SUMMARY ENVIRONMENTAL IMPACT ASSESSMENT

NINOY AQUINO INTERNATIONAL AIRPORT

INTERNATIONAL PASSENGER TERMINAL 3

IN THE

PHILIPPINES

July 1998
CURRENCY EQUIVALENTS
(as of 29 June 1998)

Currency Unit — Peso (₱)
₱1.00 = $41.55
$1.00 = ₱0.0241

ABBREVIATIONS

ANSI — American National Standard Institute
AVHAI — Villamor Airbase Village Homeowners Association, Inc.
BCDA — Bases Conversion Development Authority
CNEL — Community Noise Equivalent Level
DECS — Department of Education, Culture and Sports
DENR-NCR — Department of Environment and Natural Resources-National Capital Region
EDSA — Epifanio de los Santos Avenue
EIA — Environment Impact Assessment
ICAO — International Civil Aviation Organization
LLDA — Laguna Lake Development Authority
MERALCO — Manila Electric Company
MIAA — Manila International Airport Authority
MWSS — Metropolitan Waterworks Sewerage System
NAIA IPT 3 — Ninoy Aquino International Airport International Passenger Terminal 3
NFPA — National Fire Protection Association
NGO — Non-government Organization
NHA — National Housing Authority
PAF — Philippine Air Force
PIATCO — Philippine International Air Terminal Co., Inc.
SEIA — Summary Environmental Impact Assessment

WEIGHTS AND MEASURES

°C — degree Celsius
dB(A) — decibel audible
gpm — gallon per minute
ha — hectare
m — meter
m³ — cubic meter
mm — millimeter
MLD — million liters per day
pH — hydrogen ion concentration
TSP — total suspended particulates
µg — microgram
Ncm — normal cubic meter

NOTES

(i) The fiscal year (FY) of the Government ends on 31 December.
(ii) In this Report, “$” refers to US dollars.
# CONTENTS

<table>
<thead>
<tr>
<th>Maps</th>
<th>ii</th>
</tr>
</thead>
<tbody>
<tr>
<td>A. Introduction</td>
<td>1</td>
</tr>
<tr>
<td>B. Description of the Project</td>
<td>1</td>
</tr>
<tr>
<td>C. Description of the Environment</td>
<td>2</td>
</tr>
<tr>
<td>1. Physical Resources</td>
<td>2</td>
</tr>
<tr>
<td>2. Ecological Resources</td>
<td>2</td>
</tr>
<tr>
<td>3. Human and Economic Development</td>
<td>2</td>
</tr>
<tr>
<td>4. Quality of Life</td>
<td>3</td>
</tr>
<tr>
<td>D. Anticipated Environmental Impacts and Mitigation Measures</td>
<td>4</td>
</tr>
<tr>
<td>1. Construction Stage</td>
<td>4</td>
</tr>
<tr>
<td>2. Operational Stage</td>
<td>4</td>
</tr>
<tr>
<td>3. Aesthetic Consideration</td>
<td>8</td>
</tr>
<tr>
<td>D. Alternatives</td>
<td>8</td>
</tr>
<tr>
<td>F. Cost-Benefit Analysis</td>
<td>8</td>
</tr>
<tr>
<td>G. Institutional Requirements and Environmental Monitoring Program</td>
<td>9</td>
</tr>
<tr>
<td>H. Public Involvement</td>
<td>10</td>
</tr>
<tr>
<td>I. Conclusions</td>
<td>11</td>
</tr>
</tbody>
</table>

## Appendixes

| Appendix 1: Summary of Potential Adverse Impacts and Mitigation Measures | 13 |
| Appendix 2: Environmental Monitoring Program | 14 |
A. Introduction

1. The purpose of this Summary Environmental Impact Assessment (SEIA) report is to investigate and assess the principal environmental concerns associated with the proposed Ninoy Aquino International Airport (NAIA) International Passenger Terminal (IPT) 3. The scope of the Environmental Impact Assessment (EIA) study covers both the construction phase and the operational stage of NAIA IPT 3, investigating and analyzing

(i) the effects of aircraft noise on institutional/residential areas, particularly at night;
(ii) increased traffic congestion in the airport approaches;
(iii) increased risk from aircraft accidents in populated areas along the flight path;
(iv) fire hazards;
(v) ambient air quality;
(vi) surface water quality;
(vii) hydrogeology;
(viii) impact on flora and fauna;
(ix) social perception; and
(x) emergency preparedness.

2. The Project Sponsor commissioned A. Pascual Environmental Services and Konsulta Philippines, Inc. to undertake the EIA and prepare the SEIA.

B. Description of the Project

3. The Project consists of the design, financing, construction, and operation of a new international airport passenger terminal officially called NAIA IPT 3. The proposed new terminal will replace the existing NAIA IPT 1, whose maximum capacity of 7,000,000 passengers per year had already been exceeded by 1996. The Philippine Government has decided that NAIA IPT 3 will be located on an approximately 64-hectare (ha) site within Villamor Airbase, which is under the territorial jurisdiction of Pasay City. NAIA IPT 3 will be designed to handle a maximum of 13,000,000 passengers annually, and will replace NAIA IPT 1, which will be closed upon commercial operation of NAIA IPT 3. Map 1 shows the vicinity of the Project, while Map 2 presents the site layout.

4. The proposed schedule for implementation of NAIA IPT 3 is as follows:

<table>
<thead>
<tr>
<th>Activity</th>
<th>Timetable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start of Construction</td>
<td>October 1998</td>
</tr>
<tr>
<td>Completion of Construction</td>
<td>November 2000</td>
</tr>
<tr>
<td>Start of Testing and Commissioning</td>
<td>December 2000</td>
</tr>
<tr>
<td>Completion of Testing and Commissioning</td>
<td>February 2001</td>
</tr>
<tr>
<td>Start of Commercial Operation</td>
<td>March 2001</td>
</tr>
</tbody>
</table>
C. Description of the Environment

1. Physical Resources

5. Pasay City is situated on a coastal plain with only a slight slope of up to 2 percent. The soil at the Project site is Guadalupe clay. Pasay City is generally affected by tectonic earthquakes generated at the Manila Trench of the Philippine Fault Zone. More specifically, it is affected by tremors generated by the Casiguran Fault East Luzon Trench. These tremors are normally felt with an intensity ranging from 4 to 7 on the Rossi-Forrel scale, with most being 4.

6. The total suspended particulates (TSP) in Metro Manila range from 115 to 256 micrograms per normal cubic meter (µg/Ncm) (24-hr average). An ambient air quality survey conducted on 10 March 1998 at the Project site showed a TSP level ranging from 212 to 801 µg/Ncm. The Philippine ambient standard is 230 µg/Ncm for a 1-hour average. Daytime noise in the vicinity of the site presently averages approximately 64 decibels (dB[A]). The nighttime average level is 53 dB(A). The Philippine standards of noise level in residential areas are 55 dB(A) for daytime, and 43 dB(A) for nighttime. Temperature ranges from around 20°C in January and February to around 35°C in April and May. Rainfall is heaviest during the months of July and August, reaching 414 millimeters per month. In the Project vicinity, the groundwater table ranges from 1.0 to 7.5 meters from the ground surface.

7. The main river is the Parañaque River. Sampling conducted in March 1998 revealed that the surface water quality is below Philippine standards.

2. Ecological Resources

8. There are no fishponds, nor is there active fishing in the vicinity of the Project site. The only conspicuous forms of wildlife are birds (mostly sparrows). There are no forests near the Project site. And there are no endangered species of flora or fauna.

3. Human and Economic Development

9. In 1997, the population of Pasay City was registered at 424,500, of whom 26,000 were relocated from squatter areas, resulting in a net population of 398,500. Of the total population, 200,000 were males and 198,500 were females. The average population density was more than 21,800 persons per square kilometer, indicating serious congestion. There were 56,932 households, with an average of seven persons each—smaller than the regional average of ten. As of 1997, only 84 percent of the total labor force of Pasay City was employed. The percentage of school-age population enrolment was fairly high at an average of 85 percent. The dominant economic activity in Pasay City is services, accounting for 76 percent of total economic activity.

10. The water supply of Pasay City comes from the Metropolitan Waterworks Sewerage System. However, only 88 percent of the population have water supply. Pasay City has no sewer line. The sewerage system is connected to the drainage system. Electric power is supplied by the Manila Electric Company.

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1 1992 Air Quality Study conducted by the Asian Development Bank.
11. In terms of land use, the largest area in Pasay City is devoted to utilities. This area includes Zone 19, where the proposed NAIA IPT 3 will be located.

4. Quality of Life

a. Housing

12. There are an estimated 3,770 unacceptable dwelling units in Pasay City, in addition to 6,160 doubled-up families that need separate need housing. Both comprise the backlog of required dwelling units. In addition, there are some 29,900 families identified as slum dwellers by the National Housing Authority who need relocation or whose present dwelling units are in dire need of upgrading. It is estimated that from 1998 to 2000, Pasay City will need to build 20,000 housing units.

b. Education

13. Pasay City has 18 public elementary schools and 4 public secondary schools, plus 25 private schools, most of which offer both elementary and secondary education. There are three private colleges and one public university. There are also five private vocational schools and six flying schools.

c. Skills and Per Capita Income

14. A survey was undertaken covering Villamor Airbase, Airmen’s Village, and Barangay Moonwalk, which are areas significantly influenced by the proposed NAIA IPT 3. Most of the residents were employed in the Government (37 percent), with 29 percent being self-employed. Other types of employment include those in the private business sector (12 percent) and housekeeping (21 percent); those without any occupation or unemployed comprised 1.4 percent.

15. Approximately 25 percent of households stated an average monthly household income ranging from ₱3,000 to ₱5,000. Those that reported an average of more than ₱5,000 comprised 33 percent. Only 4 percent had an average monthly income of less than ₱500.

d. Public Health

16. Pasay City has 9 hospitals including two government hospitals: Pasay City General Hospital and the Philippine Air Force General Hospital, with a total of 314 beds. There are two lying-in clinics, one public and one private, with a total of 47 beds.

17. There are 9 Government health centers staffed by 12 physicians, 12 nurses, 15 dentists, and 36 midwives. The nine leading causes of morbidity in Pasay City are pneumonia, diseases of the heart, tuberculosis, neoplasm, measles, stab wounds, senility, gunshot wounds, and traumatic injuries. The birth rate in Pasay City is recorded at 3.5 per 1,000 population, while the death rate is 6.1 per 1,000 population.
e. Recreational Resources and Development

18. The major recreational facilities in Pasay City are the Cuneta Astrodome Complex and the Villamor Golf Course. As part of the local government’s Sports Development Program, summer basketball and volleyball tournaments in each barangay are encouraged.

f. Archeological or Historical Treasures

19. There are no known archeological or historical treasures within the Project site.

D. Anticipated Environmental Impacts and Mitigation Measures

20. Environmental impacts are anticipated during both the construction stage and the operational stage. Appendix 1 presents a summary of the potential adverse environmental impacts and their mitigation measures.

1. Construction Stage

21. Earthwork, soil excavation, building construction, and ground preparation are not expected to adversely affect either Manila Bay or the Parañaque River, since both bodies of water are quite far from the site. The Project’s estimated daily water requirement of 750 cubic meters ($m^3$) will not affect the supply of water to the residents of Pasay City, because by 1999 two new pumping stations of Maynilad Water Services Inc. will have been operational, adding 1,200 million liters per day of water to the supply.

22. The air quality within the vicinity is already above the Philippine TSP standard of 230 $\mu g/Ncm$. Earthwork, soil excavation, ground preparation, and concreting activities will further increase the TSP level. However, a comprehensive system of netting to be used as well as constant daily watering of the ground will mitigate the impact.

23. There will hardly be any fire hazard, since no combustible material will be used, and no fires will be ignited. Solid waste generated by some 500 workers at the site as well as solid waste from construction activities will be disposed of daily by Pasay City garbage trucks. Employment opportunities and other sources of income for the residents of Pasay City will be generated by the Project.

2. Operational Stage

24. No significant increase in the already high level of TSP of the air quality within the vicinity will be generated during operation. Nevertheless, the terminal building will be fully air-conditioned and equipped with dust filtration system which will be regularly checked and cleaned.

25. The additional aircraft movements will increase the noise level. However, flights are normally scheduled during daytime to minimize noise disruption to settlements relatively near to NAIA. Using the acceptable noise standard for an airport of 65 Community Noise Equivalent Level (CNEL) (the standard for San Francisco International Airport), it is estimated that, for the years 2001, 2007, and 2025, the CNEL at the proposed Project site will be 32. Thus, no breach of acceptable airport noise standards will take place. Further, the flight path of aircraft will not be over densely populated areas.
26. The estimated daily water requirement of 3,000 m$^3$ will be adequately supplied by Maynilad Water Services, Inc. without causing any shortages to the surrounding communities, since two new pumping stations will be operational by then, providing an additional 1,200 million liters per day of water.

27. NAIA IPT 3 will have its own sewerage treatment plant, which will properly treat effluents in accordance with Philippine standards before discharging them into the Parañaque River. Solid waste will be sorted, treated, and then disposed of daily by Pasay City garbage trucks.

28. To cope with the projected increase in vehicular traffic, the management of Philippine International Air Terminal Co., Inc. (PIATCO) will continuously push for the implementation and completion of the following major road network improvements before 2000:

(i) completion of C-5 extension;
(ii) improvement of Nichols interchange;
(iii) completion of left turn flyover from Epifanio de los Santos Avenue (EDSA);
(iv) widening of Andrew Avenue, Sales Road, and Manlunas Street;
(v) completion of tunnel connection between NAIA IPT 2 and NAIA IPT 3;
(vi) on/off ramps from the Manila South Skyway to Andrew Avenue;
(vii) elevated highway along Airport Road from Roxas Blvd.; and
(viii) extension of the Metro Rail Transit from EDSA to Villamor Airbase;

29. The commercial operation of NAIA IPT 3 may cause a mild migration of potential job seekers to Pasay City, since some 100,000 jobs will be created by the Project.

30. Substantial additional revenues will be contributed by the Project to both the local government of Pasay City and the National Government. Over a ten-year period, it is estimated that the Project will add some $20 million to the tax collection of Pasay City and $350 million to the National Government.

31. With reference to risk of aircraft accidents, two sets of significant historical data were used to assess the probability of aircraft accidents:

(i) There were only two recorded aircraft accidents at NAIA IPT 1 during 1987-1997.
(ii) The International Civil Aviation Organization (ICAO) reported that in 1996, there were only 23 aircraft accidents reported by 185 ICAO contracting states, down from 26 in 1995.

32. These facts imply a very slight increased risk from aircraft accidents at the airport. The risk is further reduced if one considers that the aircraft flight patterns are largely over low density settlements or enclaves. The risk will further be minimized through continuing improvements in surveillance facilities and employment of highly trained personnel.

33. In the operation of the terminal building, building and fire codes will be strictly implemented. Fire extinguishers and hydrants will be installed. In assessing the magnitude of any fire hazard that may be posed by the proposed NAIA IPT 3 Project, it is essential to state the pertinent provisions of Presidential Decree No. 1185, otherwise known as the Fire Code of
the Philippines. These pertinent provisions are contained in Section 8 of the Fire Code, and govern the following aspects:

(i) inspection requirement prior to issuance of permits and/or licenses to the owners, administration, or occupants of buildings, structures, and their premises or facilities;
(ii) safety measures for hazardous materials;
(iii) safety measures for hazardous operations/processes; and
(iv) provision on fire safety construction, and protective and warning system.

34. It is significant to note that the Fire Code does not state any specific measures required as safety measures against any fire hazard. However, the Code does state certain specific provisions that must be incorporated in the required fire safety program:

(i) use of fire protection features such as sprinkler systems, hose boxes, hose reels or standpipe systems, and other fire fighting equipment;
(ii) fire alarm systems;
(iii) fire walls;
(iv) fire-resistant materials for flooring and walls;
(v) safe passage to a public way or safe dispersal area;
(vi) fire exits;
(vii) sealing of stairways, vertical shafts, and horizontal exits from smoke and heat;
(viii) self-closing fire resistant doors;
(ix) fire dampers in centralized air-conditioning ducts;
(x) roof vents; and
(xi) properly marked and lighted exits.

35. An analysis of the Fire Protection Plan designed by the technical and engineering department of PIATCO shows full compliance with the provisions and requirements of the Fire Code:

(i) The fire protection systems for the proposed NAIA IPT 3 will strictly conform to the following standards and codes other than the Fire Code of the Philippines:

(a) Factory Mutual
(b) Underwriter Laboratories, Inc.
(c) American National Standard Institute
(d) National Fire Protection Association (NFPA), USA codes
   NFPA 10 Portable Fire Extinguishers
   NFPA 12 Carbon Dioxide Extinguishing System
   NFPA 13 Automatic Sprinkler System
   NFPA 14 Standpipe and Hose System
   NFPA 20 Centrifugal Fire Pumps
   NFPA 70 National Electric Code
   NFPA 72 National Fire Alarm Code
   NFPA 88A Parking Structures
   NFPA 101 Life Safety Code
   NFPA 416 Construction and Protection of Airport Terminal Building
   NFPA 1221 Installation, Maintenance, and Use of Public Fire Service Communications System
(ii) A comprehensive water sprinkler system will be installed. One standard sprinkler head will cover approximately 20 square meters (m$^2$) for light hazard areas, and 12 m$^2$ for ordinary hazard areas. Light hazard areas are offices, restaurants, arrival concourse, immigration and customs areas, VIP rooms, departure area, and toilets. Ordinary hazard areas are food halls, kitchens, retail outlets, concession areas, baggage handling and claim areas, and check-in counters.

(iii) Fire hose cabinets will be installed as follows:

(a) Main Building
- Level 1 — 24 cabinets
- Level 2 — 24 cabinets
- Level 3 — 24 cabinets
- Level 4 — 26 cabinets

(b) Carpark: 6 cabinets for each of the 4 levels.

(c) Concourse
- Level 1 — 21 cabinets
- Level 2 — 10 cabinets
- Level 3 — 10 cabinets

(iv) Fire hydrants will be installed on both the ramp and street sides of the terminal building. Each fire hydrant will be manually operated. The remotest fire hydrant will be designed to deliver 2,843 liters per minute.

(v) The water storage tank for general water usage and firefighting will have a permanent 1-hour fire fighting water storage positioned in the service yard.

(vi) Two fire trucks will be on a 24-hour standby basis.

(vii) Automatic fire alarm systems will be connected to the water sprinkler system.

(viii) Fire-resistant flooring, ceilings, and walls will be used such as fiber cement boards, acoustic tiles, and galvanized iron sheets coated with fire-resistant paint.

(ix) All exits will be sealed from smoke and heat.

(x) Fire exit plans will be conspicuously posted on each floor showing clearly the routes to appropriate exits.

(xi) Self-closing fire-resistant doors made of coated metal will be used on all exits.

(xii) Exits will be properly marked and lighted.

(xiii) Carbon dioxide and Freon Number 200 gas systems will be installed in the air-conditioned rooms and in computer and electronic device areas.

(xiv) Other safety provisions of NFPA will be installed.

In addition, the Manila International Airport Authority fire trucks (four units), the fire stations of Pasay City (five stations with three fire trucks each), and Parañaque, and the volunteer firefighting Chinese Brigade would be asked for assistance in the event of a major fire involving aircraft. With the full implementation of the fire protection program designed for NAIA IPT 3, the risk of any fire hazard will be insignificant.

3. Aesthetic Considerations

Landscaping will be undertaken to enhance the aesthetic value of the area and to enhance the capability to absorb carbon dioxide.
E. Alternatives

38. If the NAIA IPT 3 were not constructed there would be no effects, either positive or negative, on physical environmental factors. In addition, no adverse impact would be suffered by the adjoining city institutions. There would be, however, other significant sociological and economic losses to the city.

39. The loss of this facility would inhibit terminal development and the economic and ensuing sociological gains, and would conflict directly with established, approved master plans and goals. The international passenger congestion would restrict the growth of terminal activities.

40. Not proceeding with IPT 3 would pacify a minority segment of the opposing Airmen’s Village Homeowner’s Association, which advocates the retention of schools, a church, and a community center at their present site. However, this would result in congestion of passengers and eventual loss of revenues to the National and local governments.

41. If NAIA IPT 3 were not to be set up at the proposed site, the permanent structures such as the elementary school, the church, the community center, and residential houses would remain at their present site.

42. The vicinity will probably remain the residential area of Philippine Air Force (PAF) personnel and their families. However, the Bases Conversion Development Authority (BCDA), which owns the site of the proposed Project, definitely plans to develop the area into a commercial center with or without the new international airport terminal. Hence, even without the proposed Project, air pollution and noise levels will increase due to vehicular emissions, heavy traffic flow, and increase in domestic air flights.

F. Cost-Benefit Analysis

43. In conducting the cost-benefit analysis of the proposed NAIA IPT 3, the Financial Study prepared by DMG Financial Consultants was used.

44. For the cost item, the estimated total Project cost of $504 million was used. The total Project cost includes the total cost of relocation of PAF facilities, the schools, church, and community center, estimated at $7 million; the cost of the Fire Prevention Plan; the cost of sewerage and drainage systems, estimated at $2 million; and such other costs as provision of a carpark building ($21 million) and road access improvements. In terms of the benefit, the stream of cashflow after debt servicing but before tax payments (because tax payments are considered as one of the benefits) was used. The internal rate of return and net present value are calculated as 21 percent and $506.7 million, respectively.

45. The direct negative sociological impacts of the NAIA IPT 3 will relate primarily to Airmen’s Village. There will be a significant displacement of or change in neighborhood composition, particularly on the Third Street, Manlunas Street, and Andrew Avenue. The residents will also lose facilities such as:

(i) Villamor Air Base Elementary School;
(ii) Pasay City South High School;
(iii) Philippine State College of Aeronautics;
(iv) certain barangay facilities, e.g., the barangay hall, Menzi Park, the Village Health Center, and the gymnasium;
(v) a portion of the concessionaires’ area;
(vi) St. Therese of the Child Jesus Church; and
(vii) PAF facilities.

46. These facilities will also be temporarily subjected to nuisances associated with major construction, including increased noise levels, dust, heavier traffic on Andrew Avenue, and other similar effects. On a permanent basis, the traffic and noise from terminal activities will cause some disturbances. The disturbances will depend on the arrival and departure of various types of aircraft.

47. There will be some direct costs related to the relocation of affected residences and facilities. However, the Project will result in several beneficial impacts on both a temporary and a permanent basis.

48. Construction will require approximately 500 laborers of varying trade and skill levels. The foreign exchange inflow of $350 million will improve the foreign exchange reserves of the country. About 70 percent of the labor would require no specific skills or training, which could have some positive impact on welfare and unemployment.

49. It is estimated that the facility will spend about $30 million per year on direct purchases. This amount will help the production and sales of many local industries such as food, steel, wood, furnishings, and other construction materials. Based on the $30 million spent each year, the total direct and indirect contributions of the facility to the Philippine economy will be about $12 million per year. It is envisaged that at least $40 million will be generated from tourism-related activities due to the Project.

50. The terminal will generate revenues for Pasay City. These funds will not only compensate for construction costs, but will act as long-term source of revenue. NAIA IPT 3 will accommodate an average of 6,000 arriving and departing international passengers per day.

G. Institutional Requirements and Environmental Monitoring Program

51. During the whole Project cycle, monitoring of noise and of air and water quality parameters will be undertaken regularly and continuously. Regular monitoring will be undertaken to assess the effectiveness and integrity of the mitigating measures being implemented to minimize the adverse impacts of the Project activities.

52. Monitoring will also cover (i) performance of the facility after construction, (ii) verification of proper effluent disposal at the facility, (iii) yearly physical testing of the Project area, (iv) proper solid waste disposal, and (v) traffic management. The Environmental Monitoring Program covering both the construction and operation phases is presented in Appendix 2.

H. Public Involvement

53. A social perception survey was conducted for the Project by a group of social scientists from the University of the Philippines. The survey was undertaken among the residents of Barangay 183, site of the proposed NAIA IPT 3 Project.
54. The social perception survey was carried out by taking a random sample of the residents of Barangay 183 with the primary objectives of ascertaining awareness of the proposed Project, eliciting from the interviewees their acceptance or non-acceptance of the Project, and identifying what in their own judgment are its positive and negative effects.

55. A public consultation was held on 16 April 1998 at the barangay hall in order to validate the results of the social perception survey, and to provide a public forum where other relevant issues could be properly brought up and discussed. This consultation was attended by officers and members of the homeowners' association.

56. A public hearing was conducted by the Acting Mayor of Pasay City prior to his issuance of Certification that the residents directly affected by the proposed Project have no objections to it.

57. During the public consultation, the homeowners expressed their concerns on the relocation of their church, community center, and schools. A relocation plan has to be submitted to a site that is deemed reasonable and acceptable by the affected residents.

58. The results of the public consultation indicated that the perceived negative impacts include the following:

   (i) the rerouting of a primary road (Andrew Avenue), which would mean the dislocation of schools, the church, houses, and the mini-market in the area;
   (ii) conversion of the present site of schools, church, and community center (about 6.6 ha) into a commercial area; and
   (iii) the setting up of NAIA IPT 3 near a residential area, which would expose the residents of Barangay 183 to air transport-related accidents.

59. Based on the interview with the Chairperson of BCDA on 17 April 1998, the following information was confirmed:

   (i) Airmen’s Village residential areas will not be affected. The present occupants of the units have been given the option to purchase their lots at the concessionary price of ₱500 m².
   (ii) It is necessary to relocate the existing community center, schools, and church from their present site to an area farther away from the proposed NAIA IPT 3 Project to avoid their exposure to any air transport-related accidents.
   (iii) The Department of Education, Culture and Sports (DECS) has agreed to the transfer of the affected schools to the proposed relocation site. For this purpose, DECS and BCDA have already executed a Memorandum of Agreement.
   (iv) The PAF Command has agreed to the relocation of the airmen’s families presently occupying the apartment buildings that will be demolished to pave the way for the development and construction of the new community center, school buildings, and barangay hall at the full expense of BCDA, in the vacated area. The new relocation site for the displaced families will have high-rise
condominiums that will be offered for amortized sale to the said families at very concessional rates.

(v) The representatives of the Catholic Church have agreed to the transfer of the church to the proposed relocation site.

(vi) A definite relocation plan has already been presented to the affected residents of Barangay 183.

(vii) The group most vocal against the relocation of the existing schools, church, and barangay facilities is the Villamor Airbase Village Homeowners Association, Inc. (AVHAI). Its principal officers have privately approached BCDA, offering to end their opposition to the proposed relocation provided the BCDA will sell to them the 6.6 ha present site of the church, schools, community center, at the old price of ₱500 per m$^2$.

I. Conclusions

60. Implementation of the proposed NAIA IPT 3 Project will provide the country a facility that could adequately accommodate 13,000,000 passengers annually and is expected to increase the tourism potential of the country. Employment opportunities that will be generated from the proposed Project are estimated to be 1,500 persons (direct labor, 500; indirect labor, 1000) during construction and 12,500 persons (direct labor, 2,500; indirect labor, 10,000) during operation.

61. Incremental foreign exchange will start with the initial inflow of the $350 million loan. During commercial operation of the Project, additional foreign exchange inflows will come from approximately 6,500,000 arriving passengers, who would spend $650 million at an average expenditure of $100 per arriving passenger.

62. The Philippine Government is guaranteed to earn a total of ₱12.5 million from the operation of the proposed NAIA IPT 3 Project. It is envisaged that the Project will pay an annual income tax of approximately ₱50 million, while income tax to be paid by the roughly 14,000 employment opportunities created will total around ₱10 million annually.

63. The proposed NAIA IPT 3 Project will definitely be to public advantage. The major benefit will be socioeconomic. The primary long-range effects on the physical environment include the relocation of several houses on Third Street, Manlunas Street and Andrew Avenue due to road widening, and several institutions such as the barangay hall, gymnasium, Villamor Air Base Elementary School, Pasay City South High School, and St. Therese of the Child Jesus Church. Finally, the residents of Airmen’s Village will be subjected to both temporary and permanent increases in noise level, which, however, in terms of level, time of occurrence, and distribution will not cause a major impact. The construction of the proposed Project will assure optimum use of a section of unused land owned by BCDA. Although it will result in a few limited temporary environmental adverse effects, the life expectancy of the terminal’s productivity will prove profitable to society on both a regional and local basis.
## SUMMARY OF POTENTIAL ADVERSE IMPACTS AND MITIGATION MEASURES

<table>
<thead>
<tr>
<th>Adverse Impact</th>
<th>Mitigation Measures</th>
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</thead>
<tbody>
<tr>
<td><strong>A. During Construction</strong></td>
<td></td>
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<tr>
<td>Relocation of affected residents</td>
<td>BCDA has already completed plans for the relocation of 192 families to a newly built high-rise condominium far better than the old apartment buildings they presently occupy.</td>
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<tr>
<td>Silt runoff from unprotected cut-and-fill areas</td>
<td>There is a drainage and flood control plan.</td>
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<tr>
<td>Hazard to workers’ safety</td>
<td>There will be strict adherence to wearing of gloves, boots, helmets and other safety devices while at work. There will be signs posted at conspicuous areas to alert personnel and to prevent the occurrence of accidents. First aid kits will be available.</td>
</tr>
<tr>
<td>Damage to workers’ health</td>
<td>Portable comfort rooms will be installed at the Project site, which will at all times be kept sterilized. Potable water will be in sealed water containers.</td>
</tr>
<tr>
<td>Community slums may follow the construction period</td>
<td>Villamor Airbase will continue guard the entrances and exits.</td>
</tr>
<tr>
<td>Escape of hazardous materials</td>
<td>No hazardous chemicals will be used. The only hazardous material will be cement, which will be kept in sealed bags and opened only when about to be mixed.</td>
</tr>
<tr>
<td>Escape of air pollution from carbon monoxide emissions</td>
<td>The heavy construction equipments to be used will always be properly maintained to avoid heavy smoke emission of the engines. In any case, the site will be safely far from any residential area.</td>
</tr>
<tr>
<td>Accidental destruction of utilities</td>
<td>The work plan has been carefully designed to avoid accidental destruction of any water mains, power lines, or telephone lines. Nevertheless immediate repair will be done with the assistance of either MERALCO, MAYNILAD, or PLDT.</td>
</tr>
<tr>
<td>Traffic congestion at the site</td>
<td>The delivery of most construction materials will be done at night, when the traffic congestion will have been dissipated.</td>
</tr>
<tr>
<td><strong>B. During Operation</strong></td>
<td></td>
</tr>
<tr>
<td>Noise from aircraft movement</td>
<td>The relocation of affected residents to an area farther away from the NAIA IPT 3 would mitigate the impact of noise from aircraft movement. A noise barrier wall will be constructed at the landside in order to deflect the noise level outward to the runway.</td>
</tr>
<tr>
<td>Air pollution</td>
<td>Strict compliance with IATA and CAA regulations by the airlines regarding effective reduction in the emission of smoke from engines will at all times be observed.</td>
</tr>
<tr>
<td>Escape of sanitary waste</td>
<td>Solid waste receptacles will be made of steel and will be so constructed as to prevent leakage. Collection of solid waste will be done twice daily. The sewerage treatment plant will be set up using the most modern method of treatment.</td>
</tr>
<tr>
<td>Traffic congestion</td>
<td>The immediate and continuous implementation of the programmed road network improvement will be aggressively pushed. Additional network improvements such as on/off ramps from the Manila Skyway to Andrew Avenue, elevated highway along Airport Road from Roxas Boulevard, and extension of EDSA MRT line to NAIA IPT 3.</td>
</tr>
</tbody>
</table>

(Reference in text: page 4, para. 20)
## Environmental Monitoring Program

<table>
<thead>
<tr>
<th>Project Activity</th>
<th>Parameters</th>
<th>Location</th>
<th>Frequency</th>
<th>Responsibility</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CONSTRUCTION STAGE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earthwork, Land Development, and Building Construction</td>
<td>Water quality BOD and TSS</td>
<td>Drainage outfalls</td>
<td>Prior to start of development work</td>
<td>PIATCO will clean drainage pipes adjacent to the property of soil and aggregates</td>
<td>Cost included in the contract</td>
</tr>
<tr>
<td></td>
<td>Air quality Total suspended particulates (TSP), NOx, SO\textsubscript{2}, and noise level</td>
<td>Along Andrew St., Airmen’s Village, and Sales St.</td>
<td>Prior to operation</td>
<td>PIATCO</td>
<td>Cost included in the contract</td>
</tr>
<tr>
<td></td>
<td>Solid waste</td>
<td>Project site</td>
<td>Twice a week</td>
<td>PIATCO</td>
<td>In coordination with LGU for possible disposal site</td>
</tr>
<tr>
<td></td>
<td>Traffic management</td>
<td>Project site</td>
<td>Daily</td>
<td>PIATCO</td>
<td>In coordination with BCDA and LGU’s traffic enforcement</td>
</tr>
<tr>
<td><strong>OPERATION STAGE</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full Operation of Terminal Building Project</td>
<td>Water quality BOD, COD, pH, and TSS</td>
<td>Drainage outfall adjacent to property</td>
<td>Quarterly</td>
<td>PIATCO</td>
<td>Cost included in the operational/maintenance Cost</td>
</tr>
<tr>
<td></td>
<td>Air quality noise level</td>
<td>3-stations around the vicinity of NAIA IPT 3</td>
<td>Quarterly</td>
<td>PIATCO</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Solid waste</td>
<td>Project site</td>
<td>Twice a week</td>
<td>MIAA/ PIATCO</td>
<td>In coordination with LGU and BCDA on the disposal of garbage</td>
</tr>
<tr>
<td></td>
<td>Traffic management</td>
<td>Along Andrews Avenue, Sales Road and Manlunas Street</td>
<td>Daily</td>
<td>MIAA/ PIATCO</td>
<td>In coordination with LGU</td>
</tr>
<tr>
<td></td>
<td>Safety/ emergency</td>
<td>NAIA IPT 3</td>
<td>Daily</td>
<td>MIAA/ PIATCO</td>
<td>In coordination with LGU</td>
</tr>
</tbody>
</table>

(Reference in text: page 10, para. 52)