of subproject benefits and impacts as part of the poverty and social impact appraisal. Estimates of direct poverty benefits are based on typical construction labor shares, costs and composition from similar types of projects. Estimates of indirect poverty benefits involved relative weightings of air cargo that may have been produced by poor population as well as 2004 survey results of Cotabato air passenger expenditures while in Cotabato City.

1.3.9 Summaries of the need and status for land acquisition and resettlement were based largely on information originally provided in the Resettlement Action Plans (RAPs) prepared in 2002 for the TADP, supplemented by ITDP site visits and meetings with the TADP Project Management Office (PMO).

1.4 Organization of this Report

1.4.1 The remainder of this Feasibility Study Report is organized to contain:

- Section 2, which contains the air traffic profile, including traffic statistics, airlines and route schedules, and current aircraft utilization;
- Section 3, which presents the air cargo trends, airlift capacities and existing facilities;
- Section 4, which highlights the air transport forecasts, including the busy hour and aircraft stand demand analysis;
- Section 5, which indicates the airport project planning parameters, particularly the standards and design guidelines;
- Section 6, which introduces the airport development concepts, the detailed project scope and recommended implementation phasing;
- Section 7, which identifies the potential environmental impacts with the proposed Phase 1 investment, including the results of the due diligence review of the EIS and the compliance to ECC conditions;
- Section 8, which outlines the poverty and social impact assessments, particularly the land acquisition and resettlement issues;
- Section 9, which summarizes the required airport management philosophy on operations as well as options for private sector participation (PSP);

- Section 10, which presents the project investment cost and required operating and maintenance costs;
- Section 11, which discusses the proposed project implementation schedule and financing plan;
- Section 12, which identifies the financial impacts of the project from the view point of the government, including the financial viability indicators;
- Section 13, which indicates the results of the economic evaluation of the project investment, including the economic viability indicators;
- Section 14, which covers the review of existing airport management system and the recommended organizational structure and capacity
- Section 15, which presents the assessment of various implementation risks; and
- Section 16, which summarizes the proposed project scope, impacts, risks, countermeasures, and other Study recommendations.

SECTION 2

Air Traffic Profile

2 AIR TRAFFIC PROFILE

2.1 Air Traffic Statistics

2.1.1 Domestic Passengers

2.1.1 Statistics on air passenger movements at the Cotabato Airport for the period from 1995 to 2004 were based on the figures contained in the "*The Master Plan Study on the Strategy for the Improvement of National Airports in the Republic of the Philippines*" that was prepared in 2006 for the DOTC and JICA. The most recent data from 2005 were taken directly from Air Transportation Office (ATO) and the airlines during ITDP survey and site inspection activities. These are summarized in **Table 2.1.1-1** below.

Table 2.1.1-1: Domestic Passenger Movements Cotabato 1995-2005

Year	No. of Passenger Movements	Annual Growth Rate (%)	Comments
1995	144,128		
1996	136,394	-5.4%	
1997	193,231	41.7%	
1998	98,789	-48.9%	Stoppage of PAL services
1999	90,201	-8.7%	Peace and order condition
2000	52,482	-41.8%	Peace and order condition
2001	117,742	124.4%	
2002	76,302	-35.2%	Peace and order condition; Deteriorating runway condition
2003	65,146	-14.6%	Peace and order condition; Deteriorating runway condition
2004	80,865	24.1%	
2005	82,638	2.2%	Deteriorating runway condition

Note 1: Data Source: (a) The Master Plan Study on the Strategy for the Development of National Airports in the Republic of the Philippines (DOTC / JICA, 2006); (b) Cotabato Airport Management Office (for traffic data in 2005 and partially in 2006)
Note 2: Domestic excluding GA and Military.

2.1.2 The statistical data shows that the trend in air passenger movements at Cotabato Airport has generally been on the decline from its 1995 levels to the year 2005. While intermittent increases has been observed in the years 1997, 2001, 2004, and 2005, there was however a net decrease in annual passenger movements of about 5.7% per year on average over the period 1995 to 2005. From 1997 to 2000, air passenger movements at the airport declined at an average annual rate of 24%, before increasing in 2001. Passenger movements again declined at an average annual rate of 22% for the period 2001 to 2003 in part due to temporary closure, conflict and the poor runway condition.

2.1.3 The downward trend in the behavior of air passenger movements being handled at the Cotabato Airport can mainly be attributed to two major factors: (a) the general peace and order problem in the area; and (b) the deteriorating and unsafe condition of the airport runway. The above notwithstanding, it is noted that air passenger movement at Cotabato Airport is starting to pick up. Traffic in the year 2004 had increased by 24.13% over the previous year's level, and continued to grow by another 2.19% over the period 2004 to 2005. This uptrend in passenger movements may be attributed in part to the efforts being made by the airport management to increase security at the airport, regular sweeping of the runway and the proposed implementation of the existing runway's long awaited rehabilitation/asphalt overlay, which is envisioned to commence in late-2006.

2.1.2 International Passengers

2.1.4 Historical data show that no international passenger movement has ever been recorded at the Cotabato Airport. Moreover, an examination of the prevailing socio-economic condition of the airport's influence area, as well as proposed development support initiatives as laid out in the area's medium-term regional development plan, do not appear to support the possibility of any demand for direct international flights at the Cotabato Airport in the near future. This is also consistent with the outcomes of the 2006 National Airports Master Plan Study.

2.1.3 Aircraft Movements

2.1.5 Statistics on aircraft movements at the Cotabato Airport for the period from 1995 to 2004 were based on the figures contained in the JICA-assisted "*The Master Plan Study on the Strategy for the Improvement of National Airports in the Republic of the Philippines.*" The 2005 data for was taken directly from ATO and the airlines during ITDP survey and site inspection activities. These are summarized in **Table 2.1.3-1** below.

Table 2.1.3-1: Aircraft Movements Cotabato, 1995 – 2005

Year	Aircraft Movements	Annual Growth Rate	Comments
1995	6,726		
1996	7,398	10.0%	There is however a 5.4% decrease in passenger traffic from 1995
1997	5,812	-21.4%	There is however a 41.7% increase in passenger traffic from 1996
1998	2,707	-53.4%	
1999	2,914	7.7%	There is however a 8.7% decrease in passenger traffic from 1998
2000	1,437	-50.7%	
2001	1,638	14.0%	
2002	1,550	-5.4%	
2003	920	-40.7%	
2004	1,240	34.8%	
2005	1,392	12.3%	

Data Sources: The Master Plan Study on the Strategy for the Development of National Airports in the Republic of the Philippines (DOTC / JICA, 2006) and ATO

2.1.6 Unlike the behavior of air passenger traffic, the statistics on level of aircraft movements at the Cotabato Airport are erratic and do not correlate well with the erratic trend in passenger traffic. This would suggest that there have been significant changes in the size of aircraft and achieved load factors over the period.

2.2 Airlines and Aircraft Types

2.2.1 The airlines presently operating at the Cotabato Airport, together with the type of aircraft used, frequency of movements per week and seating capacity are shown in **Table 2.2-1** below. A movement represents one arrival or one departure.

Table 2.2-1: Airline Operators and Aircraft Types (as of March 2006)

Airline Operator	Aircraft Type	Movements Per Week	Seating Capacity
PAL	B37	14 (MNL-CBO-MNL)	148
Cebu Pacific	DC9	14 (MNL-CBO-MNL)	118
SEAIR	Let410	2 (CEB-CBO-CEB)	19

PAL – Philippine Airlines SEAIR – South East Asian Airlines

2.2.1 This weekly mix and number of aircraft produces a weekly seat capacity of 3,762 seats. Assuming annual passenger numbers are currently of the order of 95,000, then the average load factor is about 50% for each airline.

2.3 Route Profile

2.3.1 The route profile for the Cotabato Airport showing the frequency of flights per week per airline operator as of March 2006 is given in **Table 2.3-1** below.

Table 2.3-1: Air Traffic Movements at Cotabato Airport (as of March 2006)

Route	Frequency of Flight Per Week			
	PAL	Cebu Pacific	SEAIR	Total
Manila - Cotabato	7	7	0	14
Cotabato-Manila	7	7	0	14
Cebu- Cotabato	0	0	1	1
Cotabato -Cebu	0	0	1	1
Total Movements				30

2.4 Scheduling Characteristics

2.4.1 Cotabato Airport receives most of its traffic around noon, which forms the peak period. **Table 2.4-1** shows the schedules for Cotabato.

Table 2.4-1: Morning Schedules (Peak Period)

Route	Airline	Aircraft	Frequency	Departure	Arrival
Manila – Cotabato	PAL	B737	Daily	10:20 am	11:55 am
	Cebu Pacific	DC9	Daily	11:00 am	12:35 pm
Cotabato – Manila	PAL	B737	Daily	12:45 pm	2:15 pm
	Cebu Pacific	DC9	Daily	1:15 pm	2:50 pm
Cebu - Cotabato	SEAIR	LET 410	Every Friday	11:45 am	1:00 pm
Cotabato – Cebu	SEAIR	LET 410	Every Friday	1:30 pm	2:45 pm

2.4.2 The clustering of aircraft arrivals and departures is typical of airline scheduling where airlines are competing for similar markets.

2.5 Airlines and Aircraft Fleets

2.5.1 Domestic air services are provided by three major air carriers: the Philippine Airlines, Air Philippines and Cebu Pacific Air.

2.5.2 Until 1988, PAL was the only airline allowed to operate within the Philippines. PAL also serves the US, Japan, Hong Kong, Korea and the Middle East routes. PAL has no international routes or active international code share agreements from Mindanao.

2.5.3 PAL entered a 10-year financial rehabilitation period in 1999. As part of this process it reduced its fleet from 65 to 31 aircraft and this also resulted in the complete withdrawal of services from a number of airports in Mindanao. It should be noted therefore that the historical fluctuation in passenger and cargo numbers at some Mindanao airports is due to supply problems (lack of an operator) and not just demand, which has also suffered over time due to various impacts such as the 1997 Asian Financial Crisis, the 2000 technology scare (Y2K), the events of 9/11, conflicts with terror groups, SARS, etc.

2.5.4 PAL operates a fleet of 31 wide-bodied and narrow aircraft, including Airbus 300, Airbus 320, Airbus 340, and Boeing 747 and Boeing 737-300. PAL made a decision in 2005 to phase out the B737-300 aircraft and replacing them with A320 Aircraft. PAL is not interested in operating aircraft smaller than A320. This means that airports serviced by PAL, and that would be most of the airports with regular scheduled services, need to be able to accommodate an A320 (ICAO Category C aircraft) and its associated passenger load. This has a significant influence on the minimum design standards for airports in the Philippines.

2.5.5 PAL is currently using the large size A340, A330 and B747 aircraft on some domestic routes such as Manila-Cebu and Manila-Davao. PAL is operating the A330 into Puerto Princesa on a regular basis, about 4 times a week. Whilst these are the larger routes in the Philippines, it should not be construed that large aircraft is needed to meet the demand. Primarily, PAL is deploying these aircraft on the domestic routes in order to enhance utilization of the aircraft when not required for international operations. If the demand for international services was higher, these larger aircraft would be used to meet that demand and PAL would deploy A320 with increased frequency on the Manila-Cebu, Manila-Davao and Puerto Princesa routes. Once PAL emerges from financial rehabilitation it may embark on an expansion strategy,

subject to demand and other factors, and adjust its fleet composition and deployment strategy accordingly. This leads again to the conclusion that the A320 is a more appropriate design aircraft for PAL services out of Manila to most destinations in Southern Philippines, except for Puerto Princesa and Davao and possibly Zamboanga (for which the design aircraft might more appropriately be the A330/A340 due also to the international potential).

2.5.6 Air Philippines, the airline with slogan "Fly High Filipino," was founded in February 13, 1995 and owned by Mr. Lucio Tan. It operates six (older model) Boeing 737-200 type of aircraft which seats 109-148 passengers. Air Philippines competes (or perhaps supplements) with PAL on some routes, such as Manila-Zamboanga. The B737-200's are relatively old (and noisy) aircraft and have been phased out of most airline fleets in the world.

2.5.7 Designated as the country's second flag carrier, Cebu Pacific Air started operating domestic scheduled passenger and cargo air transport on August 24, 1995. As the "on-time, great value airline," it currently operates 12 DC9-32 McDonnell Douglas Aircraft with 110-115 seating capacity and recently introduced an Airbus 757 in local service. In 2005, Cebu Pacific announced that they would phase out the DC9's and upgrade their fleet with 14 new A319's (same size as an A320) and two A320's. This represents an aggressive modernization and expansion strategy within the Philippine domestic market. Cebu Pacific forecasts it will overtake Philippine Airlines as the top domestic carrier in five years. The carrier currently holds a 38% share in the domestic market.

2.5.8 Under the progressive liberalization policy of the government in the 1990's, other airlines were authorized to serve domestic routes. Two other airlines are providing service mainly on secondary and feeder airports, namely: Asian Spirit and Southeast Asian Airways (SEAIR).

2.5.9 Called the "People's Airline," Asian Spirit started its operation on April 4, 1995. It is the country's only airline cooperative, called the Airline Employees Cooperative. Asian Spirit has a total of 10 aircraft, most of them specially designed for short take-off and landing such as the two CN 235-220 (40-seater, manufacturer IPTN Indonesia), two DASH 7 (47-seater, manufacturer DeHavilland, Canada), four Let 410 (19-seater, designed in the former Czechoslovakia),and two twin-engine turbo-propeller YS-11 A (60-seater).

2.5.10 In January 2005 Asian Spirit inaugurated the latest member of its fleet, the British Aerospace (BAe) 146 jet. This is Asian Spirit's first jet aircraft, and is one of four BAE 146s ordered. Asian Spirit has commenced daily Manila-Pagadian services using the Bae146 aircraft. This is also an aggressive expansion strategy by a Philippine airline and the use of a modern 70 seat jet aircraft may be a more appropriate jet aircraft size for many routes in the Philippine domestic market.

2.5.11 SEAIR, which started operation in 1994, has a fleet consisting of 13 aircraft, of which 8 are 19-seater Let 410, and the remaining five aircraft are: two Dornier-28 (9 passengers), one Piper Cherokee (3 passengers), one Alouette, and one Citabria, which are available for air charter.

2.5.12 SEAIR are flying Let410 turbo prop aircraft into Manila. This airline has announced recently its intention to procure the 32-seater Dornier 328 aircraft for its future flights, including to and from Cotabato Airport.

SECTION 3

Air Cargo Profile

3 AIR CARGO PROFILE

3.1 Cargo Volumes

3.3.1 The statistics on domestic cargo movements at the Cotabato Airport for the period from 1986 to 2004 as summarized in **Table 3.1-1** were sourced from "*The JICA Airport Master Plan Study on the Strategy for the Improvement of National Airports in the Republic of the Philippines*." The most recent data for year 2005 was taken directly from ATO and the airlines during ITDP survey and site inspection activities.

Table 3.1-1: Cargo Movements at Cotabato Airport

Year	Cargo Movement (Kg)	Annual Growth Rate (%)	Comments
1995	1,484,450		
1996	1,184,466	-20.21	
1997	1,480,756	25.01	
1998	637,378	-56.96	Stoppage of PAL services
1999	520,346	-18.36	Peace and order condition
2000	326,820	-37.19	Peace and order condition
2001	717,919	119.67	
2002	1,363,376	89.91	
2003	640,663	-53.01	Runway pavement deterioration
2004	494,656	-22.79	Runway pavement deterioration
2005	817,423	65.25	

Data Sources: TADP Report and The Master Plan Study on the Strategy for the Development of National Airports in the Republic of the Philippines (DOTC / JICA, 2006) and ATO

3.3.2 **Table 3.1-1** shows that the highest annual growth in the historical domestic cargo trend over a 20-year period, occurred in year 1997 with a total cargo movement of 1,481 metric tons, or an annual growth of 25% with respect to the preceding year's cargo movement. However, in 1998, a significant drop of -57% occurred as a result of disruptions in the operations of PAL that was triggered by the series of protests held by PAL employees against management, and which eventually culminated in the stoppage of the airline's services in September of 1998. The resumption of PAL's operations at the airport has enabled a significant rebound in growth of cargo movements in 2001 to 2002.

3.3.3 Subsequently, negative growth was noted again in year 2003 and the downtrend continued up to 2004. The general upswing in global and local economic conditions, and business confidence consequently restored normal traffic conditions and allowed cargo movements to climb in 2005, enabling the recorded volume of cargo movements at 817 metric tons for 2005.

3.2 Cargo Profile

3.2.1 The type of cargo flown from Cotabato Airport may be classified as follows:

(i) fresh fish, crabs and prawns (aqua marine products);
(ii) live animals;
(iii) foodstuffs;
(iv) documents; and
(v) other products.

3.2.2 Based on PAL records, close to 90% of the air cargo shipped out of Cotabato Airport are high value aquaculture products.

3.2.3 **Table 3.2-1** shows the monthly distribution of cargo volumes in 2005. The highest cargo traffic of mainly aquaculture products was recorded in July 2005, which corresponded to their peak season.

Table 3.2-1: Cargo Volume at Cotabato Airport, 2005

Month	% Share	Total (in Kg)
January	7.6	61,774
February	8.2	66,938
March	9.4	77,075
April	7.0	56,950
May	7.2	59,023
June	10.0	81,512
July	11.8	96,214
August	9.1	74,661
September	4.2	34,267
October	9.3	76,003
November	6.9	56,120
December	9.4	76,886
T o t a l	100.0	**817,423**

Source: Cotabato Airport Statistics, ATO

3.3 Air Lift Capacity

3.3.1 At present, there are three airlines operating services into Cotabato as noted in Table 3.2-1. In 2005, Asian Spirit operated at this airport, but not Cebu Pacific. Based on an analysis of the aircraft types and maximum cargo loads determined by the airlines (being subject to route length and fuel loads) the cargo air lift capacity was determined as shown in **Table 3.3-1**.

Table 3.3-1: Scheduled Aircraft by Airline and Weekly Cargo Capacity, 2005

Airline Operator	Aircraft Type	Annual Aircraft Movements	Cargo Capacity (Tons)	
			Aircraft Cap	Annual
PAL	B737	690 (MNL-CBO-MNL)	6	4,140
Asian Spirit	BAe146	60 (MNL-CBO-MNL)	1.5	90
SEAIR	Let410	428 (CEB-CBO-CEB)	1.0	428
T o t a l				**4,658**

3.3.2 This indicates that only 17.5% of available cargo capacity is being utilized in 2005. However, noting that inbound cargo traffic was about 57% of total, then 20% of inbound cargo capacity was being utilized.

3.3.3 The distribution of cargo traffic by airline in 2005 is presented below.

Table 3.3-2: Distribution of 2005 Cargo Movement by Airline Operator

Airline Operator	Total Cargo Traffic (Kg)	% Share
PAL	708,582	86.8
Asian Spirit	49,604	6.0
SEAIR	59,237	7.2
T o t a l	**817,423**	**100**

Source: Cotabato Airport, ATO

3.4 Cargo Facilities

3.4.1 Only PAL has an owned dedicated cargo facility at Cotabato Airport. This facility is inadequate for future operations. Other airlines, notably Cebu Pacific do not have dedicated facilities. Cebu Pacific is handling cargo within the passenger terminal building. Security checks, re-packaging, clearing, storage, etc. prior to boarding are handled behind the check-in counters within the prescribed time of the airline (at least 2 hours before the flight).

3.4.2 At present, it would appear that there is no need for special cargo facilities such as refrigeration, dangerous good areas, livestock holding areas, bonded goods area, etc. within cargo terminal facilities.

3.5 Cargo Growth Prospects/Issues

3.5.1 Air cargo is a worldwide growth industry. On a regional basis, Southeast Asia is projected to be one of the largest growth areas for air freight and the Philippines is expected to contribute to that growth.

3.5.2 Most air cargo out of Cotabato to Manila is expected to remain as fresh fish and other marine products with a significant proportion of these aquatic products expected to be transferred to international flights from Manila to north Asian destinations. All airlines flying into Cotabato City have shown interest in maximizing their opportunities to carry air cargo.

SECTION 4

Air Demand and Capacity

4 DEMAND AND CAPACITY

4.1 Previous Forecasts

4.1.1 Third Airports Development Project (TADP, 2000 Study)

4.1.1 The air passenger and cargo traffic forecasts were made based on the relative share of traffic at the Cotabato Airport to the total volume of domestic traffic in the entire Philippines. The forecast of future domestic air traffic for the entire Philippines on the other hand was made using regression analysis where the per capita Gross Domestic Product (GDP) was used as a function of the historical annual air traffic demand.

4.1.2 To eliminate erratic variations in air traffic movements and the adverse effects of economic recession that were noted for the period from 1989 to 1992 and the effects of PAL's cessation of service in 1998, the determination of the airport's share of the traffic was based on the historical trend observed during the period from 1992 to 1997. The relative traffic share of the airport to the total national air traffic is assumed to be equal to the average value for the period from 1992 to 1997, and which will be attained by the year 2005 with graduated share values using the 1999 levels.

4.1.3 Using the per capita GDP for 1985 to 1998, the future per capita GDP values were arrived at through extrapolation using the method of least squares. A projection of the total domestic air traffic is then made by correlating per capita GDP and historical air passenger and cargo traffic for the years 1992 to 1997. Finally, a forecast of air passenger and cargo traffic at Cotabato Airport is made by taking the relative traffic share of the airport to the projected total domestic air traffic.

4.1.2 Southern Philippines Airports Development Project (SPADP, 2004 Study)

4.1.4 On the assumption that the three airports of Cotabato, General Santos and Davao share a relatively common market, traffic forecasts at the Cotabato airport were based on the relative share of the airport in the total traffic for the three airports. The forecasts of the combined future traffic for the three airports were made using a regression model that used traffic demand as a function of Gross National Product (GNP) and the effects of bombing incidents in the area, as follows:

Passengers = (-) 22535932 + 1721061 * LN(GNP) - 531057 * X1

Where: GNP is in constant 1985 prices

X1 is a dummy reflecting bombing incidents (0 = no bombing, 1 = bombing)

4.1.5 The relative share of Cotabato was then determined based on the historical share value of traffic at the airport vis-à-vis the combined traffic for the three airports.

4.1.3 Master Plan Study for the Development of National Airports (2006 JICA)

4.1.6 The forecasts of air passenger traffic at the different airports were derived based on the historical domestic air sector passenger traffic from the period 1987 to 2003. Model

estimation was conducted for the total domestic sector movements and each sector (where the end points of each sector are defined) using the following equations:

DOMPAXt = 5.93 + 1,546,612 x PHLGDPt

SECPAXt = a + b x PHLGDPt

SECPAXt = a + b x GRDP1t

SECPAXt = a + b x GRDP2t

SECPAXt = a + b x GRDP1t + c x GRDP2t

Where: DOMPAXt is the total domestic passenger traffic on all sectors in year t, used as national control total

SECPAXt is the sector passenger traffic in year t

a, b and c are the regression coefficients

PHLGDPt is the GDP in millions of Pesos at 1985 constant prices

GRDP1t is the Gross Regional Domestic Product (GRDP) of the region where one airport of the city-pairs (sector) is located

GRDP2t is the GRDP of the region where the other airport is located

4.1.7 The following criteria were then used in selecting the best fitting equation, namely: (a) b>0, c>0; and (b) t-value for b exceeding the minimum t-value at 95% confidence.

4.1.8 Based on the above criteria, statistically significant relationships were determined. Using the derived relationships and the projected GDP and GRDP figures, the future sector traffic was arrived at. After these sector traffic volumes were projected, the figures were used as the basis for allocating the sector traffic predicted using the national control total passenger traffic model. Adjustments were then made on critical airports to ensure continuity between the start of the yearly forecasts to the base year. Finally, the airport passenger traffic figures were then derived from the final sector traffic values by totalling the sector movements on a per airport basis.

4.1.4 Comparison of Air Passenger Forecasts

4.1.9 A comparison of the air passenger traffic forecasts under the three previous studies mentioned above is provided in **Table 4.1.4-1**. These forecasts represent unconstrained annual passenger forecasts.

4.1.10 The comparison of previous forecasts reveals that the recent JICA forecast is lower than previous forecasts largely because actual traffic levels from 2002 to 2005 have been lower than the expectations of the earlier forecasts.

4.1.11 As the JICA forecast was completed in 2006 and has been endorsed by DOTC, it is recommended to adopt the JICA forecast rather than prepare a new forecast.

Table 4.1.4-1: Comparison of Air Passenger Forecasts

Year	Actuals			TADP Forecast (2000 Report)			(SPADP Forecast 2004 Report)			JICA Master Plan Study Forecast (2006 Report)		
	Pass. Mov'ts	Growth Rate (%)		Pass. Mov'ts	Growth Rate (%)		Pass. Mov'ts	Growth Rate (%)		Pass. Mov'ts	Growth Rate (%)	
		Ann Ave	5-Yr Ann Ave		AnnAve	5-Yr Ann Ave		Ann Ave	5-Yr Ann Ave		AnnAve	5-Yr Ann Ave
1987	*127,905*											
1988	*184,468*	44.2										
1989	*161,066*	-12.7										
1990	*139,978*	-13.1										
1991	*101,058*	-27.8										
1992	*131,018*	29.6										
1993	*96,357*	-26.5	0.6									
1994	*247,112*	156.5										
1995	*144,128*	-41.7										
1996	*136,394*	-5.4										
1997	*193,231*	41.7										
1998	*98,789*	-48.9	-12.7									
1999	*90,201*	-8.7										
2000	*52,482*	-41.8		94,648								
2001	*117,742*	124.3		122,659	29.6	29.6						
2002	*76,302*	-35.2		150,669	22.8							
2003	*65,146*	-14.6	11.6	178,680	18.6							
2004	*80,865*	24.1		206,690	15.7							
2005	*83,045*	2.7		234,701	13.6					83,045		
2006				249,139	6.2	6.2				85,997	3.6	3.6
2007				263,577	5.8					88,950	3.4	
2008				278,016	5.5		115,827			91,902	3.3	
2009				292,454	5.2		141,175	21.9		94,855	3.2	
2010				306,892	4.9		168,251	19.2		97,807	3.1	
2011				324,929	5.9	5.9	175,495	4.3	4.3	102,331	4.6	4.6
2012				342,966	5.6		182,739	4.1		106,856	4.4	
2013				361,002	5.3		189,983	4.0		111,380	4.2	
2014				379,039	5.0		197,228	3.8		115,905	4.1	
2015				397,076	4.8		204,472	3.7		120,429	3.9	
2016				419,255	5.6	5.6	211,716	3.5	3.5	126,592	5.1	5.1
2017				441,435	5.3		218,960	3.4		132,756	4.9	
2018				463,614	5.0		226,204	3.3		138,919	4.6	
2019				485,794	4.8		233,448	3.2		145,083	4.4	
2020				507,973	4.6		240,692	3.1		151,246	4.2	
2021				534,391	5.2	5.2	247,936	3.0	3.0	159,495	5.5	5.5
2022				560,809	4.9		255,181	2.9		167,744	5.2	
2023				587,227	4.7		262,425	2.8		175,994	4.9	
2024				613,645	4.5		269,669	2.8		184,243	4.7	
2025				640,063	4.3		276,913	2.7		192,492	4.5	

Note 1: Domestic including GA and Military.

4.2 Forecasts – With Project Scenario

4.2.1 Annual Passenger Movements

4.2.1 The 'with project' case scenario assumes that the proposed development works and corresponding investments as defined in Section 6 are made.

4.2.2 The proposed development is expected to address airport security, safety, operational and capacity constraints such that the full air travel demand potential (domestic and international) can be met and be translated into the actual growth of air passenger and aircraft movements as per the unconstrained forecasts.

4.2.3 Hence, the appropriate "With Project" scenario forecasts are the 2006 JICA passenger forecasts shown in Table 4.1.4-1.

4.2.4 **Table 4.2.1-1** provides details the forecast of annual passenger movements under the "With Project" scenario broken down into international, scheduled domestic and general aviation plus military passengers.

Table 4.2.1-1: Forecast of Passenger Movements (With Project Scenario)

Year	Scheduled Domestic	GA + Military	Total
2006	82,121	3,876	85,997
2007	85,017	3,932	88,950
2008	87,914	3,989	91,902
2009	90,810	4,045	94,855
2010	93,706	4,101	97,807
2011	98,179	4,153	102,331
2012	102,652	4,204	106,856
2013	107,124	4,256	111,380
2014	111,597	4,307	115,905
2015	116,070	4,359	120,429
2016	122,184	4,408	126,592
2017	128,298	4,457	132,756
2018	134,413	4,507	138,919
2019	140,527	4,556	145,083
2020	146,641	4,605	151,246
2021	154,843	4,652	159,495

Year	Scheduled Domestic	GA + Military	Total
2022	163,046	4,699	167,744
2023	171,248	4,745	175,994
2024	179,451	4,792	184,243
2025	187,653	4,839	192,492

4.2.2 Annual Aircraft Movements

4.2.5 Forecast annual aircraft movements are based on the forecast passenger demand. Annual aircraft movements can be estimated by comparing current and projected average passenger loads per aircraft with the annual passenger forecasts.

4.2.6 Factors affecting aircraft fleet type and frequency, such as market liberalization and the introduction of new aircraft, are considered and are factored into the projected average passenger loads.

4.2.7 As defined under the 2006 JICA Master Plan Study, the classification of aircraft is as follows:

a. SJ – Small Jets (B373, B757, A320, A319) with typical capacity of 120 to 150 seats;

b. TP – Turbo Prop (CN235, ATP, Ys11, DHC7, Do328, BAe146) with typical capacity of 55 seats;

c. STOL – Short Takeoff and Landing (Let 410, Do228) with typical capacity of 20 seats.

4.2.8 Under the “With Project” case scenario, the aircraft movement forecast does not consider any operational constraints at the airport and is also an unconstrained forecast.

4.2.9 In the forecast of aircraft movements the following assumptions as used in the 2006 JICA Master Plan Study were adopted:

a. For Scheduled Domestic Aircrafts Movements

- STOL class aircraft is used for very thin sectors with annual passenger demand less than 10,000.
- TP class aircraft is used for thin route with annual passenger demand between 10,000 and 29,000
- SJ is the most widely used with sector passenger more than 29,000 annually.

b. For International Aircraft Movements

- Average Passenger Load: 49
- Aircraft Mix: 50% Small Jets (SJ); 50% Short Takeoff and Landing (STOL)

Based on these observations, the following aircraft usage – sector passenger relationship for the purpose of aircraft movement forecast were adopted:

- Small Jets shall be used for 29,000 - 5,000,000 range of annual sector passengers;
- Turbo Prop shall be used for 10,000 - 29,000 range of annual sector passengers; and
- Short Takeoff and Landing shall be used for 10,000 and below range of annual sector passenger.

c. For General Aviation and Military Aircraft Movements

The methodology adopted for forecasting General Aviation and Military Aircraft Movements, which adheres to that used under the 2006 JICA Master Plan Study, is as follows:

- First, an estimate of non-GA and non-military aircraft movements based on data from the Civil Aviation Board (CAB) were prepared from 2004.
- The differences between the ATO data on aircraft movements were calculated, the difference interpreted as being the GA and Military aircraft movements.
- Applying regional population growth rates, future GA and Military aircraft movements were projected.

4.2.10 The resulting forecast of air passenger and aircraft movements under a "with project" case scenario are summarized in **Table 4.2.2-1** below.

Table 4.2.2.-1: Forecast Aircraft Movements (With Project Scenario)

Year	Scheduled Domestic			GA + Military	Total
	SJ	TP	STOL	STOL	
2010	827	0	490	134	1,451
2015	1,024	0	607	607	2,238
2020	1,294	0	767	154	2,215
2025	1,656	310	129	164	2,259

Notes: SJ – Small Jets (B373, B757, A320, A319); TP – Turbo Prop (CN235, ATP, Ys11, DHC7, Do328, BAe146); STOL – Short Takeoff and Landing (Let 410, Do228)

4.2.11 It should be noted that the above applies to the estimation of annual aircraft movements. For the peak hour analysis in Section 4.5, the ITDP have made slightly different assumptions based on schedule information.

4.3 Forecasts – Without Project Scenario

4.3.1 The capacity analysis conducted under Section 4.6 indicates that the airport (the terminal) is already running at capacity. This means that, at peak times, the conditions for passengers in the terminal are crowded and uncomfortable and there is little room for additional passengers.

4.3.2 However, although the airport may be deemed to be running at capacity, it does not necessarily mean that passenger and aircraft numbers cannot grow.

4.3.3 Growth can occur at "off-peak times" and on the shoulders of the peak. The extent that airlines will schedule flights at off-peak times is difficult to assess and depends on the airlines assessment of the market conditions and on other constraints associated with the airlines overall route structure/schedule for each aircraft in its fleet and possibly on slot constraints in Ninoy Aquino International Airport (NAIA), particularly as NAIA becomes increasingly constrained and congested.

4.3.4 Under a "without project" case scenario, it is assumed that passengers and aircraft can grow in the off-peak and shoulder period to a maximum traffic equivalent to the 2009 forecast, although, without the project this might not be realised until some later time.

4.4 Air Cargo Forecasts

4.4.1 The erratic nature of the cargo movement statistics were noted in Section 3 and Table 3.1-1. A linear regression analysis based on the 20 years available data was used as one means of assessing potential cargo demand. The analysis from 1995 to 2005 indicates an average annual growth of 5% despite the generally erratic year on year growth.

4.4.2 **Table 4.4-1** provides the projected cargo movement for the next 20 years (until year 2025) based on the linear regression analysis and compares it to the recently completed JICA forecast.

Table 4.4-1: Air Cargo Forecast

Year	Projected Cargo (kg)	
	JICA	ITDP
2004	494,656	494,656
2005	1,598,764	817,423
2010	1,956,244	1,032,743
2015	2,527,757	1,256,489
2020	3,305,453	1,528,711
2025	4,358,196	1,815,630

4.4.3 The 2006 National Airport Master Plan (JICA) forecast was based on the 10-year historical trend from 1995 to 2004 and correlated against the national and regional gross domestic product.

4.4.4 The above methodology utilized by JICA results in an Annual Average Growth Rate (AAGR) of 5% for Cotabato Airport.

4.4.5 The ITDP linear regression analysis results in an Average Annual Growth Rate of 4.8%. The following equation was used:

$Y = 199695X + 845994$
$R^2 = 0.76$

$AAGR = (CARGO_{(2005)} / CARGO_{(1986)})^{(I/(t2005-t1986))} - 1)$

4.4.5 As both methodologies produce different results, the JICA forecast was adopted for consistency with passenger traffic forecasts. Moreover, these JICA forecasts were accepted by DOTC.

4.5 Busy Hour and Stand Demand Forecasts

4.5.1 Introduction

4.5.1 This section calculates the current and forecast passenger busy hour demand, which would need to be carried by passenger terminal facilities.

4.5.2 Busy hour passenger demand is then converted into a peak hour stand demand by consideration of existing and projected aircraft mix profiles and apron occupancy times. Busy hour forecasts are particularly important in terms of checking the adequacy of proposed passenger terminal and aircraft parking requirements.

4.5.2 Methodology

4.5.3 The passenger terminal busy hour demand is usually based on detailed examination of existing flight schedules and aircraft mix. The growth in stand demand is correlated against the growth in passenger numbers and the impacts of aircraft substitution due to expected increases in average passenger loads. Other factors also influence stand demand such as the number of layover aircraft and allowances for off schedule aircraft.

4.5.4 As there are currently no regular international flights for Cotabato, the schedule analysis that follows applies to domestic air services only.

4.5.3 Schedule Data Used

4.5.5 The demand analysis was based on aircraft schedules derived provided by ATO, the airlines and by other internet research as summarized in Section 2.

4.5.4 Growth Assumptions

4.5.6 In order to forecast future aircraft and passenger busy hours and stand demand, relevant growth forecasts were required. In the absence of specific busy hour forecast growth rates, annual passenger growth rates were used as a base.

4.5.5 Definition of Terms

4.5.7 The following section defines the meaning of some key terms used in this analysis:

4.5.8 **Busy Hour.** The (arrivals or departure) busy hours refers to the one hour during the day with the greatest number of movements (arrivals or departures). For the purposes of this analysis "Peak" busy hour refers to the busiest hour of the week.

4.5.9 **Active Stand Demand.** The active stand demand is calculated from the peak busy hour, by taking the sum of the aircraft within that hour.

4.5.10 **Total Stand Demand.** Total stand demand is a measure of the largest number of aircraft "on-the-ground" at any one time during the day. This includes "layover" or "overnight" aircraft in the peak period that maybe regarded as "non-active".

4.5.11 **Layover.** A layover refers to an aircraft that stays on the airport overnight before departing the next day.

4.5.6 Conversion of Aircraft Schedules to a Gate Allocation Chart

4.5.12 The current 2006 aircraft schedules were plotted to show each aircraft's arrival and departure time on a timeline as shown in **Figure 4.5.6-1** representing the Gate Allocation Chart. A 15-minute "buffer" was included in the figure for maneuvering time in the vicinity of the gate and for off-schedule arrival/departure of the aircraft.

Airline	Flight	Arrival	Departure	Gate
PAL	Manila	11.55 AM	12.45 PM	1
Cebu Pacific	Manila	12.35 PM	1.15 PM	2
Seair	Cebu	1.00 PM	1.30 PM	3

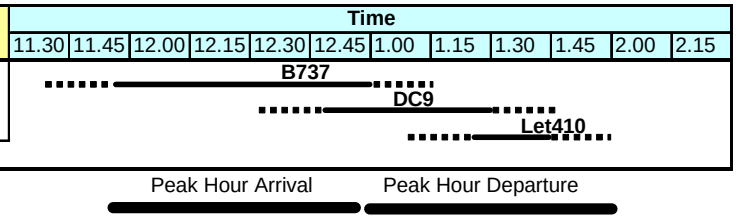


Figure 4.5.6-1: Cotabato Gate Allocation Chart

4.5.7 Current Passenger and Aircraft Busy Hour Demand (2006)

4.5.13 The busy hour aircraft arrivals and departures are identified in Figure 4.5.6-1. The busy hour arrival and departure passengers are obtained by multiplying the busy hour aircraft arrivals and departures by the number of seats in each aircraft and an assumed load factor of 70%. The 50% load factor derived in Section 2 is considered to low.

4.5.14 **Table 4.5.7-1** represents the arrivals and departures busy hour which shows that the busy hour for arrivals and departures is in the mid to late morning.

4.5.15 The arrivals busy hour consists of two aircraft.

4.5.16 The departure peak consists of two aircraft six days a week and three aircraft on Friday when the Seair flight operates.

Table 4.5.7-1: Arrivals & Departures Busy Hour 2006

Aircraft	Seats	Arrival	Departure
A330	*250*	0	0
A320	*150*	0	0
B737	*150*	1	1
DC9	*118*	1	1
BAE146	*75*	0	0
Let410	*19*	0	1
Total	**A/C**	**2**	**3**
	Seats	268	287
	LF	70%	70%
	Pax	**188**	**201**
	Day	Everyday	Friday
	Time	11:55 -12:55	12:45-1:45

4.5.8 Current "Active Stand" Demand (2006)

4.5.17 To calculate the active stand demand forecasts for the peak busy hour, the following method was used:

- Identify which of the arrivals or departures aircraft numbers are higher. This produces the critical terminal load; and
- Group the aircraft types in the busy hours by their aerodrome reference code.

4.5.18 For Cotabato, there are no issues of long staying aircraft and return of these prior to departure. **Table 4.5.8-1** summarises the active stand demand for current (2006) operations.

Table 4.5.8-1: Current (2006) Active Stand Demand

Code	Arrival	Departure
F	0	0
E	0	0
D	0	0
C	2	2
Regional Jet	0	0
Turbo Prop	0	1
Total	**2**	**3**
Day	Everyday	Friday
Time	11:55 -12:55	12:45-1:45

4.5.9 Total Stand Demand

4.5.19 Since there are currently no "inactive aircraft" in the peak period, the Total Stand Demand is the same as the Active Stand Demand.

4.5.10 JICA Forecast Aircraft Busy Hour

4.5.20 For comparison, forecast busy hour aircraft movements at the Cotabato Airport for the period from 2005 to 2025 based on the figures contained in the "The Master Plan Study on the Strategy for the Improvement of National Airports in the Republic of the Philippines" 2006 are summarized in **Table 4.5.10-1** below.

Table 4.5.10-1: JICA Forecast Aircraft Busy Hour Movements

Year	International Aircraft Movements	Domestic Aircraft Movements	Total[1]
2005/6	0	2	2
2010	0	2	2
2015	0	2	2
2020	0	3	3
2025	0	3	3

Data Source: The Master Plan Study on the Strategy for the Development of National Airports in the Republic of the Philippines (DOTC / JICA, 2006)

4.5.21 This forecast was based on applying Busy Day and Peak Hour coefficients to annual aircraft movements. It was not based on an analysis of the current or likely future schedules and may therefore not be as accurate. It does not distinguish between arrival and departure peaks. This methodology does however suggest that as traffic volumes increase and schedules mature there will be some peak spreading. It is difficult to estimate the degree of peak spreading but it can be accounted for in a schedule analysis by growing the busy hour to a lesser extent than the forecast annual growth.

4.5.11 Forecast Domestic Passenger and Aircraft Busy Hour

4.5.22 The busy hour passenger forecasts were calculated by applying only "50%" of the median annual passenger growth forecasts to the current passenger busy hour calculated in Table 4.5.7-1.

4.5.23 The "50%" factor is an important yet difficult to assess assumption. Typically, at other airports with higher levels of traffic, it is sometimes assumed as 100% (to be conservative) which would result in a higher busy hour forecast. However, at these other airports, there is often a well defined peak and off peak traffic profile.

4.5.24 In arriving at the 50% peak hour growth rate factor, the following considerations were taken into account:

- It could be expected that as growth continues airlines, particularly PAL and Cebu Pacific would go to two daily Manila flights and it could be argued that this would most likely occur in the afternoon and therefore see the emergence of an afternoon peak.
- However, if other airlines enter the market, they would most likely arrive in the morning potentially during the peak hour.

4.5.25 The forecast passenger demand then allows the aircraft busy hour forecasts to be calculated.

4.5.26 In a more mature schedule profile, the average aircraft seats would be grown at an annual rate of 1% for international aircraft and 2% for domestic aircraft. However, in this case, it is known that PAL and Cebu Pacific have made recent fleet mix decisions based on the A320 aircraft. Air Philippines is using B737's and it is assumed they will not upgrade to an aircraft with significantly more seats. Other airlines may bring in aircraft of the same size (A320/B737) but based on current trends, they are more likely to bring in smaller aircraft up to 70 seats (such as the Bae146).

4.5.27 The forecast aircraft busy hour was determined by adding a mix of aircraft whose seating capacity matches the forecast seats obtained by multiplying the forecast passengers at each year by an assumed load factor. Judgement is exercised to take account of possible future airline fleets as discussed above. The resultant number of aircraft and seats is checked against the average number of seats calculated from the assumed growth rates above.

4.5.28 **Table 4.5.11-1** shows the forecast passenger busy hours for arrivals and departures in five-year increments from 2010 to 2025.

Table 4.5.11-1: Domestic Aircraft Departures Busy Hour Forecast

Reference Code	Example	2006	2010	2015	2020	2025
F	A380	0	0	0	0	0
E	B777, A330	0	0	0	0	0
D	DC10, AB6	0	0	0	0	0
C	B737, A320	1	2	2	2	2
C	DC9	1				
Regional Jet	Bae146	0	0	0	1	2
Turboprop	Let410	1	1	2	1	0
Total Aircraft		*3*	3	4	4	4
Seats		**287**	**319**	**338**	**394**	**450**
Assumed Load Factor		70%	70%	70%	70%	70%
Pax		**201**	**223**	**237**	**276**	**315**
Forecast Pax		201	215	241	273	315
Forecast Seats		287	307	344	390	450

4.5.29 As discussed above, some judgment has to be used in what additional aircraft are brought into the mix as the growth in peak hour passengers occurs. As per the Cebu Pacific fleet upgrading plans, the DC9 will be replaced with the A320 prior to 2010.

4.5.30 It is assumed that Seair will continue to fly in the peak period and steadily upgrade to Bae146 or similar type aircraft. Other airlines like Air Philippines or Asian Spirit may also enter the market (within the peak) to meet growing demand with Code C or smaller aircraft.

4.5.12 Forecast Domestic Active Stand Demand

4.5.31 **Table 4.5.12-1** provides the forecast active stand demand. This assumes a maximum gate occupancy time of 60 minutes.

Table 4.5.12-1: Forecast Domestic Active Stand Demand

Reference Code	2006	2010	2015	2020	2025
F	0	0	0	0	0
E	0	0	0	0	0
D	0	0	0	0	0
C	2	2	2	2	2
Regional Jet	0	0	1	1	2
Turboprop	1	1	1	1	0
Total Aircraft	3	3	4	4	4

4.5.32 Table 4.5.11-1 clearly reveals that predicting busy hour stand demand is difficult with the low levels of traffic at Cotabato Airport coupled with the erratic nature of traffic growth.

4.5.13 Recommended Stand Requirements

4.5.33 The Recommended Stand Demand is provided to account for the following:

- Active Stand Demand (domestic);
- Layover aircraft given also that there are no “tow off” stands available; and
- The risk of an aircraft being delayed or requiring unexpected maintenance.

4.5.34 Generally, inactive stand demand can be assumed at 25% of the active stand demand. This ensures operational flexibility and some capacity for unexpected growth in demand given the time lag associated in expanding the number of active stands. However, given that there is no home base carrier, nor any immediate likelihood of overnight stay aircraft, a 15% factor for inactive stands is appropriate (see **Table 4.5.13-1**).

Table 4.5.13-1: Recommended Aircraft Stands

Reference Code	2006	2010	2015	2020	2025
Domestic					
F	0	0	0	0	0
E	0	0	0	0	0
D	0	0	0	0	0
C	2	2	2	2	2
RJ	0	0	1	1	2
TP	1	1	1	1	0
Sub total	3	3	4	4	4
Layover/Stand off					
Assume 15%	1	1	1	1	1
Total Aircraft Stands	**4**	**4**	**5**	**5**	**5**

Notes: 1. The stands provided for Layover/stand off should be near the active stands in front of the passenger terminal but do not necessarily have to be contiguous to it. If site constraints exist near the active stands they can be located more remotely, but this does impose a higher operational cost and inconvenience to the users.

SECTION 5

Project Planning Parameters

5 PROJECT PLANNING PARAMETERS

5.1 Introduction

5.1.1 A number of important planning and design parameters were used to underpin the evaluation of the concept and scope of work. These are briefly described as follows.

5.2 Master Planning

5.2.1 The development concept under this Study is based on the Master Plan and Concept prepared under the TADP.

5.2.2 The Master Plan, dated February 2001, provides the concept for the ultimate development of the airport with a new passenger terminal complex to the northern side of the runway.

5.2.3 The Master Plan indicates a high growth forecast of 508,000 passengers per annum beyond 2020, as per the TADP forecast.

5.2.4 At this stage, the Master Plan is more or less consistent (perhaps one position higher) with the analysis in this Study which indicates a peak aircraft parking demand of 6 aircraft at and beyond 2020.

5.2.5 The Design Aircraft is an ICAO Code C (A320 and B737) aircraft which is used to set out the airfield including runway widths, strip widths, runway to taxiway separations, taxiway to taxiway separations and taxiway to object separations, apron depths, taxiway fillets, etc. The new runway length is planned for 1,970 m and is suitable for A320/B737 operations out of Manila.

5.3 Standards and Design Guidelines

5.3.1 Mandated by the Republic Act 776 or the Civil Aeronautics Act, the objective of DOTC's line agency Air Transportation Office (ATO) is to ensure safe, reliable, economical, and efficient air transportation, fully integrated with the national transportation system, taking into account the requirements of national interest and local concerns in accordance with the International Civil Aviation Organization Standards and Recommended Practices (ICAO SARP's).

5.3.2 In the absence of any other local/national airport regulations, the concept design outlined in this Study is based on ICAO (Annex 14) requirements for physical design and operation.

5.3.3 International Air Transportation Association (IATA) guidelines are also used with reference to Service Standards.

5.4 Target Demand/Capacity

5.4.1 The original TADP targeted 2010 as the "design year" for the first phase development of facilities based on the "medium" traffic forecast.

5.4.2 Under the SPADP, the same detailed designs completed under the TADP were used as the basis to the project with some adjustments to the scope. However, at the time of the SPADP, the 2003/2004 actual traffic levels had not reached the previous forecasts made under the TADP. This effectively pushed out the "design year" to 2015.

5.4.3 Since the completion of the SPADP, there has been a strong rebound in domestic traffic at Cotabato and the new forecasts under this ITDP correlate closely with the original TADP forecasts.

5.4.3 Another factor to consider is the projected time line by which the ITDP would be implemented. As detailed in Section 11, the earliest anticipated date for commissioning and operations is 2012.

5.4.4 On this basis, it is recommended to adopt 2012 as the design capacity target. This means that for the most part, perhaps with some adjustments (refer Section 6), the original designs prepared under the TADP can be adopted.

5.4.5 With this target design capacity year, it also means that service levels will begin to drop once operations commence and start to grow as there will be little spare capacity. Therefore, the flexibility to expand passenger terminal and aircraft parking and other facilities is essential.

5.5 Level of Service

5.5.1 The target Level of Service on opening or during the course of the life of the airport facility relates to the degree of passenger comfort. It is more an airport owner's policy decision regarding the target Level of Service. High levels of service generally provide a higher level of service at a higher cost.

5.5.2 IATA has developed a Level of Service Framework as listed below:

Table 5.5-1: IATA Level of Service Framework

Level	Level Description
A	Excellent level of service; condition of free flow; no delays; excellent level of comfort
B	High level of service; condition of stable flow; very few delays; high level of comfort
C	Good level of service; condition of stable flow; acceptable delays; good level of comfort
D	Adequate level of service; condition of unstable flow; acceptable delays for short periods; adequate level of comfort
E	Inadequate level of service; condition of unstable flow; unacceptable delays for short periods; inadequate level of comfort
F	System breakdown

5.5.3 Normally, a Level of Service ”C” is recommended as the minimum design level for new terminal elements. Key areas are the departures lounge and arrivals areas. For larger terminal with higher capacity processing areas, check-in, security, immigration and quarantine processing zones are also assessed in terms of level of service.

5.5.4 However, where certain constraints may exist, a lower Level of Service may be acceptable. In terms of assessing the Level of Service at the end of the project life, a Level of Service “E” has been adopted.

SECTION 6

Concept and Scope

6 CONCEPT AND SCOPE

6.1 Introduction

6.1.1 The upgrading and expansion of the Cotabato Airport was originally included under the coverage of the TADP that was funded by the ADB and the EIB under a parallel co-financing arrangement. The TADP was a part of the Government's continuing program that aims to develop and improve the domestic aviation sector through the upgrading and rehabilitation of airport equipment and facilities to internationally prescribed standards. Under the parallel co-financing arrangement, all civil works components required for Cotabato Airport were to be financed through the EIB loan, while all equipment components will be financed out of the loan granted by the ADB.

6.1.2 The Cotabato Airport undertaking, like the other airports covered under the TADP, suffered significant delays as a result of a number of crucial implementation problems and issues. By the time both loans reached expiry (the EIB loan expired on November 2003 without any extension being granted while the ADB loan, after being extended, closed on May 2004), no significant progress was made in terms of the execution and implementation of the equipment, civil works and building components.

6.1.3 Due to its priority status, the Cotabato Airport, together with the other five airports under the original TADP, were considered anew for possible financial assistance through a new loan from the ADB under the proposed Southern Philippines Airports Development Project (SPADP), albeit at a reduced scope. The reduction in the scope of the works from that as originally envisioned under the TADP was agreed between the ADB and the DOTC apparently in consideration of two main factors: (a) the limited size of the loan initially programmed to finance the proposed SPADP and (b) the results of the "Re-appraisal Project Scope" prepared in November 2003.

6.1.4 The results of the 2004 ADB Country Programming Review Mission, as subsequently contained in a Memorandum of Agreement entered into by the ADB with the National Government as represented by NEDA, a total loan amount of US$50 million was programmed to finance the cost requirements of the SPADP. In comparison, the aggregate loan amount under the TADP was about US$122 million (US$97 million under the ADB loan and US$25 million under the EIB loan). The "Re-appraisal Project Scope" study (during the later phases of the TADP) on the other hand was conducted for the purpose of validating/re-confirming the viability, through economic re-evaluation, of the TADP airport components (a) collectively as one package and (b) individually as stand alone projects.

6.1.5 The findings of the re-appraisal study showed that the Cotabato Airport as a stand alone project will yield an economic internal rate of return (EIRR) of 14.5%, which was below the government-prescribed hurdle rate of 15% EIRR. In view thereof, a reduction in the scope of the works and the corresponding required level of investment may be necessary to render the project economically more attractive.

6.1.6 The SPADP feasibility study that was conducted based on the reduced scope of works, which is required for the processing and approval of the proposed new loan, was completed in October 2004. Based on the results of the study, the project was determined to be economically viable, with the project yielding an EIRR of 15%. The processing of the proposed loan however never actually ocurred due to the lack of government counterpart funds resulting

from the budgetary constraints of the DOTC. The SPADP was eventually shelved by the ADB and DOTC, but the upgrading and expansion of the Cotabato Airport is now being considered under the "Intermodal Transport Development Project".

6.1.7 The scope of the works related to the Cotabato Airport is presented in the following Sections.

6.2 Development Concept

6.2.1 Introduction

6.2.1 The airport development concept is modeled on the concepts developed under the TADP and the SPADP.

6.2.2 Due to the time delays in implementing the airport projects identified in the TADP and SPADP, there has been a need under this Study to reassess the latest trends in passenger and aircraft traffic, recheck forecasts and the anticipated demand for the target year for "delivery" to asses whether the existing designs are still appropriate.

6.2.3 Given that the new forecasts in this report and those done under the TADP show rough correlation and given that TADP was targeting 2010 and this project is targeting 2012 for "delivery, there are few significant changes except as reported below. The most significant changes include:

- Elimination of provisions for international operations, although the overall building size has been maintained; and
- Allowance for a second Cargo terminal for Cebu Pacific operations.

6.2.4 These are discussed below along with some other more significant project components or issues. Other aspects that are the same as the TADP are generally not discussed.

6.2.2 Passenger Terminal Building

6.2.5 Based on experience and investigations at other airports, the required floor area of terminal buildings at airports with the analyzed characteristics of Cotabato is generally in the range of 8 to 12 m²/peak hour passenger.

6.2.6 The total number of design peak hour passengers in two directions will amount to about 420 passengers in 2012.

6.2.7 The total floor area required in the passenger terminal building will be: 8 or 12 x 420 = 3,360 or 5,040 m2 for the 2012 target year. The TAPD design is 4,355 m2 which correlates well with this "rule of thumb" approach, although it should be noted that the ITDP approach has been to maintain the size and general layout of the terminal designed under the TADP, although without international operations.

6.2.8 It should be noted that the passenger terminal building concept as described in this project does not represent the final development concept. Under the existing Master Plan further building extensions are envisaged.

6.2.9 **Check-in Counters and Layout.** At virtually all domestic airports in the Philippines, the ATO provide dedicated check in counters for each domestic airline. Although most airports have coped reasonably well with this policy since domestic deregulation in 1996, it may not be the most appropriate policy for the future as new entrant airlines fly to an increasing number of destinations and as competition increases.

6.2.10 The concept design allows for the implementation of a common use check-in policy with airlines offices located behind the check-in counters but not connected to the check-in counters. If a common use check-in policy is implemented, it means that airlines wishing to use computer reservation systems will need to move them from there offices to the check-in counters for each flight. This is not usually a problem for single daily flights. With this policy, ATO would need to implement a check-in counter allocation system and a charging mechanism (typically time-based). ATO would also need to determine a signage policy for airlines compatible with its own overall terminal signage policy.

6.2.11 For Cotabato Airport, there should be eight domestic check-in counters. This would permit up to four concurrent departure operations.

6.2.12 There should at least be four airline offices to allow for an increased number of airline operators.

6.2.13 **Departure Lounge/Waiting Area – Domestic.** The new departure lounge has an area of approximately 700 m2 under the ITDP.

6.2.14 If IATA Level of Service "C" is adopted for design, a minimum of 2.0 m2 can be allocated to each occupant for the busy hour.

6.2.15 The projected departure busy hour in 2012 is approximately 201 passengers. This implies a minimum area requirement of 402 m2 which is in excess of the design. The design however previously catered for an international component which has been eliminated. This does provide the opportunity to reduce the size within the terminal during the detailed design stage if considered warranted.

6.2.16 **Arrivals Hall/Baggage Claim – Domestic.** The existing domestic arrivals hall has an area of 140 m2. The projected 2012 arrivals peak hour is approximately 208 passengers. If 1.6m2 (IATA Level of Service C) is allocated to each occupant, the required area is 332 m2. The new design provides approximately 695 m2 as a legacy of previously having two baggage reclaim belts (one for international and one for domestic). Similarly, in detailed design the baggage reclaim area could be reduced if considered warranted.

6.2.3 Terminal Parking Apron

6.2.17 There no adjustments to the existing apron which is 170m wide. An apron of this size could park four code C (A320/B737) aircraft, although this would require push-back operations on all positions.

6.2.4 Airline Cargo Facilities

6.2.18 The cargo terminal area is located to the west side of the passenger terminal within the new terminal area.

6.2.19 Provision for two cargo terminal operations is considered the minimum requirement, one for Philippine Airlines and one for Cebu Pacific.

6.2.20 In terms of facility development, the option remains to develop two buildings or one building with internal partitions to separate lease areas.

6.2.21 The development concept is for DOTC to construct the terminals and for these to be leased out to airlines by ATO. Project cost estimates in this Study allow for up to 600m2 (or two 300m2) of cargo building.

6.2.5 Air Traffic Control (ATC) Complex

6.2.22 A new ATC complex with control tower is planned in the new terminal area. The ATC complex will be incorporated into an area, which will also accommodate most of the other ATO-facilities including the operations and administration building, as well as a maintenance building and powerhouse.

6.2.6 Rescue and Fire Fighting Facilities (R&FFF)

6.2.23 The present Rescue and Fire Fighting Facility (R&FFF) is well located in relation to the runway. However, because of the long distance to the new terminal area, it has been decided to construct a new R&FFF in the new terminal area in the first development stage. The R&FFF will be designed to the level of protection for aerodrome category 6.

6.2.7 Landside Access Roads

6.2.24 The landside road system will essentially consist of a main access road from a road off the National Highway.

6.3 Summary of Project Scope

6.3.1 In line with the development concept described in Section 6.2 above, a summary of the proposed scope of the works for Cotabato Airport that is envisioned under this Study vis-à-vis those as identified under the previous TADP and SPADP studies is presented in **Table 6.3-1**. The scope of the works enumerated for the two (2) previous studies were culled from available documents obtained from the DOTC and the Project Implementation Unit (PIU) of the TADP.

Table 6.3-1: Comparison of Project Scope

TADP	SPADP[1]	ITDP
Airside Facilities and Works		
• Runway strip widening and grading works • Rehabilitation of existing runway • Widening of existing runway from 30m to 45 m • Runway shoulders, turning eave and blast pads at both ends • Taxiway and Apron, • Runway extension of 110m • Airside roads (R&FFF, apron, maintenance and air service roads) • Perimeter fence and perimeter security roads • Demolition of various obstacles	• Widening of the runway to 45 m • Extension of the runway with 135 m to the east and at the same time shifting the runway some 80 m to the east to the east to provide for a Runway End Safety Area (RESA). • Runway rehabilitation and overlay on the exiting part of the runway. • Provision of paved blast pads in the extension of runway ends. • Provision of a 2,090 x 150 m runway strip, including grading and landscaping. • Perimeter fencing along the airside/landside border • Crash, fire and rescue road system	• Runway strip widening and grading works • Rehabilitation of existing runway with selective sub-base strengthening[2] • Widening of existing runway from 30m to 45 m • Runway shoulders, turning eave and blast pads at both ends • Taxiway and Apron, • Runway extension of 110m • Airside roads (R&FFF, apron, maintenance and air service roads) • Perimeter fence and perimeter security roads • Demolition of various obstacles
Landside Facilities and Works		
• New passenger terminal building • New cargo terminal building • Other new buildings (Administration and operations; R&FF; Power House; Solid waste disposal, Chiller Pump house; Control Tower. • New landside roads, security fence and parking facilities • Drainage (Runway strip, apron,road, parking)	• Refurbishment of the existing passenger terminal • Refurbishment of the existing control tower, administrations building, rescue and fire station and the cargo. • New drainage along the runway outside the runway strip	• New passenger terminal building • New cargo terminal building • Other new buildings (Administration and operations; R&FF; Power House; Solid waste disposal, Chiller Pump house; Control Tower. • New landside roads, security fence and parking facilities • Drainage (Runway strip, apron,road, parking)

[1] The upgrading and expansion of the Cotabato Airport under the SPADP study was proposed to be carried out in two (2) phases. The first phase development was to be implemented in 2007 and subsequent investments are to be made in 2025. The scope of the works under the SPADP as presented in the table refers to the first phase development works only.

[2] Earlier pavement tests for B737 introduction in Cotabato Airport in mid-1970s revealed acceptable pavement strength. Further tests under TADP confirmed the general structural integrity of the pavement system. However, selective sub-base strengthening is recommended on deteriorated and exposed original PCC runway pavement.

Table 6.3-1: Comparison of Project Scope (Continuation)

Equipment		
• Navigational Aids (DVOR; DME; Remote control; Power supply) • ATC & Communications (VHF system; Voice switch control system; recording equipment, HF com. & UPS) • Airfield Ground Lighting (High intensity simple approach lighting system for RWY 30 and 12; High intensity runway edge lighting; High intensity runway end lighting; High intensity runway threshold lighting; Medium intensity taxiway edge lighting; Apron flood lighting; Obstacle lighting; Illuminated wind cones) • Airfield Maintenance (Tractor; Grass mower; Utility vehicle) • One fire fighting vehicle	• Navigational Aids (DVOR; DME; Remote control; Power supply) • ATC & Communications (VHF system; Voice switch control system; recording equipment, and UPS. • Airfield Ground Lighting (High intensity simple approach lighting system for RWY 28 and 10; High intensity runway edge lighting; High intensity runway end lighting; High intensity runway threshold lighting; Medium intensity taxiway edge lighting; Apron flood lighting; Obstacle lighting; Illuminated wind cones) • Airfield Maintenance (Tractor; Grass mower; Utility vehicle) • One fire fighting vehicle	• Navigational Aids (DVOR; DME; Remote control; Power supply) • ATC & Communications (VHF system; Voice switch control system; recording equipment, and UPS. • Airfield Ground Lighting (High intensity simple approach lighting system for RWY 30 and 12; High intensity runway edge lighting; High intensity runway end lighting; High intensity runway threshold lighting; Medium intensity taxiway edge lighting; Apron flood lighting; Obstacle lighting; Illuminated wind cones) • Airfield Maintenance (Tractor; Grass mower; Utility vehicle) • One fire fighting vehicle

6.3.1 Intermodal Components

6.3.2 The potential to improve intermodal components of the project were investigated and the most appropriate scope for incorporating or upgrading intermodality is summarized as follows:

- Road Signage from city and outside areas to the airport. This would need to be coordinated with DPWH and the city government.
- Development of a Traffic Management Plan controlling access of various modes of transport to the airport and airport vehicle parking and kerbside areas. A key objective of this plan would be to ensure the “convenient” movement of people and baggage from land based vehicles (including public transport modes) to the terminal frontage. This objective would need to be at the forefront of the Plan while still managing security issues and other traffic engineering principles. Solutions could include attention to:
  - Designated parking areas and drop off/pick up zones.
  - Ensuring pavements/footways between the terminal kerbside and vehicle parking areas are “friendly” to the use of trolleys, with consideration also given to the location of trolley storage areas.
  - Construction of covered walkways.
  - Adequate signage.

6.2.3 Consideration was given to the development of truck docks for cargo at cargo terminals but this is not a priority.

6.2.4 Budgets exist within the cost plan for implementing the various intermodal project components.

6.4 Project Phasing

6.4.1 The project as described in this Study represents the first phase implementation of the Master Plan. The capacity of this first phase is further discussed in Section 6.5. Subsequent development phases will include:

- Extensions to the passenger terminal building.
- Expansion of the aircraft parking apron to the east and/or west.
- Expansion of landside vehicle parking areas, administration and other facilities.
- Expansion of cargo terminals and the potential development of additional terminals.
- Potential addition of ILS facilities.
- Potential development of a fuel farm and perhaps even small catering and other support facilities.

6.5 Airport Capacity Estimate

6.5.1 An airport is a system of components that function together. From a capacity and operational perspective these components are usually divided into two areas, landside and airside. The landside component is sometimes subdivided into passenger terminal area and access road/carpark/kerbside areas. The effective use of capital should ensure that these components are in balance from a capacity perspective.

6.5.2 For Cotabato Airport, the critical capacity component for both the “With Project” and Without Project” scenarios are considered to be the passenger terminal.

6.5.1 With Project

6.5.3 The project essentially delivers additional passenger terminal and aircraft parking capacity.

6.5.4 Other aspects of the project also improve capacity, such as with additional cargo terminals, expanded support areas, etc but these are less critical components. Other project components address maintenance and improve operational efficiency, safety and/or security.

6.5.5 **Domestic Operation.** The new departure lounge is approximately 700m^2. Using IATA Level of Service E this would provide capacity of 437 people. Note this is not a design capacity, which would normally use a Level of Service C, but a capacity at the end of its design life.

6.5.6 The new arrivals area is approximately 695m^2. Using IATA Level of Service E, this would provide a capacity of 580 people. Note this is also not a design capacity, which would normally use a Level of Service C, but a capacity at the end of its design life.

6.5.7 Based on the forecast departure peak hour demand (Section 4.6), this should provide a design life through to approximately 2030, unless refinements are made in detailed design.

6.5.2 Without Project

6.5.8 The existing dedicated domestic departure lounge is approximately 275 m^2. If maximum capacity is based on IATA Level of Service "E", which is a very low level of service, approximately 1.6 m^2 can be allocated to one person. This provides a capacity of 172 people. There are currently 168 seats in the departure lounge, so assuming some passengers are standing and not able to be seated at peak times, this would correlate well with Level of Service E.

6.5.9 The existing baggage reclaim hall is 140m2. Based on IATA Level of Service "E", which is a very low level of service, approximately 1.2 m^2 can be allocated to one person. This provides a capacity of 116 people. This correlates well with the fact that the arrivals area is known to be very congested with the arrival of one full A320 aircraft, noting also that there are a number of other airport personnel within the arrivals area. As discussed in Section 4.5, the existing departures busy hour is 201 people and the arrivals busy hour is 188 people.

6.5.10 On this basis, at peak times, the airport is already running over capacity and in need of expansion.

6.5.11 Recent site inspections confirm this point in that the passenger terminal is highly congested and uncomfortable at peak times. People have to stand in the departures lounges and people find difficulty in getting near the baggage reclaim on arrival.

SECTION 7

Environmental Impact Appraisal

7 ENVIRONMENTAL IMPACT APPRAISAL

7.1 Environmental Categorization

7.1.1 Department of Environment and Natural Resources (DENR) System of Categorization

7.1.1 The Philippine Environmental Impact Statement (EIS) system is mandated by Presidential Decree No. 1586 (1978). DENR's Administrative Order No. 30 establishes quantitative thresholds for project categorization. The EIS system is based on a four-level categorization of projects:

- Category A – environmentally critical projects (ECPs) with significant potential to cause adverse environmental impacts. ECPs include projects in the heavy or resource extractive industries as well as some infrastructure projects and golf course projects;
- Category B – projects that are not environmentally critical in nature, but which may cause negative effects because they are located in environmentally critical areas (ECAs);
- Category C – projects intended to enhance environmental quality or address existing environmental problems; and
- Category D – projects that were operational prior to 1982, projects not falling under other categories OR projects unlikely to cause adverse environmental impacts.

7.1.2 Under Administrative Order No. 42, all projects categorized as A or B require the issuance of an 'environmental compliance certificate' (ECC) prior to implementation while Category C and D projects require the issuance of certificate of non-coverage (CNC).

7.1.2 Asian Development Bank System of Categorization

7.1.3 The ADB has a threefold categorization based on generic "locational" characteristics and magnitude of impacts of projects:

- Category A – projects with likely significant adverse impacts that are located in or near sensitive environments; cultural heritage sites; densely populated areas; regions subject to heavy development or create conflicts with natural resource allocation; and lands or waters containing valuable resources;
- Category B – projects that will have impacts on environmentally important areas or people that are less adverse than Category A and mitigation measures can be designed more easily than for Category A projects. Category B deemed environmentally sensitive are subject to the same disclosure requirements as Category A projects; and
- Category C – projects that are likely to have minimal or no adverse environmental impacts. Category C projects need to be reviewed for identification of mitigation measures that can be incorporated directly into project design or could be subject to an environmental management plan.

7.1.4 It should be noted that if a project with many components or subprojects has one component that is categorized as A, the entire project becomes a Category A project and an EIA must be prepared, full disclosure of which is required at least 120 days before ADB Board consideration. If a subproject will result in significant resettlement, this will mean the project is treated as a 'Category B Sensitive' project and is also subject to the disclosure requirements.

7.1.3 Recommended Categorization of ITDP

7.1.5 For both DENR and ADB systems of environmental assessment, the environmental category is determined according to the likelihood and magnitude of risk associated with a project (and subprojects) either being located in an ECA, and/or posing potentially significant adverse environmental impacts when implemented without mitigation.

7.1.6 The overall risks associated with ITDP are considered low because the project does not include any new development, rather it is focused on improving and rehabilitating existing facilities.

7.1.7 Activities envisaged by the ITDP for airport improvements include construction of new, or extension of existing, access roads to existing airports, extension of airport runways, widening of aprons, passenger terminal expansions, and provision of safety facilities.

7.1.8 The initial screening process determined that all the short-listed subprojects fall under Category B for both DENR and ADB classifications. These subprojects are not located in ECAs but are anticipated to create a range of potentially adverse environmental impacts when implemented without mitigation. Therefore, the recommendation is that the ITDP can have an overall environmental categorization of Category B.

7.1.4 Summary of DENR and ADB Procedural Requirements and Safeguards

7.1.9 According to DENR's Administrative Orders the level of environmental assessment and documentation should be appropriate for the environmental category to which a proposed subproject is assigned. ADB's reporting process is very similar to that required by DENR with a difference in terminology, rather than document content.

7.1.10 There are no Category A subprojects to be included under ITDP. Category B projects require either an Initial Environmental Examination (IEE) or EIS/ Environmental Impact Assessment (EIA) - depending on the scale of works proposed - and a short resettlement plan. The level of environmental analysis and reporting differs for major improvement projects vis-à-vis minor airport improvement projects, as shown in the table below.

Table 7.2.4-1: Environmental Analysis and Reporting Requirements for Airport Projects

Project	Components/Activities	Analysis and Reporting Required
Airports	New projects, major improvements (> 50 % extension or widening of runway)	EIS
	Minor improvements (< 50 % extension or widening of runway) or private airstrip	IEE

Source: DENR's Procedural Manual for Administrative Order 30 (2003)

7.1.11 DENR and ADB environmental procedures prescribe preparation of an EIS/IEE for Category B subprojects and submission of an EIS/IEE Report to the Regional DENR-Environment Management Bureau (EMB) Office in the subproject area for review and approval of issuance of an ECC. This process clears the subproject for implementation.

7.1.12 **EIS Preparation and Submission for Cotabato Airport Subproject.** The Cotabato Airport subproject is one of the four short-listed subprojects with existing ECCs issued by the Regional DENR-EMB offices concerned.

7.1.13 The airport subproject has a currently valid ECC which was issued based on an approved EIS report prepared and submitted by DOTC as part of the feasibility study conducted for the earlier Southern Airports Development Project/Third Airport Development Project (TADP) funded by ADB.

7.1.14 The ECC for Cotabato City Airport subproject was issued on 11 December 2002 and is effective for five years from issuance date. The ECC includes a number of conditions for compliance by the implementing agency. A "due diligence" review of the status of compliance by the project proponent has been made to assess whether the ECC conditions have been, are being, or can be, met by the implementing agency (refer to Section 7.5).

7.1.15 The ECC will expire before the project reaches the likely construction starting timeframe of August 2009, therefore application for an extension of ECC validity will need to conform to the prescribed procedural guidelines of DENR's AO 2003-30.

7.1.16 **Process for Cotabato Airport EIS Review and Approval**. The EIS for Cotabato City Airport improvements was reviewed and approved by DENR prior to issuance of the ECC, following the process prescribed in DAO 2003-30. As noted above, the Regional EMB Director has granted the issuance of an ECC.

7.1.17 The ADB Environment Specialist to the project has confirmed that an overall project Summary IEE (SIEE) will be required. The SIEE has been prepared according to prescribed ADB content outline and reporting format, the SIEE includes a summary of the main relevant elements of the Cotabato City Airport EIS and the review of ECC compliance, along with recommendations.

7.1.18 The SIEE will be submitted to ADB for review and approval, and this will include review and sign-off by the Environment Specialist for the ITDP as well as the safeguards division (RSES). During the review period, the project proponent and the PPTA consultant will be available to respond to any review comments or request for additional information by ADB.

7.2 Cotabato EIS Report Components

7.2.1 Summary of EIS Process Applied in Accordance with Requirements

7.2.1 The EIS study for the Cotabato Airport subproject closely followed the procedural guidelines prescribed by DAO 96-37 of DENR. Primary and secondary data was gathered complying with a set of studies that were agreed upon at a scoping meeting held at DENR-EMB-ARMM in Cotabato City (13 March 2001). A Project Description was submitted to EMB-ARMM, and the scope and criteria for the study and subsequent EIS report were agreed at this meeting.

7.2.2 The agreed upon scope for procedural compliance of the EIS included topics on meteorology, air quality, water quality, terrestrial ecology, geology, socio-economic studies and social acceptability. The minutes of the technical scoping meeting and the attendance sheet are included as an appendix to the EIS.

7.2.3 The characterization of baseline conditions is in accordance with the criteria and methods prescribed by the DENR's administrative orders (AOs) and guidelines.

7.2.4 This was followed by collation of secondary data covering geology, meteorology, hydrology and socio-economic aspects of the subproject site obtained from government, private and academic institutions. The full list of information sources used for compilation of the EIS is provided in the References section of the EIS report. Already published secondary data was supplemented by data gathered from Barangay Health Centers, and Municipal Planning and Health Offices.

7.2.5 A second scoping meeting and public consultation was conducted (held in the pre-departure area of the Cotabato Airport, 19 March 2001). This consultation was the first forum for DOTC and its consultants to present the proposed development stakeholders (representatives from the affected barangays), local government officials of Cotabato City, and other concerned individuals and agencies. DOTC and its consultants also responded to various questions and requests for clarifications on the project components. The issues and concerns raised during the meeting were summarized and presented as the Scoping Report (included as an appendix to the EIS).

7.2.6 Community meetings were also held in the three affected barangays; Awang, Semba and Tamontaka. The meetings were attended by affected families, barangay captains and officials, church pastors and representatives from religious groups, people's organizations, as well as other interested residents.

7.2.7 Following the meetings, scoping teams undertook primary data gathering on the physical environmental, terrestrial, and socio-economic parameters of the project site and affected communities in order to establish the existing baseline environmental conditions. This included a perception survey conducted during April 2001 which surveyed a sample of the affected population to gauge the public's level of awareness and acceptance of the proposed subproject. From this primary data, the potential impact of the project on the physical, biological and socio-economic aspects of the environment was assessed, and corresponding mitigation and enhancement measures drawn.

7.2.8 The potential impacts of the project on land, water, air and communities were identified, predicted and assessed in terms of their negative or positive effects, significance and severity. Based on the impact assessment and prediction, mitigating and enhancement measures were recommended and the corresponding environmental management and monitoring plans were prepared.

7.2.2 Summary Outline and Description of the EIS Report

7.2.9 The EIS prepared for Cotabato Airport was prepared in November 2001 and contains the following:

- Executive summary – summarizing the project components and anticipated effects, process for EIS preparation, overall assessment approach and results, and requirements for compliance;
- Project description – including a brief description of the project and development phases, and an analysis of alternatives including the "do nothing" option;
- Baseline environmental conditions – describing the existing status of the physical (geology, meteorology and climate, airy quality, noise, and water quality), biological (flora and fauna), and social (demography and socio-economic profile) environments;
- Impact assessment and mitigating measures – sets out the analysis of the impacts for both construction and operation phases of the development and proposed mitigation measures for negative environmental effects;
- Environmental management plan (EMP) – provides the management plan for the construction and operation phases of the subproject for the various environmental components, including worker's health and safety and employment aspects;
- Social development plan – contained the resettlement plan and how rehabilitation assistance would be managed, it included an economic assistance program and procedures for strengthening community relations (consultation plan);
- Contingency emergency response plan – prepared for each phase of subproject development in the event of emergency or disaster. This plan sets out the responsibilities and tasks of emergency tem members and coordinators, response procedures, evacuation routes, and reporting systems;
- Environmental monitoring plan – establishing the parameters and requirements for monitoring the subproject implementation and operation focusing on air quality, noise levels, water quality, and solid and liquid waste;
- Institutional plan – sets out the responsibilities for implementation of the subproject, including compliance with EMP and monitoring plan, and a health and safety program;
- Information and education campaign – includes the communication plan for the subproject, it identifies responsibilities for dissemination of information to the public, methods and avenues for dissemination, and the timeframe; and
- References and appendices - all information sources, people consulted, ancillary reports.

7.3 Summary of Findings of Cotabato Airport EIS

7.3.1 Summary of Key Environmental Impact Concerns

7.3.1 The EIS concluded that the majority of adverse impacts on the physical, biological and social environment will be incurred during the construction phase. The construction phase effects are considered to be of low to medium adverse impact and are able to be mitigated, as shown in the table below. The EIS also concluded that there are a number of impacts that will be caused as a result of subproject operation, all of which are already being experienced because the airport is an existing facility and would also be experienced in a "without project" case. The main effects include air quality, noise, water quality, and impacts on the community.

7.3.2 A Gaussian plume model was used to determine the effects on air quality as a result of the access road and expansions of the runway at several downwind measuring points. The results showed that for all emissions tested – CO, HC, NOx, SOx and PM - concentrations fell within the prescribed DENR standards. The operational impact on air quality was therefore considered to be minimal, even after modelling for maximum values of background pollutant concentrations.

7.3.3 The EIS provided data showing the increase in noise impacts on the area surrounding the airport for the 2010 and Master Plan cases compared with the 2000 case. The 2010 modelling determined that the 65 dB LDN would increase from a lateral distance of 340 m to 576 m and from a longitudinal distance of 1,341 m to 2,833 m thus enclosing an area of 454 ha, compared with 166 ha in 2000. The impact area would increase to 580 ha in the Master Plan. The existing airport has been operating with minimal noise annoyance complaints from residents within the impact zone (65 dB LDN). It should be noted that the impact of noise was not raised as an issue during the scoping or consultation meetings. Noise pollution was not identified as a negative effect during the perception survey and it is unclear whether it is included under the umbrella term of 'air pollution' which ranked as second highest impact to loss of house or land acquisition.

7.3.5 The impact on water quality as a result of the proposed changes in layout and arrangements is negligible. The apron will be equipped with a separate system for collection of oil or fuel spilled on the runway which will be separated from water before it is discharged to the main drainage system which discharges to the Siawan Creek. Mitigation measures are proposed in the EMP to avoid and minimize emissions to adjacent watercourses.

7.3.6 Land acquisition is considered the most significant effect on the community. This will be undertaken in strict accordance with the Land Acquisition and Resettlement Plan (LARP) to ensure that affected households are not left worse off as a result of project implementation.

7.3.7 For some environmental components the proposed improvements to airport operations will increase the level of these impacts. Mitigation measures have been identified for these impacts, but some depend on the cooperation of other agencies, such as municipal authorities in the case of noise and land use planning. A summary of the impacts is provided in **Table 7.3.1-1**.

Table 7.3.1-1: Summary of Environmental Impacts

Impacts	Magnitude, Time-scale and Geographic Extent of Impact	Mitigation and Enhancement Measures
Construction Phase		
Impacts on the geology and topography; increase in soil erosion and change in relief; possible soil contamination	Insignificant negative, temporary – project site	Diversion of surface run-off flow from exposed soil areas; Construction of soil retaining wall, berm, or temporary interceptor trenches; Provision of secondary containment and lining of fuel/oil storage areas; and Undertake appropriate geotechnical engineering tests

Table 7.3.1-1: Summary of Environmental Impacts (Continuation)

Impacts	Magnitude, Time-scale and Geographic Extent of Impact	Mitigation and Enhancement Measures
Impacts on air quality; possible generation of TSP and increase in ambient concentration of NO_2, SO_2 and CO due to emission from construction equipment	Insignificant negative, temporary – project impact area	Water sprinkling of dust generating areas; Cover construction materials with tarpaulin during delivery and storage; Imposition of speed limits on incoming and outgoing vehicles; and Proper maintenance of construction equipment
Impacts on noise level	Insignificant negative, temporary – project impact area	Maximize daytime period for construction and utilization of excessive noise-producing construction equipment; Night operations noise to be kept within permissible levels; Provision of ear mufflers for workers exposed to excessive noise; and Proper maintenance of equipment
Impact on water quality; increase in dissolved and suspended solids (TSS)	Insignificant negative, temporary – project site	Installation of proper drainage, silt traps, etc.
Sanitary wastewater generation	Insignificant negative, temporary– project site	Provision for sufficient number of proper toilets in the workers' area
Impact on terrestrial ecology	Insignificant negative, temporary – project site	Landscaping and re-vegetation
Generation of construction wastes	Insignificant negative, temporary – project site	Encourage recycling of materials, i.e., use of excess soil as filing materials; Daily collection and delivery of debris to dumpsite; and Establish and enforce solid waste management system
Change in land use	None	No mitigation/enhancement required
Displacement of affected residents/properties	Significant negative, long-term – local level	Strict implementation of resettlement and compensation plans based on proponents Land Acquisition and Resettlement (LARP)
Increase in job business opportunities	Significant positive, short-term - local level	Preference for hiring workers be given to qualified workers within the project site Patronize local goods and services
Additional income and benefits to the local government	Significant positive, short-term - local level	Increased taxes for the local government
Increase of migrants	Insignificant negative, temporary – local level	Hiring of existing residents first; Hiring of qualified local workers on contract basis for airport project only;
Impact on health and safety	Insignificant negative, temporary – project site	Require workers to use safety equipment; Implementation of health and safety program for workers
Traffic	Insignificant negative, temporary - project site	Traffic enforcement within construction area;
Deterioration of visual or aesthetic quality	None beyond project site	Immediate disposal of excavated materials; Good working layout and cleanliness during construction and operational phases

Table 7.3.1-1: Summary of Environmental Impacts (Continuation)

Impacts	Magnitude, Time-scale and Geographic Extent of Impact	Mitigation and Enhancement Measures
Operational Phase		
Increase in air emissions	Insignificant negative, long-term, manageable – local level	Proper maintenance of equipment used in operation; Strict implementation of traffic management
Traffic congestion	Insignificant negative, long-term, manageable – local level	Installation of traffic signage and markers; Proper scheduling of parking/waiting areas; Implementation of traffic management plan in coordination with City traffic planning
Increase in noise level	**Insignificant negative**, long-term, manageable – local level	Request for zoning ordinance that would prohibit building of new houses and other noise sensitive facilities beyond the 65 dB contour line and construction of any new structures to be in accordance with ATO's regulations (incl. height restrictions in flight paths); Enforcement by ATO of aircraft noise abatement procedures (reduced thrust conditions on take-off and flaps setting on landing) and aircraft operating restrictions (no night operation and redesigned flight paths avoiding noise sensitive uses)
Generation of additional wastewater effluent	Insignificant negative, long-term, manageable – project site	Construction of centralized sewerage treatment plant
Generation of solid wastes	Insignificant negative, long-term, manageable – project site	Proper collection and disposal of solid wastes; Adherence to the methods of reducing waste generation; Disposal of hazardous wastes according to local bylaws and regulations
Improved airport utilities and facilities	Significant positive, long-term – local and regional site	Device regulations and programs that will further improve and streamline airport services; Proper maintenance of airport facilities to improve services
Increase in economic activities incl. additional income and benefits to local government	Significant positive, long-term – local and regional site	More jobs and livelihood activities Improve and accessibility of services
Increased commercial activities	Significant positive, long-term – local and regional site	More jobs and business in the area Improvement of transportation services shall encourage mobility and improve tourism and other related economic activities Develop tourism industry through development of other support services

7.3.2 Summary of Recommended EMP, Mitigation and Monitoring Measures

7.3.8 The EIS concluded that the environmental effects, as summarized above, can be mitigated and prepared an EMP identifying the actions required and their costs. A summary of the EMP included in the EIS is provided below.

7.3.9 Of the eleven impacts requiring mitigation, the EIS estimated a cost, over and above the project development cost or costs already included in ongoing programs or activities of government agencies, for nine of the items. The total cost of mitigation as set out in the EMP was estimated as PhP 380,000.

7.3.10 An overall cost for monitoring of PhP 420,000/year was established as the minimum requirement in the EIS. This includes air quality, noise, and water quality during monitoring both the construction and operational phases.

7.3.11 A summary of the EMP is included as **Table 7.3.2-1**.

7.3.3 Summary of Conditions of Environmental Compliance Certificate

7.3.12 The conditions for the three airport subprojects are very similar and include the following items:

- Compliance with the EMP mitigation measures including noise, drainage, waste/sewage treatment and management, spoil handling and storage, traffic management, shore protection, silt and erosion control, and implementation of a safety and risk management plan;
- Memorandum of Agreement between proponent and landowners regarding land acquisition and resettlement, to be approved by EMB prior to any relocation. Livelihood development projects be implemented for all relocating households;
- Preparation and implementation of an information and education campaign on environmental issues and matters related to project construction and operation;
- Establishment of an Environmental Unit (EU) within the proponent/implementing agency, responsible for environmental management and monitoring;
- Specific monitoring requirements including submission of an updated EMP with revisions of necessary, post-assessment permits are secured, compliance audits prepared every two years, and conducting detailed studies (noise and air quality) annually for the first five years;
- Establishment of an Environmental Monitoring Fund and an Environmental Guarantee Fund; and
- Establishment of a Multipartite Monitoring Team for external monitoring and to oversee compliance.

7.3.13 A copy of the ECC is attached as **Appendix B**.

Table 7.3.2-1: Summary of Environmental Management Plan

Impacts	Mitigation/Enhancement Measures	Method of Implementation	Schedule and Frequency of Implementation	Responsible Party	Cost of Mitigation or Enhancement	Guarantee
Construction Phase						
Generation of excessive particulate matter	Regular sprinkling of bare earth surfaces; Project cover to construction materials during delivery and storage; Excavated soil must be stockpiled to avoid particulate airborne; Proper maintenance of equipment	Provide water for spraying dust-generating areas Regular checking of equipment	Throughout construction phase	DOTC and Contractor	PhP 20, 000.00	Compliance with ECC conditions
Increase in TSS/turbidity of surface water	Construction of temporary sediment traps and temporary drainage and diversion canals	Design and construct silt fences and traps	Throughout construction phase	DOTC and Contractor	PhP 80, 000.00	Compliance with ECC Conditions
Noise level concentration	Maximize daytime period for construction and utilization of excessive noise-producing construction equipment; Night operations noise to be kept within permissible levels; Provision of ear mufflers for workers exposed to excessive noise; Proper maintenance of equipment	Inspection and regular maintenance of equipment		DOTC and Contractor	PhP 60, 000.00	Compliance with ECC Conditions
Sanitary waste generation	Provision of portable toilets for workers at the construction site	Procure and install portable toilets	Throughout construction phase	DOTC and Contractor	PhP 50, 000.00	Compliance with ECC Conditions
Impacts on terrestrial ecology	Landscaping and re-vegetation	Landscaping and re-vegetation	Post-construction	DOTC and Contractor	PhP 10, 000.00	Compliance with ECC Conditions
Increase in waste generation	Collection and delivery of debris to dumpsite; Establish and enforce solid waste management system	Design and implement waste management plan that adheres to proper guideline	Pre-construction to construction phase	DOTC and Contractor	PhP 50, 000.00	Compliance with ECC conditions

Impacts	Mitigation/Enhancement Measures	Method of Implementation	Schedule and Frequency of Implementation	Responsible Party	Cost of Mitigation or Enhancement	Guarantee
Impact on health and safety	Require workers to use personal protective safety equipment; Implementation of health and safety program for workers Availability of first aid and medical attention in cases of accident or emergency	Personnel inspection, Design and provide guidelines on health and safety	Throughout construction phase	DOTC and Contractor	PhP 50, 000.00	Compliance with ECC conditions
Land acquisition	Implementation of LARP; Strict compliance with compensation and rehabilitation measures as set out in Framework and LARP	Compliance with Framework and LARP; Monitoring	Before and during the project implementation	DOTC, Coordinating Committee	Included in the project cost	Compliance with ECC conditions and LARP
Traffic	Strict traffic enforcement within the construction area; Systematic scheduling of delivery of construction materials; Provision for traffic construction signs	Provide and implement traffic rules and regulations	Throughout construction phase	DOTC and Contractor	PhP 20, 000.00	Compliance with ECC conditions
Increase in livelihoods and employment opportunities	Priority hiring of local residents, esp. qualified workers; Include construction phase employment as part of LARP rehabilitation measures Implementation of Social Development Plan	Compliance with LARP	Throughout construction phase	DOTC, LGU, Contractor and Coordinating Committee	Included in DOTC/LGU program or included in Contractor's scope of work	Compliance with ECC conditions
Operation Phase						
Air emissions	Proper maintenance of equipment used in operation; Strict implementation of traffic management; Coverage of cargoes during deliveries; Promote Clean Air Act provisions	Coordinate with the local government agencies to facilitate the implementation	Operational phase	DOTC and LGU	Part of project cost	MOA with local government
Increase in noise level	Request for zoning ordinance that would prohibit building of new houses and other noise sensitive	Coordinate with the local government	Operational phase	DOTC and LGU	Part of project cost	MOA with local government

Impacts	Mitigation/Enhancement Measures	Method of Implementation	Schedule and Frequency of Implementation	Responsible Party	Cost of Mitigation or Enhancement	Guarantee
	facilities beyond the 65 dB contour line and construction of any new structures to be in accordance with ATO's regulations; Assist the local government to apply for a land use conversion of the Master Plan impact area into an industrial area to conform with US FAA noise standards	agencies to facilitate the implementation				
Solid waste generation	Regular collection/disposal of waste; Adoption of waste recycling and minimization program	Periodic inspection of disposal site and amount of waste to be disposed	Operational Phase	DOTC and LGU	PhP 40, 000.00	MOA with local government
Generation of liquid domestic waste	Construction of centralized wastewater treatment facility that shall treat domestic wastes prior to discharge	Incorporate as part of the engineering design	Operational Phase	DOTC and LGU	Part of development cost	Engineering design/Compliance to ECC conditions
Benefits to local economy incl. increase in local revenue	None required	None required	Operational Phase	DOTC and LGU	None	None

7.4 Due Diligence Review of Proposed Cotabato Airport Investment

7.4.1 Purpose of Due Diligence Review

7.4.1 The main objectives of the due diligence review are:

- To determine whether there are any substantial or significant design modifications between the original proposal assessed in the EIS and for which an ECC has been granted and those proposed under ITDP and if so, whether they require additional environmental assessment;
- To determine whether baseline environmental conditions have changed since the preparation of the EIS;
- To review of the status of compliance by DOTC; and
- To assess whether the ECC conditions have been, are being, or can be, met by the implementing agency.

7.4.2 The methodology for the due diligence review included field investigations to verify that baseline environmental conditions have not changed, a reading and clear understanding of the EIS and ECC, undertaking of interviews with key personnel of the TADP Project Management Office of the DOTC and DENR-EMB, review of any monitoring reports, and an understanding of the activities and arrangements as proposed under ITDP for the subproject.

7.4.2 Results of the Due Diligence Review

7.4.3 There are no modifications to the TADP's design proposed for Cotabato City Airport under ITDP. Therefore there is no substantive effect on the original assessment as presented in the EIS.

7.4.4 As noted in Section 7.2, the date of ECC issuance was 11 December 2002.

7.4.5 The ECC is valid until December 2007, after which time the same shall be revoked if construction has not commenced unless an extension from DENR has been sought.

7.4.6 The Cotabato Airport subproject has not been implemented. The predicted impacts cannot occur if no preceding construction-related activity has taken place, therefore there are no impacts to mitigate at least in the context of the submitted EMP. In the case of documentary requirements like permits from other government agencies, the same are dependent on the subproject's actual implementation. Similarly, compliance with the ECC conditions is contingent on the construction activities which first have to take place.

7.4.7 The ECC stipulates some 24 conditions. One condition - condition 15 - contains several sub-conditions relating to the establishment of an Environmental Guarantee Fund, Environmental Monitoring Fund, and a Multi-Partite Monitoring Team (MMT). All conditions remain as they stand and will be complied with upon commencement of subproject implementation.

7.4.8 Neither an EU nor MMT have been established. This may be construed as a breach of the ECC conditions (condition 15 and condition 16) requiring that the DOTC set-up such groups. However, it can be argued that because the TADP was not progressed the EU and MMT have

not been required, and therefore this requirement may be deferred until the implementation schedule of the ITDP is determined.

7.4.9 As noted above, there are no design changes since the original subproject EIS was prepared and the existing ECC was issued, therefore the airport subproject does not require any additional environmental assessment for clearance by DENR.

7.4.10 As the subproject is to be implemented beyond the ECC validity period, a request for an ECC extension will need to be fielded by DOTC to EMB-ARMM.

7.4.3 Outline of Procedure for Extension of ECC

7.4.11 DOTC may apply for relief from ECC commitment due to non-implementation of the TADP. The procedure is set out in the provisions of Section 8 of DAO 2003-30 Procedural Manual, which explain that a proponent is given the opportunity to seek relief from the requirement of, or continued compliance with, ECC commitments under the following circumstances:

- A project was not implemented;
- A project was issued ECC but has since been re-classified as Category D; and
- A project has been terminated (including projects that have been abandoned, completed, or decommissioned).

7.4.12 DOTC now wishes to pursue implementation of ITDP and its various subprojects under a new loan package, essentially creating the need for an extension of ECC validity and/or amendments to certain conditions thereof. Section 8.3 of DAO 2003-30 provides the parameters for amending an ECC. There are different levels of approval depending on the nature of the request:

- If modifications are required to the ECC, which is a project and location-specific document, because there are changes to; project location; major changes in process flow or technology to be used that may affect the validity of the EIS findings; or, baseline characteristics have changed significantly that the impact assessment (as embodied in the EMP) are no longer appropriate;
- Major modifications to the original proposal such as; expansion of land/project area; increase in production capacity; or, major change/s in process flow or technology to be used; and
- Minor modifications to the original proposal such as; extension of deadlines for submission of post-ECC requirements; extension of ECC validity; change in company name/ownership; decrease in land/project area or production capacity.

7.4.13 **Figure 7.4.3-1** shows a procedural flow diagram for the processing of a request to amend an ECC.

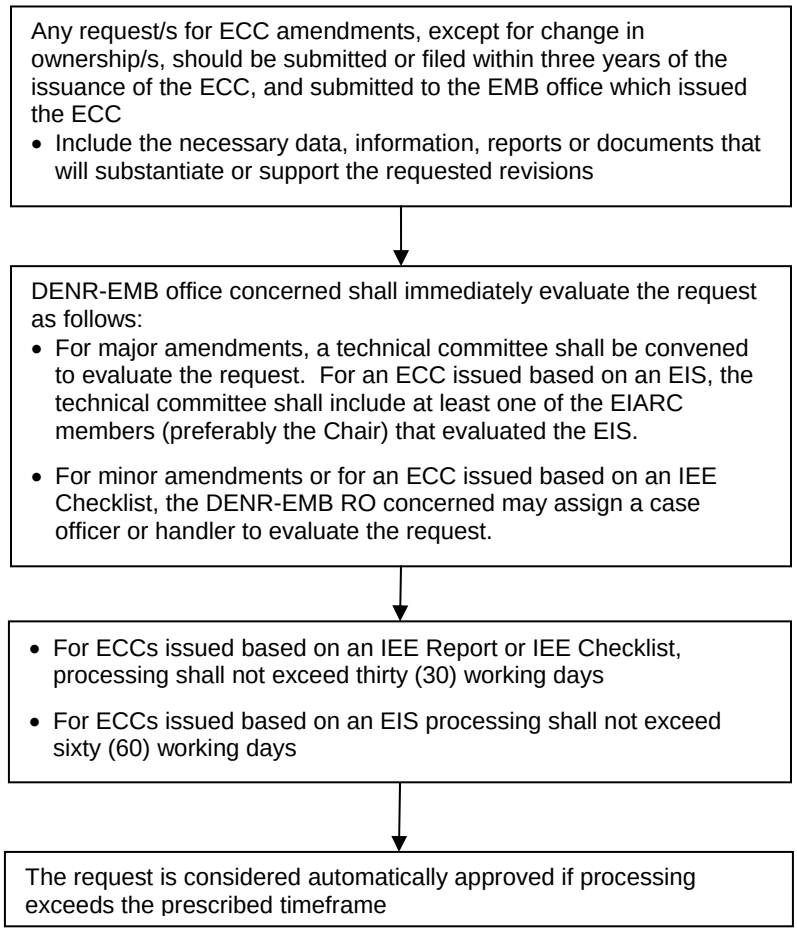


Figure 7.4.3-1: Amendment to ECC Request Procedure

7.4.14 The approximate cost of an amendment to an ECC is PhP 300 for a minor amendment and PhP 1,200 for a major amendment. The requested period of extension of ECC validity should not exceed three years and should be filed at least three months before the expiration of the ECC.

7.4.15 In the case of Cotabato Airport, the ECC was issued in 2002, and therefore the three year period within which extensions may be sought has past. However, there are several valid reasons for requesting a waiver of the foregoing (i) the subproject is an important component of an integrated transport development project, (ii) several ECCs will be sought for various subprojects under the project, and (iii) only one design modification is proposed to the original design for which the ECC was granted and this is minor and does not alter the findings of the already approved EIS or conditions attached to the ECC. It is therefore recommended that DOTC start consulting with DENR as well as DENR-EMB regarding the most appropriate process for requesting a waiver of the three year period for ECC extension request, and the type of documentation required to support such an application. Following DENR agreement to the process, application for an extension of validity can be made in 2008, once the loan conditions have been agreed and the implementation schedule is known with more certainty. The documentation supporting the request for extension would need to include a statement to the effect that the ECC needs to be valid for a further five years in order that the ECC covers the

likely timeframe for commencement and completion of construction (including the possibility of some delay). Approval for ECC extension would need to be gained from DENR prior to start of construction, currently forecast for August 2009.

7.4.4 Recommended Measures to be Applied under ITDP

7.4.16 The conclusion of the due diligence review is that neither the subproject description nor scope of work have changed substantively, only two minor design modifications are proposed under ITDP.

7.4.17 Based on the results of the due diligence review the following recommendations are made:

1. That DOTC advise DENR-EMB of the two design modifications, stating that these are minor in nature and do not change the impact analysis or conclusions of the EIS already submitted.
2. That DOTC apply for an extension of the validity period of the ECC once the overall timeframe for implementation and actual execution of the projects is determined (including design and construction timeframes).
3. That DOTC request a deferment of compliance with specific ECC conditions that have not been needed thus far because the overall project, and subsequently subproject, is still in the planning stages.
4. That compensation and relocation of the affected residents must be carried out strictly in accordance with the LARP in order to avert potential unrest and unnecessary uncertainty for the affected families.
5. That the DOTC establish the EU immediately upon loan agreement in order that the training and capacity building can be provided prior to the commencement of construction activities when the environmental management capability of DOTC will be required. The EU should consist of at least four people, including a head of office and three staff. The functions of the EU will be to handle compliance with the ECC and other environment and safety related matters.
6. That DOTC allocate adequate and regular funding and resources required for the function of the EU and MMT. The appropriate budget must also be set aside for the establishment of the Environmental Guarantee Fund, Environmental Management Fund and all other expenses relating to environmental management and compliance.
7. The total cost of mitigation and implementing the EMP was estimated as PhP 380,000. The EIS was submitted in November 2001. An inflation adjustment of 15 per cent plus a five per cent contingency should be included in the overall budget line for this item. Thus the costs associated with implementing the EMP for Cotabato City Airport will be in the order of PhP 496,000.
8. An overall cost for monitoring of PhP 420,000/year was established as the minimum requirement in the EIS. The EIS was submitted in November 2001. An inflation adjustment of 15 per cent plus a five per cent contingency should be included in the overall budget line for this item. Thus monitoring costs associated with Cotabato City Airport will be in the order of PhP 504,000.

7.5 Consultation, Disclosure and Social Acceptability

7.5.1 Consultation was undertaken during the preparation of the EIS, and has been fully documented in the EIS. Ongoing dialogue with the community, since that time, has focused primarily on land acquisition. There are no design modifications proposed under ITDP and therefore the nature of the impacts and the overall conclusions of the EIS remain unchanged, and no additional consultation has been required. The EIS includes a communications plan which will be implemented by DOTC upon commencement of subproject design.

7.5.2 The Accountability Statement and project endorsements obtained as part of the EIS consultation are included as an appendix to the report.

7.5.3 Disclosure will conform to the new Public Communications Policy of the ADB: Disclosure and Exchange of Information (March 2005) which requires that environmental assessment reports for ADB projects are accessible to interested parties and the general public. The draft IEEs and SIEEs prepared for subprojects will be uploaded on ADB website before appraisal.[1]

7.5.4 A detailed description of the consultation, disclosure and social acceptability is contained in Volume 7.

[1] The project's Resettlement Policy Framework and any resettlement plans prepared during the PPTA will also go through this process.

SECTION 8

Poverty and Social Impact Appraisal

8 POVERTY AND SOCIAL IMPACT APPRAISAL

8.1 Socio Economic Profile

8.1.1 The Cotabato Airport is the gateway to Central Mindanao and the administrative center of the ARMM. The subproject's zone of influence (ZOI) encompasses the three (3) provinces of North Cotabato, Sultan Kudarat and the City of Cotabato in Region 12 and Maguindanao of the ARMM, involving an aggregate land area totaling about 61,819.7 sq. kms.

8.1.1 Population

8.1.2 From 1975 to 2000, the population of subproject's ZOI rose from 1,189,283 to 2,510,099, which represents an average annual population growth rate of 4.4 %, compared to an average national growth rate of 2.3 %.

Table 8.1.1-1: Population of the Subprojects' Influence Area, 1975 – 2000

Province / City	1975	1980	1990	1995	2000
North Cotabato	472,302	564,599	763,995	862,666	958,643
Sultan Kudarat	238,817	303,784	435,905	522,187	586,505
Cotabato City	67,097	83,871	127,065	146,779	163,849
Maguindanao	411,022	452,675	630,674	662,180	801,102
Total	1,189,23	1,404,929	1,957,639	2,193,812	2,510,099

Source of Data: 2002 Philippine Statistical Yearbook

8.1.2 Socio – Economic Profile

8.1.3 The economies of the three ZOI provinces of Maguindanao, Sultan Kudarat and North Cotabato are primarily based on agriculture. The majority of the provinces' inhabitants are engaged in the cultivation and production of rice, corn, coconut, and other agricultural products. In the province of Maguindanao, marine as well as fresh water products also abound.

8.1.4 The City of Cotabato, on the other hand, functions on the main as a center for commerce, trade and services. It also serves as the government center for both Regions 12 and the ARMM. The socio-economic profile of Cotabato City, when viewed in the context of those for both Region 12 and the ARMM overall, exhibits a high level of growth not only in terms of population, but also in terms of income.

8.1.5 In terms of the regional economies of the project's influence areas, the Gross Regional Domestic Product (GRDP) expressed in 1985 constant prices of Region 12 has grown by a total of 35.5% from 1993 to 2002, or an average of 3.9% per year over the 9 year period while the GRDP of ARMM increased by a total of 43.5% or an average yearly annual growth of 4.8% over the same period (see **Table 8.1.2-1**).

Table 8.1.2-1: Gross Regional Domestic Product (in PhP million constant 1985 prices)

Year	Mindanao	Region 12	ARMM
2002	184,299	27,642	9,915
2001	179,184	26,186	9,462
2000	172,730	25,368	9,071
1998	160,082	23,656	8,775
1998	160,082	23,656	8,775
1997	159,634	24,135	8,582
1996	155,260	23,491	8,386

Source of Data: 2002 Philippine Statistical Yearbook

8.2 Poverty Issues

8.2.1 The ZOI provinces are included in the listing of the Philippine's poorest 44 provinces which is a common reference for measuring poverty at the provincial level. The unemployment level of Maguindanao province where the airport is located in 2000 was 8.0 % of the population and some 61.3 % of people lived below the year 2000 poverty threshold of PhP 12,218 per year.

8.2.2 As described in the ITDP Initial Poverty and Social Analysis (IPSA) provided in the Second Interim Report, it is difficult to derive accurate estimates of poverty benefits from the proposed airport subprojects because such facilities and air travel typically serve better off and higher income people and broader ZOIs. Poverty benefits can, however, be inferred from:

- Direct benefits from construction work provided by poor laborers. As summarized in **Table 8.2-1** these benefits over the estimated 2 year construction period may be in the range of 382 person-years of employment, involving an estimated total of US$ 1,070,590 in wage earnings.

Table 8.2-1: Summary of Projected Direct Poverty Benefits from Construction Work provided by Poor Laborers

Total Cost	US$ 35,686,327
Estimated Labor Share	0.10 %
Estimated Labor Cost	US$ 3,568,633
Estimated Poor Labor Share	0.30 %
Estimated Total Poor Labor Income	US$ 1,070,590
Average Length of Construction	2.5 years
Average Poor Wage Bill per Year	US$ 535,295
Average Annual Wage	US$ 1,400
Number of Poor Worker Jobs	191 jobs per year
Total Jobs for Poor Workers	382 person-years

- Indirect "multiplier benefits" benefits from the total wage injection into the communities surrounding the Cotabato Airport, which are estimated to be 2 to 3 times as large as the initial total wage bill of US$ 3.57 million. At least 30 % of this induced income, or some US$ 1,071,000, may accrue to poor households based on the population profile of the ZOI.
- Direct benefits from improved / expanded air cargo handling capacities, particularly for high value products such as fresh / live fish which may be produced by poor fishermen.
- The increased access, direct and indirect economic impact of the airport should help to address poverty alleviation, particularly through increased tourism to the province. **Table 8.2-2** summarizes some of the key types of expenditures and possible sources of poverty benefits from travellers and tourists passing through the Cotabato Airport, which handled some 61,200 passengers in 2004. Average reported length of stay of non-resident visitors / tourists/business operators in the ZOI was 4 – 7 days.

Table 8.2-2: Summary of Key Types of Local Expenditures from April 2004 Surveys of Cotabato Airport Users (sample size: 226 respondents)

Type of Reported Expenditure	Average Amount Reportedly Spent (PhP)
Accommodations (per day)	PhP 500 – 1,000
Meals (per day)	PhP 150 – 300
Transportation (per day)	PhP 200 – 500
Souvenirs (per visit)	PhP 500 – 1,000
Average Length of Stay in CARAGA	4 – 7 days

Source: Third Airports Development Project Feasibility Study, Cotabato Airport, 2004.

8.3 Possible Interventions

8.3.1 No specific poverty alleviation initiatives (PAIs) were identified for the proposed airport subprojects in accordance with the ITDP IPSA and the Second Interim Report. General consideration should be made to introducing poor farmers and fishermen to the potential benefits of shipping high-value products by air to new markets through project coordination with concerned government agencies, non-government organizations (NGOs) and other aid providers in these areas. The proposed types of airport subproject improvements are considered to be gender neutral and women were well represented and directly involved in the subproject evaluation and selection bodies and process. Based on passenger records, women are projected to comprise a significant proportion of the transport users and beneficiaries of the completed facilities.

8.4 Need for Land Acquisition and Resettlement

8.4.1 The need and status of land acquisition and resettlement is summarized in **Table 8.4-1**. These land acquisition and resettlement activities were conducted based on the 2002 Resettlement Action Plan (RAP) prepared by the DOTC and approved by the ADB for these previously proposed TADP investments.

Table 8.4-1: Summary Need and Status of Land Acquisition and Resettlement

1	**Status of Land Acquisition (sq. m.)**	
1.1	Total Land Area Required	492,865 sq. m.
1.2	Area Paid For / Acquired to Date	492,865 sq. m.
1.3	Area under Expropriation Proceedings	0
2	**Fencing Works to Protect Acquired Land**	Program of fencing works is 70 % complete and completion of the work is fully funded by the LGU
3	**Status of Structure Acquisition (% complete)**	
3.1	Percent complete - private structures	100 %
3.2	Percent complete – PAF/PA structures	0 %
4	**Status of Resettlement (number of households)**	
4.1	Total Number of Households to be Resettled	84 households
4.2	Number of Households Resettled to Date	82 households
4.3	Remaining Number of Households to be Resettled	2 households
5	**Status of RAP Expenditures (PhP million)**	
5.1	Original / Agreed RAP Estimated Budget	PhP 93.29 million
5.2	Actual / Revised Budget	PhP 99.87 million
5.3	RAP Expenditures to Date	PhP 66.83 million
5.4	Estimated Budget to Complete all RAP Activities outside TADP's currently available funds	PhP 33.04 million
6	**Summary Results of Supplemental LARP**	
6.1	Additional Land Area to be Acquired (sq. m)	0
6.2	Additional Number of Structures to be Acquired	7
6.3	Additional Number of Households to be Resettled	7
6.4	Estimated Budget to Complete Supplemental LARP	PhP 1.67
7	**Summary Total of Remaining LARP Activities**	
7.1	Land Area under Expropriation Proceedings (sq. m)	0
7.2	Additional Land Area to be Acquired (sq. m)	0
7.3	Total Number of Structures to be Acquired	7
7.4	Total Number of Households to be Resettled	9
7.5	Estimated Budget to Complete All LARP Activities	PhP 34.71

Source: Third Airports Development Project (TADP) Project Management Office (PMO) and ITDP Supplemental LARPs

8.4.2 In summary, land acquisition and resettlement is nearly complete but a balance of PhP 26.46 million will be applied under the ITDP loan to fund remaining land acquisition costs.

8.4.3 In addition to the requirements of the 2002 LARP, the Project Team prepared Supplemental LARP (refer to Appendix X of Volume V) to address the relocation of seven structures/households that were not included in the TADP LARP, but remain within the fence line on government property. The estimated cost of resettling these informal settlers, including the replacement cost for existing structures is about PhP 1.7 million.

8.5 Compensation Policy Framework

8.5.1 The ITDP Land Acquisition and Resettlement Policy Framework and Procedural Guidelines (LARPFPG) are provided in Volume VII, which includes the compensation policy framework. In summary, the objectives of this policy framework are:

- Providing for a proper and humane resettlement of informal settlers.
- Due compensation and other assistance to those families who will be displaced, when their houses will be demolished, or when their land will be acquired.
- Minimizing negative impacts as mush as possible.
- Carrying out the resettlement/compensation so as to improve or at least restore the APs pre-project living standards.
- Informing and consultation with APs on compensation options and RAP design.
- Compensation rates of affected lands and structures in accordance with the ADB's policy and the country's relevant laws.
- Compensation for lost assets and subsidies prior to ground leveling and demolition.

8.5.2 To arrive at a Fair Market Value for land and Replacement Cost for structures, the DOTC had engaged the services of Private Appraiser (Cuervo Appraisers, Inc.) to provide an independent valuation of land and structures affected. Entitlement for compensation and assistance to different categories of Affected People (APs), which are defined as those who stand to lose, as a consequence of the project, all or part of their physical and non-physical assets as summarized in **Table 8.5-1**.

Table 8.5-1: Compensation Entitlement Matrix

Type of Loss	Application	Compensation
Residential / Commercial Land	Actual Area needed by the project and the remaining land is still viable for continued used. Remaining residential area not viable for continued used	Cash compensation equivalent to the reproduction / replacement cost ("market value") of the affected area.
Residential and Residential with Shop / Store	Main structure affected and the remaining portion not viable for continued use	Cash compensation equivalent to the reproduction / replacement cost ("market value") and subsistence allowance if business is loss and disturbance allowance equivalent to PhP 15,000
Independent Shops and/or Store	Main structure affected and the remaining portion not viable for continued use	Cash compensation equivalent to the reproduction / replacement cost and subsistence allowance
Other Fixed Structures	Partially or severally affected	Cash compensation equivalent to the reproduction / replacement cost.
Public Infrastructures and Other Assets	Partially or severally affected	Replacement of functional replication on a turnkey basis with temporary facilities during construction works.
Plants / trees	Partially or severally affected	Cash compensation at market value and sufficient time to harvest crops (or a minimum of 30 days notice)

SECTION 9

Management and Operation

9 MANAGEMENT AND OPERATION

9.1 Management and Operational Philosophy

9.1.1 Completed in 1992, the first Civil Aviation Master Plan (CAMP), which was funded by United Nations Development Program (UNDP) with the assistance of ICAO reviewed the then prevailing civil aviation policies and recommended necessary institutional reforms. It also focused on airport physical infrastructure and air traffic services and support facilities. After identifying short and long term investment requirements, it submitted for government consideration investment programs for the aviation sector.

9.1.2 Under TA No. 2559-PHI granted by the ADB, the 1992 Civil Aviation Master Plan (1992 CAMP) was revised and updated. CAMP II discussed the impact of air transport on the economy, analyzed the prevailing organizational and institutional arrangements in the aviation sector, addressed human resources issues, the financial issues and traffic demand, proposed policy and regulatory reforms and considered the potential role of the private sector. The plan also addressed airport development, air services networks and the CNS/ATM Systems. On infrastructure and service provision, it proposed the transfer of project planning and implementation functions from the DOTC to the ATO whose corporatization was then recommended as the most essential strategy in the institutional restructuring process. The corporatized ATO was envisioned to perform infrastructure and service functions.

9.1.3 The recently completed JICA *Airport Master Plan Study on the Strategy for the Improvement of National Airports in the Republic of the Philippines* analyzed the structure of the aviation sector in the Philippines, identified the problems of the sector, reviewed past studies and plans and made recommendations to improve the sector. Among the recommendations of the study is the restructuring of the aviation sector through the creation by law of two airport authorities – the Airport Authority of the Philippines (AAP) and the Civil Aviation Authority of the Philippines (CAAP). The restructuring is primarily aimed at ensuring the financial autonomy and financial viability of airport owners/ operators, thereby ensuring a steady and reliable source of funds to defray the costs of airport infrastructure development and construction, operation and maintenance. The proposed restructuring was based on the following criteria: a) financial autonomy; b) separation of regulatory and operation functions; c) financial sustainability of airport operators; d) financial sustainability of the civil aviation regulator; and separation of airport and air navigation services.

9.1.4 The civil aviation policy reform program and the attendant institutional strengthening initiatives are presented in full in Chapter 6 of the Main Report.

9.2 Requirements for Successful Private Sector Participation (PSP)

9.2.1 Most Governments have realized that airports, especially gateway airports, are critical to the attractiveness and the economic development of the country. Any country that wants to compete and be a part of the global economy has to improve the efficiency and effectiveness of the air sector. The development of airports has been identified as a key strategic step. Improving accessibility is the reason why airports are so important.

9.2.2 Airports need high levels of capital investment. This is a common factor for any country. Many countries have identified that they do not have sufficient capital for airport

development as they have other demands on their financial resources. Despite this financial constraint, they have not lost sight of the potential benefits of not just developing but in fact "accelerating" their airport development programs, if they want to gain a "competitive edge".

9.2.3 Due to the strategic importance of the airport sector, many national governments have invested significantly in the gateway airports. Other countries have solved the financial constraint problem by inviting the private sector to invest the necessary capital and take out long term leases or other PSP arrangements so that the private sector can enjoy a capital return over time. These governments know they are missing out on certain direct airport revenues by doing this, but they also know that they save capital and it is the Government getting the substantial and accelerated "indirect" benefits that airport development brings.

9.3 Options for PSP

9.3.1 The legal and institutional framework for PSP and Public-Private Partnership (PPP) is provided by Republic Act No. 7718, An Act Amending Certain Sections of Republic Act No. 6957, Entitled An Act Authorizing Financing, Construction, Operation and Maintenance of Infrastructure Projects by the Private Sector, and for other Purposes. The Act's implementing rules and regulations, establishes the legal framework for private sector participation in infrastructure and development projects normally financed and undertaken by the Government.

9.3.2 The eligible types of projects for BOT include construction, rehabilitation, improvement, betterment, expansion, modernization, operation, financing and maintenance of the many types of projects which are normally financed and operated by the public sector which will now be wholly or partly financed, constructed and operated by the private sector, including transport infrastructure and development projects as may be authorized by the appropriate agencies provided that such projects have a cost recovery component which covers at least 50% of the project cost.

9.3.3 For all such PSP projects, a realistic appreciation of the willingness of the private sector to participate in these subprojects has to be considered. Where private sector participation is initially difficult to implement, it might be possible to take a first step towards privatization through creating a state-owned enterprise or strengthen an existing one. If commercial practices are followed by this organization over a period of time and the revenue streams are good, it could be privatized on a competitive tender basis.

9.3.4 Over the years, the decline in private sector interest is widely observed in many parts of the world. The Public-Private Infrastructure Advisory Facility (PPIAF) of the World Bank reported that the decline is an international trend and is brought about by several underlying factors: the more developed middle-income countries had reached the end of the private participation cycle; the financial crises during the '90s brought about a climate of uncertainty; and controversial transactions highlighted the complex political economy of private involvement in infrastructure. The last explanation for investment decline is particularly relevant to the Philippines.

9.4 Historical PSP

9.4.1 The Philippines has had successes in attracting private sector investment in what had previously been considered public infrastructure, especially in the early 1990s in the power sector. The transportation sector has been spotty in achieving completed infrastructure projects

with private participation, although there have been some successes. Such successful arrangements, however, have been structured at the cost of large government subsidies or contingent liabilities.

9.4.2 Because the government has been unable to raise revenues for infrastructure investments, it relied on private sector participation in the sector, especially in the power and energy and transport sectors. The biggest private expenditures on infrastructure were in telecommunications, roads and transport in 1994 and in water resources development and flood control in 1997. The private sector also made substantial investments in power and energy in response to the power crisis in the early 1990s. Unfortunately, private sector participation in infrastructure seems to have waned as an aftermath of the 1997 Asian financial crisis and the lack of confidence in the Philippine economy.

9.4.3 Some progress has been achieved in setting new procedures to facilitate transactions and establishing acceptable criteria for risk allocation. However, the recent judicial interventions on power projects and the pure Build Operate Transfer (BOT) arrangement for the NAIA International Passenger Terminal 3 Project has severely discouraged infrastructure investors, and posed a major challenge to the Government in creating a rational environment to promote successful PPP initiatives.

9.5 Recommended PSP Components

9.5.1 Based on recent experience in the Philippines, and considering the perceived investment climate in Mindanao due to peace and order "problems", the investment by the private sector in basic infrastructure such as a runway and air navigational facilities for an airport is not a realistic assumption to make. Importantly, the relatively low volumes of traffic that exist at most of the subproject airports do not justify the investment and the user charges that would have to be collected fall far short of the amount needed to obtain a reasonable rate of return, say, 20 percent for the private sector.

9.5.2 Therefore, no new PSP components are expected for the Cotabato Airport, except the continued concessioning of commercial areas within the airport complex and mainly within the passenger and cargo terminal buildings.

SECTION 10

Project Costs

10 PROJECT COSTS

10.1 Introduction

10.1.1 The Project cost estimates include all categories of expenditures that are expected to occur in connection with the implementation of a project. These are (a) the investment or development costs and (b) the operating and maintenance (O&M) costs. The investment or development costs refer to expenditure requirements that attend the investment phase of the project while O&M costs are expenses that accompany the operation of the project facility after its completion.

10.1.2 The detailed description and the derivation of the related estimates of the various expenditure items that comprise the project investment costs corresponding to the scope of the works as identified in Section 6 above, including the subsequent O&M cost requirements for the operation of the facility are presented and discussed in the following sections.

10.2 Investment/Development Costs

10.2.1 Investment or development costs cover all project development related expenses and include costs for the following:

a) Base cost for the construction of all civil works and building components identified earlier in Section 6 as part of the scope of the proposed development works. This will include the cost of construction materials, equipment, labor and other related inputs required for the execution of the works and will involve both local and foreign currency costs;

b) The cost of the procurement and installation of airport equipment identified as part of the scope of the development works under Section 6 above. This cost mostly consists of foreign currency costs (90%). Together, the civil works and equipment costs are the base costs.

c) The cost of consulting services for the preparation of the detailed engineering design, specifications and tender documents, assistance in tendering and construction management and supervision;

d) The cost of additional land acquisition and resettlement representing the remaining land to be expropriated, relocation/replacement of structures since the TADP and other payments to affected persons as detailed in Section 8.4;

e) The cost of project administration expenses of the Government, which covers the operation and maintenance of the project management office, created to supervise the day-to-day management of the project;

f) The cost of taxes and duties prescribed under applicable local revenue regulations that are expected to be imposed during the implementation of the Project, which include the extended value-added-tax (EVAT) and duties on imported items. These are denominated solely in local currency; and

g) The cost of physical contingencies to cover possible upward adjustments in the quantities and unit costs of local and foreign currency costs.

10.2.2 In the estimation of the costs corresponding to each of the expenditure items described in the foregoing, the following parameters and assumptions were adopted:

a) The unit costs used to estimate the base costs for the civil works and building components, as well as the acquisition of all related airport equipment were estimated by using the unit rates and prices of work items as derived under the SPADP feasibility study report (2004 price levels) and adjusted to March 2006 prices using the General Construction Price Indexes published by the National Statistics and Coordination Board (NSCB). The resulting unit rates and prices were then applied to the items of work that comprise the scope of the developmental works for civil works and buildings, as well as airport equipment identified in this Study. Relevant equipment required for incorporation in the permanent works includes related airfield ground lighting (AGL) facilities, navigational aids (NavAids) and air traffic control (ATC), communications and meteorological facilities. Labour cost is taken to be 30% of the estimated total cost of the works, and with unskilled and skilled labour having share of 20% and 10% of the total cost of the works, respectively. Moreover, owing to the fact that detailed engineering design plans and specification have already been prepared under the TADP, the breakdown of the local and foreign currency requirements of the base costs of construction that were arrived at under the TADP shall be adopted for the purpose of this Study. In accordance with the latest version of the "Master Budget" prepared under the TADP in August 2001, the breakdown of the local and foreign currency costs for the base cost of construction is taken at 45% and 55% on the average of the total cost of the works, respectively. On the other hand, all related airport equipment (i.e., airfield ground lighting (AGL) facilities, navigational aids (NavAids), air traffic control (ATC), communications and meteorological facilities, airfield maintenance equipment and crash, fire fighting and rescue vehicles) are assumed to be 90% imported abroad

b) For the purposes of preparing a budgetary estimate, the cost of consulting services assume the extensive use of the designs of the proposed facilities prepared in 2004 under the Third Airport Development Project. The consulting services estimates have been prepared for all three airports (Puerto Princesa, Cotabato and Butuan) as if done as a single contract. Of these costs, 40 percent are allocated to Cotabato. A detailed description of the services required and budgetary cost estimates are found elsewhere in this report.

c) The cost of project administration is estimated at three-and-a-half percent (3.5%) of the estimated total base cost, and shall be paid purely in local currency.

d) A twelve percent (12%) EVAT was applied to all expenditure items (except the land acquisition and resettlement costs and project administration costs). An additional three percent (3%) duties/tariff on all imported items was added. All taxes and duties are to be paid in local currency.

e) The cost of physical contingencies is valued at seven percent (7%) of all costs associated with the project.

10.2.3 A summary estimate of the total investment cost requirements for the proposed project in terms of the expenditure items earlier discussed based on the foregoing parameters and assumptions is presented in **Table 10.2-1** below. A more detailed presentation of the estimates of the base cost of civil works and building construction and the acquisition of airport equipment is provided in **Appendix C**.

Table 10.2-1: Estimated Total Project Investment Cost (PhP'000)

Project Component				Project Cost, PhP'000		
				Local Cost	Forex Cost	Total
1.	**Civil Works, Buildings & Intermodal**			**740,373**	**1,115,832**	**1,856,205**
	a.	Materials		518,261	1,115,832	1,634,093
	b	Labor		222,112	0	222,112
		i.	Skilled	74,037	0	74,037
		ii.	Unskilled	148,075	0	148,075
2.	**Airport Equipment Packages**			**3,781**	**34,030**	**37,811**
	a.	Maintenance		246	2,214	2,460
	b.	Crash, Fire Fighting and Rescue		3,535	31,816	35,351
3.	**Consulting Services**			**53,628**	**53,628**	**107,255**
4.	**Land Acquisition & Resettlement**			**34,710**	**0**	**34,710**
5.	**Project Administration (DOTC/ATO)**			**53,033**	**13,258**	**66,291**
6.	**Taxes and Duties**			**241,287**	**0**	**241,287**
5.	**Physical Contingencies**			**78,877**	**85,172**	**164,049**
	Total			**1,205,688**	**1,301,920**	**2,507,608**

10.3 Operating and Maintenance Costs

10.3.1 In the estimation of the O&M cost requirements that are expected to ensue during the operation of the project, the following assumptions that were considered under the feasibility study conducted for the SPADP, which were arrived at in consultation with the concerned airport management, shall be adopted for the purpose of this Study:

a) Additional personnel shall be required for the operation of the improved airport, which will result to a fifty percent (50%) increase in the cost of personnel services from the 2006 level of PhP8,607. The annual increase in personnel services cost is estimated at 1.5% p.a., which is about 25% of the annual passenger growth rate of 4.9% for Butuan Airport. However, no increases in annual personnel costs starting 2020 are assumed when the apron and terminal capacities would have been reached;

b) Other operating expenses, such as the cost of utilities, office supplies, etc., are taken collectively to be equal to twenty percent (20%) of the cost of personnel services at the start of project operation. These are based on earlier estimates under the TADP; and

c) The cost of maintenance for buildings, other civil work components and equipment is estimated at 1% of the total project cost of PhP2.51 billion, which is based on ICAO airport planning guidelines. These are expected to increase by 2% every year following historical trends for ATO-operated airports until 2020 when the apron and terminal capacities would have been reached.

10.3.2 **Table 10.3-1** below shows a summary of the total O&M cost requirements with the project starting its operational stage (Year 2012) based on the above parameters and assumptions. Note that the years when airport apron and terminal congestion without and with the Project were forecasted to be 2009 and 2020, respectively.

Table 10.3-1: Estimated Project Operating & Maintenance Costs (PhP'000)

Year	Incremental O&M Costs with Project				Projected O&M Cost without Project	Total O&M Cost with Project
	Personal Services	Other Operating Costs	Maintenance	Total		
2012	1,583	317	25,076	26,975	9,080	36,056
2013	1,606	321	25,578	27,505	9,080	36,586
2014	1,631	326	26,089	28,046	9,080	37,126
2015	1,655	331	26,611	28,597	9,080	37,677
2016	1,680	336	27,143	29,159	9,080	38,239
2017	1,705	341	27,686	29,732	9,080	38,812
2018	1,731	346	28,240	30,316	9,080	39,397
2019	1,757	351	28,805	30,912	9,080	39,993
2020	1,783	357	29,381	31,520	9,080	40,600
2021	1,783	357	29,381	31,520	9,080	40,600
2022	1,783	357	29,381	31,520	9,080	40,600
2023	1,783	357	29,381	31,520	9,080	40,600
2024	1,783	357	29,381	31,520	9,080	40,600
2025	1,783	357	29,381	31,520	9,080	40,600
2026	1,783	357	29,381	31,520	9,080	40,600
2027	1,783	357	29,381	31,520	9,080	40,600
2028	1,783	357	29,381	31,520	9,080	40,600
2029	1,783	357	29,381	31,520	9,080	40,600
2030	1,783	357	29,381	31,520	9,080	40,600
2031	1,783	357	29,381	31,520	9,080	40,600

10.3.3 The operation and maintenance cost without the Project is estimated at PhP 9.08 million, which is the escalated 2009 figure using the historical average annual growth rate of 1.8% from 2006 (PhP 8.607 million). As noted in Sections 4.3 and 6.7, the maximum passenger and aircraft traffic that could be served are equivalent to the 2009 forecasted traffic. With the Cotabato Airport reaching capacity limits by 2009, there would be no additional air traffic, even during the off-peak times.

10.3.4 With the Cotabato Airport improvement, the operation and maintenance cost will increase from PhP 8.6 million in 2006 to PhP 36.0 million in 2012 when the Project is completed. The incremental O&M cost would increase from PhP 27.0 million in 2012 to PhP 31.5 million in 2020. Thereafter, since the airport would have reached its revised design capacity (Section 6.7), the O&M cost would be held constant until further improvements and capacity upgrades are undertaken outside of the proposed ITDP loan.

SECTION 11

Project Implementation and Disbursement Schedules

11 PROJECT IMPLEMENTATION AND DISBURSEMENT SCHEDULES

11.1 Project Implementation Schedule

11.1.1 The various works that comprise the scope of the project shall be implemented under three (3) contact packages, as follows:

a) Civil Works and Buildings

b) Rescue and Fire Fighting Equipment

c) Airport Maintenance Equipment

11.1.2 Relevant equipment required for incorporation in the permanent works consisting of related airfield ground lighting (AGL), navigational aids and air traffic control (ATC), communications and meteorological facilities shall be included and form part of the civil works and buildings contract package.

11.1.3 The Project will be implemented over a period of four (4) years and six (6) months starting from the sector loan date of effectivity. The estimated time durations for each milestone activities relative to the implementation of the project are given in the table below:

Table 11.1-1: Estimated Time Durations per Milestone Activity

Milestone Activity	Estimated Time Duration
1. Detailed Engineering Design Works	9.2 months
2. Tendering and Contract Award	10.7 months
3. Contract Execution/Completion	24.4 months

11.1.4 The detailed engineering design works is expected to commence by May 2008 and the completion of the works is targeted by January 2012.

11.1.5 The project implementation schedule in the form of a bar chart is given in **Figure 11.1-1** below:

Activity	Timeline Schedule
1. Engineering Design	→ (9 mos., May – Feb 2009)
2. Tender & Award	→ (10.5 mos., Feb 2009 – Jan 2010)
3. Contract Execution	
a. Civil Works & Bldgs.	→ (24 mos., Jan 2010 – Jan 2012)
b. Rescue & Fire Fighting	→ (10 mos., Jan – Oct 2011)
c. Maintenance Equip't	→ (6 mos., Jan – June 2011)

Figure 11.1-1: Implementation Schedule, Cotabato Airport

11.2 Project Financing Plan

11.2.1 The estimated total investment cost amounting to PhP 2.5 billion, excluding price contingencies and financial charges during construction, is proposed to be financed through a mixture of local/Government funds and loan assistance from the ADB.

11.2.2 Under the proposed arrangement, the Government, through the DOTC/ ATO as the lead Executing Agency, shall finance only the costs of project administration and all applicable duties and taxes. ADB on the other hand is expected to provide financing for all the identified developmental works, as follows:

a) Cost of consulting services for engineering design and construction supervision works;

b) Cost of the civil works and buildings components, which includes airport equipment for incorporation into the permanent works consisting of related airfield ground lighting (AGL), navigational aids and air traffic control (ATC), communications and meteorological facilities; and

c) Cost of airport equipment consisting of maintenance equipment and Rescue and Fire Fighting vehicles.

11.2.3 Overall, ADB will be financing 65% of the estimated total project investment cost. This will mean that the proposed ADB loan will likewise be used to finance the local currency cost requirements of the project, except the costs of project administration and applicable duties and taxes.

11.2.4 The proposed financing plan with a breakdown of the estimated total project investment cost by funding source following the arrangement cited in the above is shown in **Table 11.2-1**.

11.3 Annual Project Cash Disbursement Schedule

11.3.1 The estimated annual cash disbursement requirements of the Project consistent with the proposed implementation schedule and broken down by local and foreign currency components are provided in **Table 11.3-1**.

Table 11.3-1: Cash Disbursement Schedule (PhP'000)

Cost Component	2007		2008		2009		2010		2011		Total	
	Local	Forex	Local	Forex	Local	Forex	Local	Forex	Local	Forex	Local	Forex
1. Land Acquisition / Resettlement	34,710	0									34,710	0
2. Consulting Services			13,407	13,407	13,407	13,407	13,407	13,407	13,407	13,407	53,628	53,628
3. Civil Works and Bldgs							296,149	446,333	444,224	669,499	740,373	1,115,832
4. Airport Equipment									3,781	34,030	3,781	34,030
5. Project Administration			13,258	3,315	13,258	3,315	13,258	3,315	13,258	3,315	53,033	13,258
6. Taxes & Duties			3,218	0	3,218	0	93,941	0	140,911	0	241,287	0
7. Physical Contingencies	2,430	0	2,092	1,170	2,092	1,170	29,173	32,414	43,091	50,418	78,877	85,172
Total	37,140	0	31,975	17,892	31,975	17,892	445,928	495,468	658,672	770,668	1,205,688	1,301,920
Total Project Cost											**2,507,608**	

SECTION 12

Financial Analysis and Evaluation

12 FINANCIAL ANALYSIS AND EVALUATION

12.1 Methodology and Approach

12.1.1 Financial analysis, as one of the criteria for decision-making, determines the revenues to be generated to cover the capital cost and operation and maintenance costs to be incurred by the project. Financial analysis is undertaken on the total project/investment point-of-view (all-capital/cost approach) as well as from the viewpoint of the government agency concerned. The total project/investment point-of-view examines the returns on the total invested capital and from the amount of funds (equity) invested by the agency or Government itself. It evaluates whether or not financial receipts generated from the Cotabato Airport operations are adequate to cover the investment and operational and maintenance expenditures.

12.1.2 The financial internal rate of return (FIRR) is estimated using the "with" and "without" subproject comparison. The major assumptions are:

- financial analysis to cover a period of 20 years from the start of operation is based on costs and revenues at constant March 2006 prices;
- capital costs include all incremental capital expenditures associated with the airport, including taxes and physical contingencies, but not interest during construction and price escalation;
- projected traffic growth attributable to the subproject is as presented in Section 4; and
- airport tariffs and charges are based on the prevailing fee structure of Manila International Airport Authority (MIAA), Mactan-Cebu International Airport Authority (MCIAA) and Subic Bay Metropolitan Authority (SBMA).

12.1.3 The main indicator of financial viability for this airport project is the FIRR. This is computed considering only the incremental costs and revenues due to the implementation and operation of the project. For purposes of the financial analysis, the prevailing MIAA/ MCIAA/ SBMA tariff rates as applied to the total expected traffic were taken to estimate the incremental revenues. The project is viable if the computed FIRR is at least equal to or greater than the weighted average cost of capital (WACC) of 7.4% as estimated for the project (refer to Section 12.4.1). Capital costs will be financed through an ADB sector loan (65%) carrying an interest rate of 6% p.a. and the GOP counterpart funds with cost of capital of about 10% p.a.

12.1.4 At the present tariff levels, even those airport projects undertaken by international airport authorities are not financially viable. The sensitivity analysis is undertaken to test the effects of possible unfavourable scenarios with respect to changes in the main parameters that determine subproject costs and revenues. These scenarios include the levels of tariff increase to cover the capital cost and the operating and maintenance costs (break-even analysis).

12.2 Present Financial Performance of the Airport

12.2.1 Existing Level of Airport Charges

12.2.1 The prevailing level of airport charges is as prescribed by Department Order 99E-002 effective January 1, 1999 for air navigation facilities and D.O. 98-1178 effective 1997 for other

fees and charges (**Table 12.2.1-1**). As noted by the JICA National Airport Master Plan, airport tariffs would need to be revised to achieve full cost recovery for provision of airport services. For purposes of the financial evaluation, the higher tariff charged at MIAA, MCIAA and SBMA are assumed to be allowed by a corporatized ATO (**Appendix D**).

Table 12.2.1-1: ATO and Assumed Schedule of Fees and Charges

Fees and Charges	ATO Charges	Based on MIAA, MCIAA and SBMA Charges
1. Air Navigational Charges	½ of the charge in US$ or its peso equivalent is equal to the distance flown by an aircraft in km divided by 100 and multiplied by the aircraft weight factor Ave. P600/arrival or departure	Foreign aircraft-$225/arrival or departure Domestic aircraft-P1000/arrival or departure
2. Landing and Take-off Fees	For Alternate International Airports: P70.00/1,000 kgs. or a fraction thereof upto160,000 kgs and P50.00/1,000 kgs or a fraction thereof in excess of 100,000 kgs For National Airports: P55.00/1,000 kgs, (PCC paved runway) P45.00/1,000 kgs (AC paved runway)	Foreign aircraft – Ave. $4/ton or P208/ton Domestic aircraft – P53.74-P101.72/ton
3. Aircraft Parking Charges	First hour free of charge, additional fee of 10% of landing fees for every additional 15 minutes	Beyond one hour free period: Foreign aircraft-$3-21 per 30min Domestic-Ave. P195.5 per 30min
4. Passenger Service Charge	P40 per departing passenger	Foreign-P550/passenger Domestic-P200/passenger
5. Rental of Floor Space	P50/sqm/month	P150-250/sqm/month
6. Rental of Land Space	Developed area – P10.00/sq.m./month Undeveloped area – P5.00/sq.m./month	Developed area – P50/sqm/mo Undeveloped area – P25/sqm/mo
7. Concession Privilege Fee	Passenger service – P200.00 to P600.00/month Food service – P100.00 to P450.00/month Transportation utilities – P150.00/month Miscellaneous business – P50.00 to P300.00/month	Passenger service – P1000/mo Food service – P1,000/mo Transport service – P500/mo Other business – P800/mo
8. Advertising	Lighted signboards or displays – P60.00/sq.m./month Unlighted signboards or displays – P40.00/sq.m./month Circulars and posters – P30.00/sq.m./month	P250/sqm/mo P100/sqm/mo P50/sqm/mo
9. Aviation, Fuel, Oil and Lubricant Services	Royalty fee: Aviation fuel – P0.03/liter Oil – P0.07/liter Grease – P0.06/100 gram	P0.50/liter
10. Other Fees and Charges	Utilities and other services: Average – P100.00/month/concessionaire	P500/month/concessionaire

12.2.2 Historical Level of Incomes and Expenditures

12.2.2 Airport revenues at Cotabato Airport for the past six (6) years have decreased by about 15% from PhP 4.38 million in 2000 to PhP 3.89 million in 2006 with an average annual growth rate of -2.8% per year (**Table 12.2.2-1**). On the other hand, expenditures increased from PhP 6.91 million to PhP 8.61 million for the same period or an average annual growth rate of 3.4%. In 2006, personal services accounted for 74% of total expenditures, with the rest comprised of repair and maintenance costs and other operating expenses (supplies, utilities, and miscellaneous expenses).

Table 12.2.2-1: Income and Expenditure Statement, Cotabato Airport, 2000-2006

'000 Pesos

	2000 Actual	2001 Actual	2002 Actual	2003 Actual	2004 Actual	2005 Estimated	2006 Proposed
1. Airport Revenue							
Aeronautical Charges							
Landing and Takeoff Fees/Parking Fees	1,592.65	1,152.45	1,014.23	1,163.41	683.52	718.65	755.54
Lighting Charges							
Air Navigational Charges	1,504.62	1,658.76	1,472.83	1,836.74	878.85	925.16	971.40
Sub-Total	3,097.27	2,811.21	2,487.06	3,000.15	1,562.37	1,643.81	1,726.94
Passenger Service Charges							
Passenger Terminal Fees	1,049.64	2,354.84	1,526.04	1,302.92	1,617.30	1,652.76	1,735.40
Aviation Security Fees[(1)]							
Sub-Total	1,049.64	2,354.84	1,526.04	1,302.92	1,617.30	1,652.76	1,735.40
Airport Business Revenues							
Water/Electric/Telephone							
Rental of Floor Areas	163.51	163.51	163.51	350.24	350.24	350.24	350.24
Rental of Land Area	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Concession Privilege Fees							
Vehicle Parking Fees							
Royalties for Aviation Fuel							
Other Revenues	69.06	69.06	69.06	41.60	74.10	74.10	74.10
Sub-Total	232.57	232.57	232.57	391.84	424.33	424.33	424.33
Total Airport Revenues	4,379.47	5,398.62	4,245.67	4,694.91	3,604.01	3,720.90	3,886.68
2. Airport Expenditure							
Personal Services	6,064.10	7,258.51	6,820.73	6,113.48	7,082.66	6,330.91	6,330.91
Maintenance and Other Operating Expenses	847.20	2,240.61	1,710.03	2,672.94	2,294.61	1,820.85	2,276.06
Total	6,911.30	9,499.12	8,530.76	8,786.42	9,377.27	8,151.76	8,606.97
3. Profit (Loss)	(2,531.83)	(4,100.51)	(4,285.10)	(4,091.51)	(5,773.26)	(4,430.86)	(4,720.30)

12.2.3 Cotabato Airport's financial performance has been deteriorating since 2000. For 2006, the national government will have to provide operating subsidy of about PhP 4.72 million.

12.3 Impact of the Project on the Finances of the Airport

12.3.1 Capital Investment

12.3.1 The project's main investment components are civil works, buildings, airport equipment, engineering studies, construction supervision, physical not price contingencies, financing charges during construction, taxes, additional land acquisition/resettlement and project administration. The estimated total investment cost amounting to PhP 2.507 billion (**Table 10.2-1**), excluding financial charges and price contingencies, will be financed through a mixture of foreign loan and government equity as presented in Section 10.2.

12.3.2 Projected Incremental Expenditures

12.3.2 Personnel expenses and other operating expenses, such as repair and maintenance, supplies and utilities, dominate the Airport's cost structure. The cost of personal services in the "with project" scenario will increase due to the additional airport personnel needed for the expanded facilities. This would result to an increase in personnel cost by about 50% from the 2006 cost for personal services. The incremental operation and repair and other O&M costs were earlier presented in Table 10.3-1.

12.4 Financial Viability of the Project

12.4.1 Weighted Average Cost of Capital

12.4.1 Based on current borrowings and loan interest rates of ADB (6% p.a), the coupon rates of the 10-year Philippine treasury bonds issued in February 2006(10% p.a.) and financing ratio of 65:35, the weighted average cost of capital is estimated at 7.4%.

12.4.2 Airport Revenues

12.4.2 Incremental airport revenues were calculated based the incremental forecasted traffic (passengers, cargo flows, aircraft movements) and the prevailing schedule of airport fees as discussed earlier (Table 12.2.1-1 and detailed in **Annex E**). These rates are higher than those currently charged at ATO-operated airports. The airport operating data for the evaluation period of 2012 to 2031 are presented in **Table 12.4.2-1**.

Table 12.4.2-1: Projected Operating Performance, 2012-2031

	2012	2015	2020	2025	2031
Incremental Aircraft Movements					
Domestic-Departures only	728	728	728	1820	1820
A330 (PAL)	0	0	0	0	0
A320 (PAL)	364	364	364	364	364
A319 (CPAir)	364	364	364	364	364
B737 (Air Phils)	-364	-364	-364	-364	-364
Bae 146 (Asian Spirit)	0	0	0	0	0
Dornier 328	0	364	364	364	364
LET 410	364	0	0	0	0
General Aviation	70	121	187	187	187
Incremental No. of Aircraft Parking					
Domestic					
A330 (PAL)	0	0	0	0	0
A320 (PAL)	73	73	73	73	73
A319 (CPAir)	73	73	73	73	73
B737 (Air Phils)	-73	-73	-73	0	0
Bae 146 (Asian Spirit)	0	0	0	73	73
Dornier 328	0	73	73	73	73
LET 410	73	0	0	73	73
Incremental No. of Aircraft (Night Operations)					
Off-peak A320 flight	364	364	364	364	364
Incremental Passenger Traffic					
Domestic	11,842	25,260	55,831	55,831	55,831
General Aviation	211	363	560	560	560
Departing Passengers					
Domestic (50% departures)	6,513	13,893	30,707	30,707	30,707
GA (46.2% departures)	97	168	259	259	259

12.4.3 **Table 12.4.2-2** indicates the estimates of airport revenues associated with the Cotabato Airport improvement.

Table 12.4.2-2: Projected Airport Revenues, PhP'000

	2012	2015	2020	2025	2031
1. Incremental Airport Revenues					
Aeronautical Charges	3,093.21	3,135.20	5,557.04	5,557.04	5,557.04
Landing and Takeoff Fees (Refer to Annex E)					
Domestic	575.71	599.53	2,997.93	2,997.93	2,997.93
General Aviation	7.56	13.02	20.07	20.07	20.07
Terminal Parking Fees (Refer to Annex E)					
Domestic	193.07	193.07	193.07	193.07	193.07
Lighting Charges (Refer to Annex E)	1,425.70	1,425.70	1,425.70	1,425.70	1,425.70
Air Navigational Charges (Refer to Annex E)					
Domestic	873.60	873.60	873.60	873.60	873.60
General Aviation	17.58	30.28	46.68	46.68	46.68
Passenger Service Charges	9,384.74	10,874.84	14,255.84	14,255.84	14,255.84
Domestic	9,021.43	10,497.46	13,860.27	13,860.27	13,860.27
General Aviation	363.30	377.39	395.57	395.57	395.57
Airport Business Revenues	11,896.51	11,915.89	11,960.05	11,960.05	11,960.05
Water/Electric/Telephone	2,750.40	2,750.40	2,750.40	2,750.40	2,750.40
Rental of Floor Areas					
CIP Lounge Rental (PAL)	240.00	240.00	240.00	240.00	240.00
Ticket Counters (8 non-dedicated)	2,184.00	2,184.00	2,184.00	2,184.00	2,184.00
CIP Lounge Rental (CPAir)	180.00	180.00	180.00	180.00	180.00
Airline Offices (4)	960.00	960.00	960.00	960.00	960.00
VIP Lounge (80 sqm)	300.00	300.00	300.00	300.00	300.00
Concession Areas (200 sqm)	480.00	480.00	480.00	480.00	480.00
Cargo Terminal (600 sqm)	1,800.00	1,800.00	1,800.00	1,800.00	1,800.00
Concession Privilege Fees					
Porterage	17.11	36.49	80.65	80.65	80.65
Banks/hotels/Insurance/etc.	180.00	180.00	180.00	180.00	180.00
Taxi/car rentals/travel agencies, etc	135.00	135.00	135.00	135.00	135.00
Shops/coffee & snack bars/etc.	180.00	180.00	180.00	180.00	180.00
Aviation fuel, oil, and lubricants	1,820.00	1,820.00	1,820.00	1,820.00	1,820.00
Rental of developed land area (1,000 sqm)	420.00	420.00	420.00	420.00	420.00
Advertising fees and other income	250.00	250.00	250.00	250.00	250.00
Total Airport Revenues	**24,374.45**	**25,925.93**	**31,772.93**	**31,772.93**	**31,772.93**

12.4.3 Financial Viability Indicators

12.4.4 **Table 12.4.3-1** presents the financial analysis for the base case. Using the all-capital approach, the Cotabato Airport Project is not financially viable with a NPV of negative PhP1.83 billion at a WACC of 7.4% per annum.

12.4.5 Taking the DOTC/ATO point-of-view, the computed NPV is negative PhP919.4 million. This means that DOTC/ATO will lose on its equity for the project with cost of capital of 10%.

12.4.6 It is noted that the airport fees and charges used could not cover the incremental operation and maintenance costs resulting from the project investment on the airport improvement.

Table 12.4.3-1: Financial Evaluation: Base Case, PhP '000

Year	Capital Cost	O & M Cost	Aeronautical Fees	Passenger Service Charges	Airport Business Incomes	Net Financial Benefits
2006						
2007	37,140					-37,140
2008	49,866					-49,866
2009	49,866					-49,866
2010	941,396					-941,396
2011	1,429,340					-1,429,340
2012		26,975	3,093	9,385	11,897	-2,601
2013		27,505	3,107	9,882	11,903	-2,614
2014		28,046	3,121	10,378	11,909	-2,637
2015		28,597	3,135	10,875	11,916	-2,671
2016		29,159	3,369	11,552	11,925	-2,314
2017		29,732	3,689	12,229	11,934	-1,881
2018		30,316	4,128	12,906	11,942	-1,340
2019		30,912	4,732	13,583	11,951	-646
2020		31,520	5,557	14,256	11,960	253
2021		31,520	5,557	14,256	11,960	253
2022		31,520	5,557	14,256	11,960	253
2023		31,520	5,557	14,256	11,960	253
2024		31,520	5,557	14,256	11,960	253
2025		31,520	5,557	14,256	11,960	253
2026		31,520	5,557	14,256	11,960	253
2027		31,520	5,557	14,256	11,960	253
2028		31,520	5,557	14,256	11,960	253
2029		31,520	5,557	14,256	11,960	253
2030		31,520	5,557	14,256	11,960	253
2031		31,520	5,557	14,256	11,960	253
	2,507,608				**NPV (7.4%)=**	**-1,834,087**

12.4.4 Sensitivity Analyses

12.4.7 As noted earlier, the operational and financial performance of domestic airports in the Philippines, except for the capital airport at Manila, tend to result in unprofitable operations. National government capital subsidies are required to maintain their vital role in the socio-economic development of the country. The national capital subsidy level can be reduced if the airport tariff levels are adjusted to account for the real cost of operations and recoup a significant portion of the proposed airport investment, including future investments in capacity expansion.

12.4.8 For the Cotabato Airport, the break-even analysis indicated limited prospects for financial sustainability with the proposed investments as the prevailing airport fees and charges (assumed to be the MIAA, MCIAA and SBMA rates) need to be increased by about 900%. Assuming that the capital cost of improving the Cotabato Airport will be assumed by the National Government, then the airport fees and charges should be raised by about 10% to cover the incremental O&M costs.

12.4.9 To cover at least the airport operation and maintenance expenses, an increase in airport fees up to about 100% is recommended and appears feasible to implement, noting the previous commitment of the Government to the ADB for the Davao International Airport Development Project (Loan 1333-PHI) to increase these fees in the range of 100-250 percent for various categories by January 1998. To this date, the next round of tariff increases has never been implemented by the DOTC/ ATO.

SECTION 13

Economic Analysis and Evaluation

13 ECONOMIC ANALYSIS AND EVALUATION

13.1 Methodology and Approach

13.1.1 The economic analysis of this subproject compares the incremental costs (capital and operation and maintenance costs) and benefits under the "with" and "without" project scenario basis. The "without" subproject scenario refers to the continued operation of the existing facility with only minor physical improvements. The "with" project scenario assumes the implementation of the project resulting in improvements in airport operational efficiency, safety and security. The Cotabato Airport Project was evaluated over a period of 20 years after completion of construction from the estimated opening date of April 2012 to the year 2031. The difference in the projected operation and maintenance cost in the "with" and "without" project scenarios (incremental O&M costs) were included in the evaluation.

13.1.2 All financial costs and revenues were converted to economic costs and revenues by excluding taxes and duties, and by applying shadow pricing for foreign exchange and local unskilled labor. Taxes and fees (representing user charges) imposed on foreign tourists were included as they represent net gain to the Philippine economy. Price escalation contingencies and interest during construction were also excluded from the project costs.

13.1.1 Economic Costs

13.1.3 The economic costs of implementing the Project included airside and landside civil works, maintenance and other related equipment for air traffic control and navigation, land acquisition/relocation and consulting services. Price escalation components, interest during construction, and taxes and duties were deducted from the financial costs derived in Section 12.3.

13.1.2 Economic Benefits

13.1.4 For this airport subproject, the improvement of the airport facilities will directly lead to improved aircraft utilization, reduced incidence of cancellations and diversions and travel-time savings. Through the improvement of facilities to accommodate increased traffic volume and more advanced aircraft, the airport subproject will generate incremental aircraft operating cost savings. The airport subproject at Cotabato will also produce economic benefits by attracting more tourists, whose net expenditure will be treated as a benefit. With the improved airport facilities, higher safety and security levels, and better passenger handling services are realized.

13.2 Economic Investment and O&M Costs

13.2.1 Investment Costs

13.2.1 The Project economic costs were derived by eliminating transfer payments (taxes and duties) and applying the following factors:

- Shadow exchange rate of 1.2 for foreign currency costs; and
- Shadow labor rate of 0.6 for unskilled labor used during construction.

13.2.2 The conversion factors used in the economic evaluation is presented in **Table 13.2.1-1**. The resulting Project economic costs are indicated in **Table 13.2.1-2**.

Table 13.2.1-1: Conversion Factors to Economic Values

Cost Components	Economic Cost Elements for Airport Facilities				
	Civil works	Equipment	Consulting Services	Maintenance	Operation
Foreign Currency Goods/Services	55%	90%	50%	20%	5%
Local Currency Goods/Services	45%	10%	50%	80%	30%
Material	70%	50%	50%	35%	35%
Skilled labor	10%	50%	50%	5%	5%
Unskilled labor	20%	0%	0%	60%	60%
Conversion Factor	**1.07**	**1.18**	**1.10**	**0.85**	**0.85**
Taxes and Duties	Deduct from Costs				

Table 13.2.1-2: Project Economic Costs, PhP'000

	Project Components	Economic Cost, PhP'000					
		Total Investment Cost	2007	2008	2009	2010	2011
1.	Civil Works, Buildings & Intermodal	1,993,010				797,204	1,195,806
2.	Airport Equipment Packages	44,617				44,617	0
3.	Consulting Services	117,981		29,495	29,495	29,495	29,495
4.	Land Acquisition and Resettlement	29,504	29,504				
5.	Project Administration	56,331	0	14,083	14,083	14,083	14,083
6.	Taxes and Duties	0	0	0	0	0	0
7.	Physical Contingencies	176,144	2,610	3,503	3,503	66,126	100,401
	Total	2,417,586	32,113	47,081	47,081	951,525	1,339,785

13.2.2 Operating and Maintenance Costs

13.2.3 The O&M costs in Table 12.3.2-2 were also converted into economic values using a conversion factor of 0.73 as in **Table 13.2.2-1**.

13.3 Project Benefits

13.3.1 Economic Benefits

13.3.1 The Cotabato Airport Project is aimed at improving aviation operational and safety standards by upgrading the facilities to comply with safety standards of ICAO. It will further expand the capacity of the airport in order to be able to serve future air travel demand.

13.3.2 There are, in general, seven categories of economic benefits generated from airport investments. These are:

- Benefits associated with aviation safety and security;
- Aircraft operating cost savings;
- Passenger service improvement benefits;
- Benefits from international business travelers;
- Passenger travel cost savings;
- Airfreight cost savings; and
- Airport repair and maintenance cost savings.

Table 13.2.2-1: Economic O&M Costs, PhP'000

Year	Financial O&M Cost	Economic O&M Cost
2012	26,975	22,875
2013	27,505	23,325
2014	28,046	23,783
2015	28,597	24,250
2016	29,159	24,727
2017	29,732	25,213
2018	30,316	25,708
2019	30,912	26,214
2020	31,520	26,729
2021	31,520	26,729
2022	31,520	26,729
2023	31,520	26,729
2024	31,520	26,729
2025	31,520	26,729
2026	31,520	26,729
2027	31,520	26,729
2028	31,520	26,729
2029	31,520	26,729
2030	31,520	26,729
2031	31,520	26,729

13.3.3 **Benefits associated with aviation safety and security**. One of the most important project benefits would be those associated with improved aviation safety and enhanced airport security. As there is no established methodology to directly quantify and measure safety and security benefits, the "willingness to pay" approach was applied using the air navigational charges and landing/take-off fees to estimate the airline benefits and the passenger terminal fees to estimate the passenger convenience, safety and security benefits of passengers. To avoid double counting, the "willingness to pay" approach was used only for those domestic passengers and aircraft traffic which will not divert or be affected by the airport congestion by 2009. Based on traffic estimates, these consist of 94,855 scheduled and general aviation passengers, of which half are departing from Cotabato Airport and 728 aircraft movements for scheduled flights.

13.3.4 The estimated annual incremental benefits have been estimated as follows:

- Annual Passenger Terminal Fees = 94,855 x 0.5 x (PhP 200 - PhP 30) x 0.88 (EVAT) or PhP 7,095,154
- Annual Aeronautical Fees = 728 x (PhP 1,000 - PhP 600) x 0.88 (EVAT) + 728/2 x (PhP 3,424 - PhP 3,118) x 0.88 or PhP 354,274
- Total Annual Aviation Safety and Security Benefits = PhP 7,449,428

13.3.5 **Aircraft operating cost savings**. The benefits from aircraft operating cost (AOC) savings accrue mainly from the introduction of larger and more fuel-efficient aircraft for domestic operations. The AOC savings were estimated on the difference in the operating expenses in economic terms between A320 (PAL) to be used with the Project and the current B737 aircraft in use. The difference in AOCs is estimated at PhP 1,367/passenger (economic terms). **Table 13.3.1-1** shows the AOC savings for the 20-year evaluation period.

Table 13.3.1-1: Annual Domestic Aircraft Operating Cost Savings, PhP'000

Year	Air Passengers with Project	AOC Savings, PhP'000
2012	102,652	140,342
2013	107,124	146,457
2014	111,597	152,572
2015	116,070	158,687
2016	122,184	167,046
2017	128,298	175,405
2018	134,413	183,765
2019	140,527	192,124
2020	146,641	200,483
2021	146,641	200,483
2022	146,641	200,483
2023	146,641	200,483
2024	146,641	200,483
2025	146,641	200,483
2026	146,641	200,483
2027	146,641	200,483
2028	146,641	200,483
2029	146,641	200,483
2030	146,641	200,483
2031	146,641	200,483

13.3.6 **Business Travel Benefits.** The benefit from increased business travel is quantified on the basis of the incremental foreign business traveller that would be brought to the country because of the improved and upgraded Cotabato Airport. There would be additional benefits arising from the added length of stay of foreign business travellers under the Project, but these were not included in the analysis. Instead of the average length of stay of five days as reported by the local city tourism office, the analysis considered only three days. The economic benefits were calculated using the DOT average foreign tourist expenditures less the cost of providing the tourism service of US$55.45/day of stay.

13.3.7 The share of foreign business travellers for Cotabato was taken as the historic share over the national "tourist" arrivals, which is about 0.15% of total annual arrivals. Forecast of "tourist" arrivals into the Philippines were derived using the MTPDP tourism targets from 2004 to 2010. The estimate of incremental foreign business travellers and the resulting benefits are presented in **Table 13.3.1-2**.

Table 13.3.1-2: Annual Foreign/Business Traveller Benefits, PhP'000

Year	Tourist/Business Traveller Arrivals				Business Traveler Benefits, Php'000
	Philippine Tourist Arrival Targets	Cotabato with Project	Cotabato without Proect	Incremental Business Travellers	
2012	5,948,743	8,923	1,483	7,441	64,363
2013	6,543,617	9,815	1,483	8,333	72,081
2014	7,197,979	10,797	1,483	9,314	80,572
2015	7,917,777	11,877	1,483	10,394	89,911
2016	8,709,554	13,064	1,483	11,582	100,185
2017	9,580,510	14,371	1,483	12,888	111,486
2018	10,538,561	15,808	1,483	14,325	123,917
2019	11,592,417	17,389	1,483	15,906	137,591
2020	12,751,659	19,127	1,483	17,645	152,633
2021	14,026,824	19,127	1,483	17,645	152,633
2022	15,429,507	19,127	1,483	17,645	152,633
2023	16,972,458	19,127	1,483	17,645	152,633
2024	18,669,703	19,127	1,483	17,645	152,633
2025	20,536,674	19,127	1,483	17,645	152,633
2026	22,590,341	19,127	1,483	17,645	152,633
2027	24,849,375	19,127	1,483	17,645	152,633
2028	27,334,313	19,127	1,483	17,645	152,633
2029	30,067,744	19,127	1,483	17,645	152,633
2030	33,074,518	19,127	1,483	17,645	152,633
2031	36,381,970	19,127	1,483	17,645	152,633

13.3.8 **Passenger service time benefits**. The passenger service improvement benefits are the time cost savings resulting from shorter queuing times at counters and security checks as well as shorter waiting times in baggage retrieval upon passenger arrival. In the absence of a willingness-to-pay survey, the valuation of passenger waiting time of about PhP 120/hour for Cotabato Airport passengers was used. It is noted, however, that recent interview of passengers of departing at Zamboanga Airport revealed a "willingness-to-pay" value of PhP 200/trip due to increased comfort and convenience from improved airport terminal facilities.

13.3.9 Based on the airport facilities to be installed at the airport "with the Project", it was estimated that "savings in time" for departing passenger queuing for check-in/security check is 30 minutes, while "savings in time" for arriving passenger waiting for baggage retrieval is 45 minutes. **Table 13.3.1-3** presents the estimate of passenger service improvement benefits.

Table 13.3.1-3: Passenger Service Improvement Benefits

Year	Incremental Air Passengers	Annual Passenger Service Time Cost Savings, PhP'000		
		Arrival	Departure	Total
2012	11,842	533	355	888
2013	16,315	734	489	1,223
2014	20,787	935	623	1,559
2015	25,260	1,136	758	1,894
2016	31,374	1,412	941	2,353
2017	37,489	1,687	1,124	2,811
2018	43,603	1,962	1,308	3,270
2019	49,717	2,237	1,491	3,728
2020	55,831	2,512	1,675	4,186
2021	55,831	2,512	1,675	4,186
2022	55,831	2,512	1,675	4,186
2023	55,831	2,512	1,675	4,186
2024	55,831	2,512	1,675	4,186
2025	55,831	2,512	1,675	4,186
2026	55,831	2,512	1,675	4,186
2027	55,831	2,512	1,675	4,186
2028	55,831	2,512	1,675	4,186
2029	55,831	2,512	1,675	4,186
2030	55,831	2,512	1,675	4,186
2031	55,831	2,512	1,675	4,186

13.3.10 **Passenger Travel Cost Savings**. The domestic passenger travel cost savings were computed as the savings in travel cost (economic terms) for incremental air passengers "with the Project" who would have to travel by land transport to either Davao Airport (80%) or General Santos Airport (20%). Diverted air passengers due to airport congestion will travel to these alternate airports using private cars (average of two passengers per car). The road distances from Cotabato Airport are 228 and 200 kilometers for Davao and General Santos, respectively. The estimates of additional road transport costs are PhP 1,609 for Davao passengers and P1,412 for General Santos passengers, inclusive of the travel time value of PhP 120/hour for Cotabato air passengers. **Table 13.3.1-4** shows the computed air passenger travel cost savings.

13.3.9 **Savings in Air Freight Costs**. The savings in air freight costs were estimated on the assumption that the high-value air cargo volumes, principally fish and other aquatic products, will have to be shipped via Davao Airport. This alternate airport for air cargo at Cotabato offers higher air service frequencies, and the preferred mode of shipment even with tuna shippers from General Santos.

13.3.10 The estimated savings in truck cost is about PhP 35 per kg for the 220-kilometer road distance between Cotabato and Davao. **Table 13.3.1-5** presents the annual airfreight cost savings.

Table 13.3.1-4: Annual Domestic Passenger Travel Cost Savings, PhP'000

Year	Incremental Air Passengers	Annual Passenger Travel Cost Savings, PhP'000
2012	11,842	14,597
2013	16,315	17,504
2014	20,787	22,303
2015	25,260	27,102
2016	31,374	33,662
2017	37,489	40,223
2018	43,603	46,783
2019	49,717	53,343
2020	55,831	59,903
2021	55,831	59,903
2022	55,831	59,903
2023	55,831	59,903
2024	55,831	59,903
2025	55,831	59,903
2026	55,831	59,903
2027	55,831	59,903
2028	55,831	59,903
2029	55,831	59,903
2030	55,831	59,903
2031	55,831	59,903

Table 13.3.1-5: Annual Air Freight Cost Savings, PhP'000

Year	Incremental Air Cargo, tons	Savings in Truck Shipment Cost, PhP'000
2012	1,285	44,970
2013	1,399	48,970
2014	1,513	52,971
2015	1,628	56,971
2016	1,783	62,415
2017	1,939	67,859
2018	2,094	73,303
2019	2,250	78,747
2020	2,405	84,191
2021	2,405	84,191
2022	2,405	84,191
2023	2,405	84,191
2024	2,405	84,191
2025	2,405	84,191
2026	2,405	84,191
2027	2,405	84,191
2028	2,405	84,191
2029	2,405	84,191
2030	2,405	84,191
2031	2,405	84,191

13.3.11 **Airport Repair and Maintenance Cost Savings**. The Cotabato Airport is the main gateway to ARMM and serves the ARMM Regional Government Center located in Cotabato City. From the socio-political perspective, there is recognition by the Government of the importance of maintaining the airport open for air services, particularly to reassure the officials of the predominantly Muslim areas of the clear resolve of Government to pursue the peace efforts with the MILF (an agreement between the Government and this Muslim separatist group is in the advanced stage of conclusion).

13.3.12 Based on DOTC estimates of the required repair works at Cotabato Airport, particularly the runway rehabilitation/overlay, airstrip correction, and replacement of air navigational and other equipment, annual maintenance budget of about P60 million has to be provided. This annual maintenance cost refers to deferred maintenance and repair works for the airport.

13.3.2 Economic Viability of the Project

13.3.13 The EIRR has been estimated for the Cotabato Airport Project at 15.2% and NPV of PhP 18.9 million based on the NEDA-prescribed opportunity cost of capital of 15% (**Table 13.3.2-1**). The result indicates that business traveller benefits and air cargo shipment savings are the main benefits.

13.3.3 Sensitivity Analyses

13.3.14 Sensitivity analysis was carried out to test the effects of possible unfavourable scenarios with respect to changes in the cost and benefit parameters (**Table 13.3.3-1**). This analysis indicated that the Project would continue to have marginal economic viability even under severe conditions involving a 10% cost increase and 10% decrease in benefits with an EIRR of 12.5%.

Table 13.3.3-1: Sensitivity Analysis Results

Scenario	EIRR, %	NPV, PhP million (15%)
Base Case	15.2	18.9
10% Increase in Costs	14.1	-103.8
10% Decrease in Benefits	13.9	-105.4
10% Increase in Costs and –10% in Benefits	12.5	-225.6

Table 13.3.2-1: Economic Evaluation of the Project, P'000

Year	Capital Cost	O & M Cost	Aviation Safety and Security	Aircraft Operating Cost Savings	Business Traveller Benefits	Passenger Service Improvement	Passenger Travel Cost Savings	Cargo Shipment Cost Savings	Repair and Maintenance Cost Savings	Net Economic Benefits
2007	32,113									-32,113
2008	47,086									-47,086
2009	47,086									-47,086
2010	951,769									-951,769
2011	1,340,148									-1,340,148
2012		22,875	7,097	140,342	64,363	888	14,597	44,970	60,000	309,382
2013		23,325	7,097	146,457	72,081	1,223	17,504	48,970	60,000	330,009
2014		23,783	7,097	152,572	80,572	1,559	22,303	52,971	60,000	353,291
2015		24,250	7,097	158,687	89,911	1,894	27,102	56,971	60,000	377,414
2016		24,727	7,097	167,046	100,185	2,353	33,662	62,415	60,000	408,032
2017		25,213	7,097	175,405	111,486	2,811	40,223	67,859	60,000	439,669
2018		25,708	7,097	183,765	123,917	3,270	46,783	73,303	60,000	472,426
2019		26,214	7,097	192,124	137,591	3,728	53,343	78,747	60,000	506,416
2020		26,729	7,097	200,483	152,633	4,186	59,903	84,191	60,000	541,764
2021		26,729	7,097	200,483	152,633	4,186	59,903	84,191	60,000	541,764
2022		26,729	7,097	200,483	152,633	4,186	59,903	84,191	60,000	541,764
2023		26,729	7,097	200,483	152,633	4,186	59,903	84,191	60,000	541,764
2024		26,729	7,097	200,483	152,633	4,186	59,903	84,191	60,000	541,764
2025		26,729	7,097	200,483	152,633	4,186	59,903	84,191	60,000	541,764
2026		26,729	7,097	200,483	152,633	4,186	59,903	84,191	60,000	541,764
2027		26,729	7,097	200,483	152,633	4,186	59,903	84,191	60,000	541,764
2028		26,729	7,097	200,483	152,633	4,186	59,903	84,191	60,000	541,764
2029		26,729	7,097	200,483	152,633	4,186	59,903	84,191	60,000	541,764
2030		26,729	7,097	200,483	152,633	4,186	59,903	84,191	60,000	541,764
2031		26,729	7,097	200,483	152,633	4,186	59,903	84,191	60,000	541,764
	2,418,201							**EIRR =**		**15.21%**
								NPV(15%) =		**18,903**

SECTION 14

Institutional Capacity

14 INSTITUTIONAL CAPACITY

14.1 Introduction

14.1.1 Weak institutions have often been cited as a principal cause of failures in development programs in the Philippines. Strengthening these weak institutions would entail improving organizational structures, streamlining procedures, reforming incentive systems, and staff training.

14.1.2 The institutional framework of the civil aviation sector is defined under the Civil Aeronautics Act which gives the DOTC the overall responsibility for policy, planning and implementation of airport development projects. Under the DOTC, the ATO is responsible for safety regulations, providing air traffic control and navigational services, and managing the 86 national airports. With weak linkages at the airport level due to the bureaucratic layers of decision-making, the planning, development, operation and maintenance of the national airports are not integrated. For instance, investment decisions are not matched by increases in manpower complement as experienced in the New Davao International Airport where the counterpart project management team, who have been trained to handle the more modern airport equipment, have yet to be integrated into the airport personnel plantilla after more than three years of operation.

14.1.3 Moreover, the separation of the airport planning and operation functions within ATO resulted in the airports being considered as merely cost centers. The airport managers, with limited responsibility on the business/commercial aspects of airport management and no responsibility on the planning OF airport improvements, are not motivated to transform their respective airports into revenue and cost centers.

14.1.4 The proposed establishment of the Civil Aviation Authority of the Philippines (corporatized ATO) has been viewed in the past as well as in this ITDP work as extremely necessary as the anchor initiative to reform the civil aviation sector of the Philippines and align its structure and performance to internationally accepted practices.

14.1.5 The effectiveness of the DOTC and ATO in policy and planning implementation impacts on the long-term capacity and responsiveness of the aviation sector to changing markets and demands. The JICA National Airport Master Plan has identified key areas to strengthen institutional capacity under the proposed CAAP organizational structure, notably:

- Airport Safety Standards and Certification System, including the preparation of the Aerodrome Manual for Airports;
- Establishment of rational airport pricing regulations;
- Further establishment of airport security programmes;
- Improvement in airport data quality and management; and
- Training programs focusing on aerodrome safety and aviation security.

14.1.6 More importantly, further training and technical assistance need to be extended to ATO as a new corporation in the fields of:

- Asset management (investment planning and budgeting, procurement procedures, project management, asset evaluation, preparing for asset maintenance and replacement, airport land management, and financial reporting on assets);
- Financial management (records keeping, accrual accounting and activity-based costing, charging mechanisms and structure, financial reporting, budgeting principles as a corporation and balance sheet preparation);
- Business planning (corporate vision/goals/objectives, organizational structures, budgeting for airport operations and airport investments, development of performance indicators and target setting and measurements);
- Airport management (aeronautical services, airport business and other user services, airport tariff setting and community relations);
- Human resources management (assessment of staffing patterns, staff selection and promotion, staff remuneration and other benefits, staff training and career development process, and staff communications); and
- Management information systems (operation and financial reporting systems, maintenance planning systems and personnel deployment systems).

14.2 Recommended Capacity Building Program

14.2.1 As part of the institutional strengthening component of the proposed ITDP sector loan, airport personnel of Cotabato Airport should be direct participants in the training programs and systems and procedures development. Based on the above, the main areas for intervention include: airport security and aeronautical safety, airport finance and management planning, airport maintenance and improvement planning and budgeting, database management and reporting, and staff training and development.

SECTION 15

Risk Analysis

15 RISK ANALYSIS

15.1 Risk Types and Countermeasures

15.1.1 From the economic perspective, project risks can adversely impact on costs and benefits. In the case of costs, this can mean unanticipated increases during the implementation and the operation of the project. Likewise, benefits may be reduced because of a reduction in traffic due to poor security conditions in the area or adverse economic conditions affecting the hinterland of the airport. Delays in the implementation are also a project risk and affect costs by increasing them and retard or reduce benefit.

15.1.2 During the implementation of the project, the following could occur.

Risks / Impacts	Mitigation Measures
Lack of accurate geotechnical (Particularly off-shore) data increasing risks of higher cost and delays.	Employment of a qualified consultant to oversee the final designs including adequate funding for geotechnical investigations.
Not having the right of way available before construction commences delays implementation and increases costs.	Thorough investigation during the DE stage to identify right of way issues. All of the construction is within the airport itself requiring no new right of way for construction activities.
Unanticipated delays and/or increase in costs due to sizable exchange rate fluctuations, *force majeur*, construction accidents, etc,	Employment of a qualified construction supervision consultant to mitigate these issues by minimizing their impact on cost and schedule. Maintain secure and safe working conditions on site.
Security concerns against persons and equipment can result in higher costs and delays in project implementation.	Airports have been relatively free of these risks by having vigilant security personnel and maintaining adequate security procedures.

15.1.3 During the operation of the project, the following could occur.

Risks	Mitigation Measures
Lack of experience operating modern airport equipment and facilities	Training of airport personnel by the civil works contractor and equipment supplier by incorporating these requirements in the contract documents
Lack of maintenance: This reduces the life of the facilities.	DOTC/ATO must provide adequate funding for maintenance to assure sustainability and functionality of the facilities.
Security concerns against persons and equipment increases costs and decreases traffic (benefits).	Airports have been relatively free of these risks by having vigilant security personnel and maintaining adequate security procedures.

15.2 Risk Assessment for the Airport Project

15.2.1 The Cotabato Airport Project has been the subject of previous studies and extensive project evaluation and stakeholder consultation over the past 10 years. In many ways, while this also represents unwanted delays to the project, it does help reinforce the continued demand and support for the project and therefore reduce political and institutional risk.

15.2.2 The following are a summary of identified project risks that may impact on the successful completion of the project:

15.2.3 **Stakeholder Risks.** The project may require another or at least an addendum to the existing Philippine Army agreement associated with the land swap arrangements between the AFP and DOTC/ATO and also the replication of facilities. This maybe required as the concept for the project as outlined in this Study has changed from the concept agreed to with the AFP under the TADP, although not in a significant way.

15.2.4 **Readiness Risks.** The separate DOTC project to replicate the AFP facilities to allow the development of the original TADP project has commenced but has not significantly advanced and appears to have stopped. It should have been completed in 2003 to meet the original schedule for the TADP. The fact that it has not significantly advanced up until May 2006 would suggest that there is a significant risk it will not be completed prior to the commencement of schedules under this ITDP.

15.2.5 There are a few occupants on land areas designated for the new passenger terminal area, terminal access road and areas to the southwest inside the widened 300m strip. These occupants should have been relocated under the TADP. One reason they have not been relocated may in part be associated with the lack of progress associated with the AFP replication of facilities contract (discussed above). Further discussions with the AFP and possible additional surveys are needed to quantify the extent of the problem, the exact causes and the likely speed proper solutions can be implemented.

15.2.6 **Funding Risks.** The DOTC annual infrastructure budget has remained at the PhP 3.1 billion level from 2002-2005. The budget deficit problem of the national government required the imposition of new tax measures and stringent controls on the expenditure program. With the budget deficit expected to be within manageable limits by 2009, the funding risk may have diminished, but the ability of the Government to meet counterpart funding requirements needs further commitment during the loan appraisal stage.

15.2.9 **Revenue or Market Risk.** The project is scheduled to come on line and be operational by 2012, or 6 years after this feasibility study. To date, the traffic growth at Cotabato has been erratic with relatively dramatic decreases and increases in traffic numbers over various two to three year periods due to a variety of reasons ranging from general economic conditions, airline withdrawal, and peace and order conditions (kidnapping). The forecasts, while not considered particularly aggressive or optimistic, do account for long term trends although it is possible that there could be any number of future developments or events that could interrupt continued growth.

15.2.10 **Operational Risks.** Small regional airports, such as Cotabato, can be subject to dramatic increases or decreases in passenger and aircraft traffic in short periods of time as they are more sensitive to external economic or other “shocks” that impact on the industry. The history of traffic at Cotabato has been erratic and reinforces this point. However if there is

underlying confidence in the nature of the destination and its primary markets, airports such as Cotabato should be prepared for the “upside swings” that do often occur. The key in planning and design is the retention of flexibility to adapt the airport facilities and operation if required. The concept design under this Study is considered flexible although there are constraints to the easy/rapid expansion of aircraft parking areas should greater than anticipated growth in aircraft parking demand occur. Where other facilities can continue to operate in congested states, it is not possible to bunch up aircraft. Given the nature of the assumptions associated with the aircraft parking demand forecast and given the importance of ensuring adequate aircraft parking areas at any airport, this would be a reasonable operational risk.

SECTION 16

Conclusions and Recommendations

16 CONCLUSIONS AND RECOMMENDATIONS

16.1 The Proposed Project

16.1.1 The Project maybe briefly described as follows:

- A new passenger terminal complex including ATC, cargo, administration, maintenance and other support facilities to the northwestern side of the existing runway.
- A new access road to the passenger terminal complex off a road leading to the national highway.
- Extended runway, establishment of 150 m wide runway strip.
- New security fencing and removal of remaining obstacles.

16.1.2 The project depends on the successful implementation of the agreement with the AFP and any actions by DOTC such as replication of AFP facilities and relocation of AFP operations to be done separately prior to the commencement of this project.

16.2 Project Risks and Sensitivities

16.2.1 Section 15 summaries various risks associated with the project. The major risks to the successful implementation of the project are summarised as follows:

- Successful and timely replication of AFP/ PAF facilities to the satisfaction of the AFP/ PAF prior to the commencement of this project;
- The successful relocation of the remaining affected persons and buildings still within the project site area prior to the commencement of this project;
- The ability for the Government to allocate and approve the required 35% counterpart funding in accordance with the project schedule; and
- Timely procurement of the design and construction supervision consultant to complete the project preparation and bid preparation works.

16.3 Financial Viability

16.3.1 In common, with other national airports in the country, full financial viability of operations with increasing demands of operational and safety improvements cannot be assured at Cotabato Airport. As presented in Section 12, full cost recovery can only be achieved if the airport fees and charges are raised by 900% from the assumed level (MIAA/MCIAA/SBMA rates).

16.4 Economic Viability

16.4.1 From the point of view of the Philippine economy, the Project has demonstrated marginal economic feasibility with base case EIRR of 15.2% (NPV of PhP 18.9 million at 15% cost of capital) and with extreme case (10% increase in costs and 10% decrease in benefits) EIRR of 12.5% (NPV of -PhP 225.6 million).

16.4.2 It should also be noted that the recommended improvements will bring the airport up to the ICAO standards and that the future traffic may exceed forecasts if a peace agreement is signed with the MILF.

16.5 Immediate Project Implementation Steps

16.5.1 Noting the above project risks, mainly on the replication of AFP/ PAF facilities and land acquisition/ resettlement, the DOTC and ATO has to address these immediately to demonstrate its clear resolve to pursue the Cotabato Airport Project through the proposed ADB intermodal transport sector loan.

16.5.2 The civil aviation policy reform agenda, which is discussed in Chapter 6 of the Main Report, has to be approved by the NEDA Board upon the recommendation of DOTC prior to loan application.

16.6 Recommendations

16.6.1 The following recommendations are made based on the outcomes of this Feasibility Study:

- The project, as defined in the Study, should be carried forward for approval to carry out the detailed design and construction on the basis of favourable economic benefits that exceed minimum hurdle rates as lay down by the ADB and NEDA.

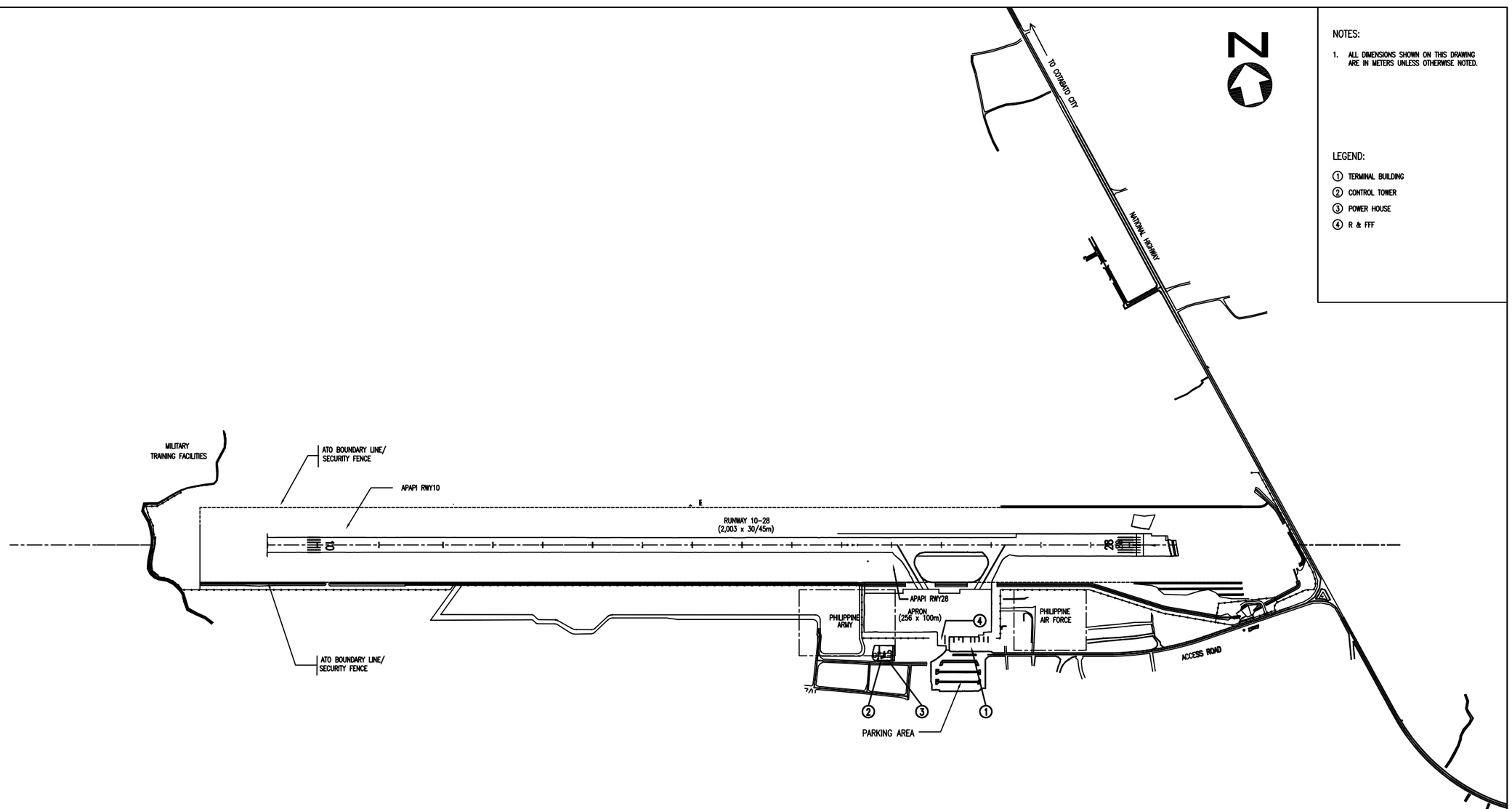
- The detailed design phase should be initiated by an update of the Master Plan to examine the limitations identified with the current design concept and to ensure that the detailed design for the current project is optimised with respect to subsequent development phases.

- The next phase of the project should be initiated as soon as practical, noting the capacity constraint starting in 2020, in order to minimize the various risks associated with the project, many of which are time dependant.

APPENDIXES

APPENDIX A

Layout Plans



NOTES:

1. ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METERS UNLESS OTHERWISE NOTED.

LEGEND:

1. TERMINAL BUILDING
2. CONTROL TOWER
3. POWER HOUSE
4. R & FFF

APPENDIX A: EXISTING AIRPORT LAYOUT

SCALE : 1:8,000

Note:

1. The concept layout is based on the detailed design drawings prepared under the Third Airports Development Project as sourced from DOTC.

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In association with:
PACIFIC CONSULTANTS INTERNATIONAL

Project Name:	Design Concept:	Sheet Contents:	Graphic Scale:	Sheet No.
Intermodal Transport Development Project	**COTOBATO AIRPORT**	EXISTING AIRPORT LAYOUT	0 50 100 200 300 400m GRAPHIC SCALE 1:8,000	**A-1** Date DD/MM/YY

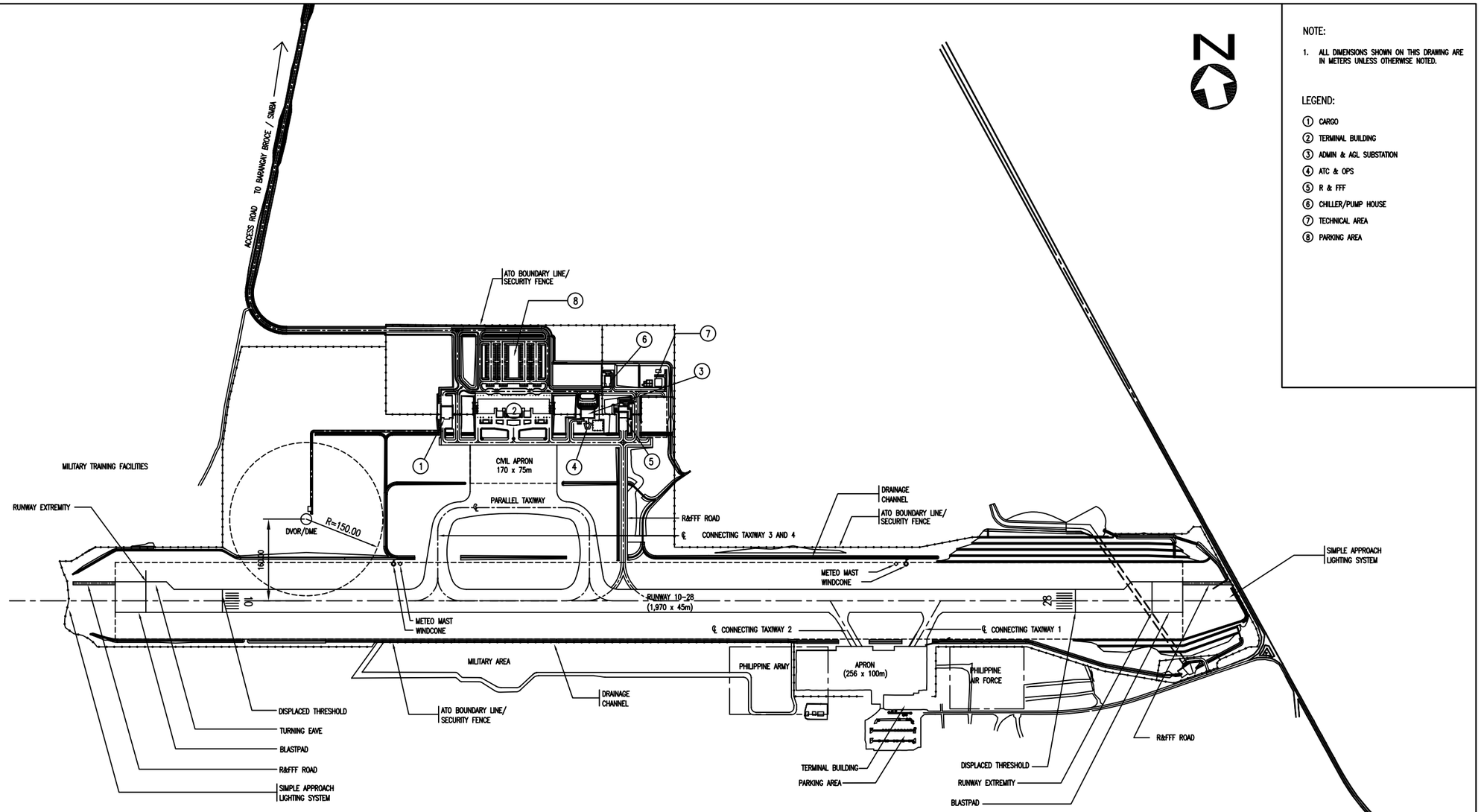
A4

NOTE:

1. ALL DIMENSIONS SHOWN ON THIS DRAWING ARE IN METERS UNLESS OTHERWISE NOTED.

LEGEND:

① CARGO
② TERMINAL BUILDING
③ ADMIN & AGL SUBSTATION
④ ATC & OPS
⑤ R & FFF
⑥ CHILLER/PUMP HOUSE
⑦ TECHNICAL AREA
⑧ PARKING AREA



APPENDIX A: PROPOSED DEVELOPMENT PLAN

SCALE : 1:8,000

Note:

1. The concept layout is based on the detailed design drawings prepared under the Third Airports Development Project as sourced from DOTC.

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Project Name:	Design Concept:	Sheet Contents:	Graphic Scale:	Sheet No.
Intermodal Transport Development Project	**COTOBATO AIRPORT**	PROPOSED DEVELOPMENT PLAN	0 50 100 200 300 400m GRAPHIC SCALE 1:8,000	**A-2** Date DD/MM/YY

A4

APPENDIX B

Copy of Environmental Compliance Certificate (ECC)

بسم الله الرحمن الرحيم

Republic of the Philippines
Autonomous Region in Muslim Mindanao
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES – ARMM
OFFICE OF THE REGIONAL SECRETARY
ARMM Compound, Cotabato City
Tel. No. 421-43-92 / Telefax 421-43 87

RELEASED
Date: 12/11/02 Time: 1:20 pm
By:

ENVIRONMENTAL COMPLIANCE CERTIFICATE

ARMM2002-12-11011 - 120

The Environmental Management Bureau, Department of Environment and Natural Resources Autonomous Region in Muslim Mindanao hereby grants this ENVIRONMENTAL COMPLIANCE CERTIFICATE (ECC) to the proposed **Upgrading and Rehabilitation of Cotabato Airport** to be located at Barangay Awang, Datu Odin Sinsuat, Maguindanao under the Third Airport Development Project of the Department of Transportation and Communication (DOTC), after complying with the Environmental Impact Assessment (EIA) requirement as prescribed in the promulgated guidelines implementing Section 3 (b) of PD 1121 and PD 1586.

This Certificate is being issued subject to the following conditions, to wit:

1. That this Certificate is valid only for the first development stage of the existing Cotabato Airport which includes the rehabilitation and upgrading of its capacity to handle the forecast traffic for the year 2010. The first development stage comprises the following main items:

   a. Extension, widening and upgrading of the runway and its strips, construction of a new apron and connecting taxiways, removal of obstacles and construction of fences;
   b. Passenger Terminal, Cargo Terminal, Administration Building, Control Tower and Fire Station, Rescue and Fire Fighting Equipment;
   c. Vehicle Parking Area, Terminal Road, Airport Access Road, Airside Service Road;
   d. Airport Utilities and Storm Water Drainage facilities;
   e. Air Navigation and Visual Aid Systems;
   f. Aviation Fuel Storage and Supply System; and
   g. Temporary Batching Plant for cement and asphalt mix;

2. That construction of the airport facilities must be in accordance with the standards and recommendations of the International Civil Aviation Organization (ICAO) under the supervision of the DOTC;

3. That construction spoils, strip vegetation, discarded construction materials and debris must be collected, stockpiled and stored in a pre-designated area before disposal;

4. That the proponent must strictly follow and implement the Drainage, Sewage Collection Treatment and Disposal Systems designs and specifications attached in the EIS Report;

5. That the effluent and air emission from the airport's operation must conform with the EMB-DENR Standards;

6. That the proponent must secure an "Authority to Construct" Air Pollution Source Equipment and Control Facilities (APSE/CF) and Wastewater Treatment Facilities (WTF) prior to project implementation. That "Permit to Operate" of such APSE/CF and WTF must be secured first before the project

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7. That the proponent must designate a Pollution Control Officer (PCO) from within the Project Management Office to take charge of all pollution related matters and shall be automatically become member of the MMT;

8. That a Solid Waste Management Plan for all solid, liquid and hazardous wastes, including spoiled and confiscated items to be generated by the airport project must be prepared by the proponent in coordination with the concerned Local Government Units and the Air Transportation Office. Said Plan must be submitted to the EMB for approval prior to commencement of the project;

9. That a site-specific Contingency Response Plan/Risk Management and Aircraft Emergencies Communication Plan must be formulated to address accidents (e.g., explosion/leaks particularly during the operation of the fuel supply system and other aviation facilities, to be submitted sixty (60) days before project operation;

10. That the proponent must ensure that all appropriate mitigation/enhancement measures stated in the submitted EIS Report and Environmental Management Plan (EMP) are strictly implemented;

11. That the proponent must design and undertake a continuing Information and Education Communication (IEC) campaign to the people affected from the pre-construction, construction and operational phases of the project so as to prepare their minds in the disturbance/dislocations they will and about to face;

12. That the proponent must submit to the EMB-ARMM Audit Reports once every two (2) years after the start of operations;

13. That proper handling, collection/storage and disposal of used oils/lubricants, worn-out tires and other spare parts used/discarded by the heavy equipment must be strictly implemented;

14. That air quality and aircraft noise impact measurements and model verification studies must be conducted. The study must be undertaken yearly for the first five (5) years and the initial results must be submitted to the EMB-ARMM six (6) months after the start of the commercial operations and yearly thereafter. Further studies should be undertaken every five (5) years thereafter during the operational life of the project and the results shall be used by the MMT for action planning and intervention;

15. That the proponent must establish the following:

15.1 A readily available and replenishable Environmental Guarantee Fund (EGF) to cover the following: expenses for further environmental assessment, compensation/indemnification of whatever damages to life or property that may be caused by the project, rehabilitation or restoration of areas affected by the project's implementation and decommissioning;

15.2 A Multi-partite Monitoring Team (MMT) composed of representative from the DENR-ARMM, proponent, local environmental NGOs should there be any, the surrounding stakeholder-communities (women, youth,

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(Barangay, Municipal and Provincial) shall be organized. The MMT shall oversee the proponent's compliance with the EMP and the ECC conditions,

15.3 An Environmental Monitoring Fund (EMF) to cover all costs attendant to the operation of the MMT, and

15.4 The amount and mechanics of the EGF, EMF and the establishment of the MMT shall be determined by the EMB-ARMM and the proponent in coordination with other concerned sectors. Arrived agreements shall be put into Memorandum of Agreement (MOA) and must be implemented within two (2) months upon approval and receipt of this Certificate.

16. That the proponent must establish an Environmental Unit (EU) with appropriate resources needed to supervise the contractors/sub-contractors, implement the EMP and other measures that may be required by the DENR-ARMM. The said unit shall coordinate with the MMT and submit an environmental monitoring report to the EMB-ARMM on a quarterly basis or monthly if deemed necessary (e.g. during construction stage);

17. That a Decommissioning Plan must be submitted to the EMB-ARMM for approval at least one (1) year prior to the project's abandonment. The plan shall include among others, an assessment of possible soil and groundwater contamination and recommendation of proposed alternative project in the area;

18. That the proponent must provide a reasonable compensation package, which must include but not limited to the identification of prospective relocation/resettlement areas, concrete livelihood projects other than the temporary employment that will be provided by the proponent during the construction activities. A Memorandum of Agreement (MOA) between the proponent and the affected residents/landowners on the resettlement/relocation/compensation scheme on this regard must be executed and a copy of the MOA including LARP shall be submitted to EMB-ARMM prior to relocation activities;

19. That the proposed project must conform with the Comprehensive Land Use Plan (CLUP) of Datu Odin Sinsuat, Maguindanao. Should there be any significant portion of the project site which is not yet converted into commercial use, the proponent must apply the same with Certificate of Land Conversion in the Office of the DENR-ARMM and DAR-ARMM;

20. That the proponent must ensure that all relevant conditions of this Certificate must be properly complied with by its commissioned contractors;

21. That this Certificate shall be considered automatically revoked if the project will not be implemented within five (5) years from the date of its issuance or if the project is suspended or stopped for a period of more than three (3) years such that significant changes in land and resource use have occurred in the project area and immediate vicinities;

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22. That qualified skilled and unskilled local residents of Datu Odin Sinsuat, Maguindanao must be given first priority to job opportunities;

23. That earth-filling materials and aggregates must be taken from legitimate suppliers; and

24. That transfer of ownership of this project carries the same conditions set forth in this ECC for which written notification to the EMB-ARMM must be made within fifteen (15) days from such transfer.

Non-compliance with any of the above stipulations shall be sufficient cause for suspension or cancellation of this Certificate and/or imposition of a fine in an amount not to exceed Fifty Thousand Pesos (PhP 50,000.00) for every violation thereof or both, at the discretion of this bureau pursuant to Section 9 of P.D. 1586.

Given this 11th day of December, 2002.

KABUNTALAN P. EMBLAWA, AL-HAJ
Regional Secretary

Recommending Approval:

ABOLAIS B. TENDEGARANAO
Director II, EMB

Cc: All Concerned
Fr\Airport rehabilitation