

5. CURRENT PLANS

The chapter will cover other plans to increase service to points around Laguna de Bay, Cavite, and Manila Bay. Most of the discussion centers on the creation of new piers. It will also tackle plans the to redevelop land along the Pasig River.

5.1 Pasig River

5.1.1 Passenger Service

Discussions on this section are focussed on the need to increase passenger service along the Pasig River.

The government ad-hoc committee originally proposed the rehabilitation of existing piers and the building of new ones. The status of these projects is shown in Table 5.1.

TABLE 5.1
STATUS OF THE PROPOSALS FOR THE REHABILITATION OF EXISTING PIERS
AND THE CONSTRUCTION OF NEW ONES ALONG THE PASIG RIVER

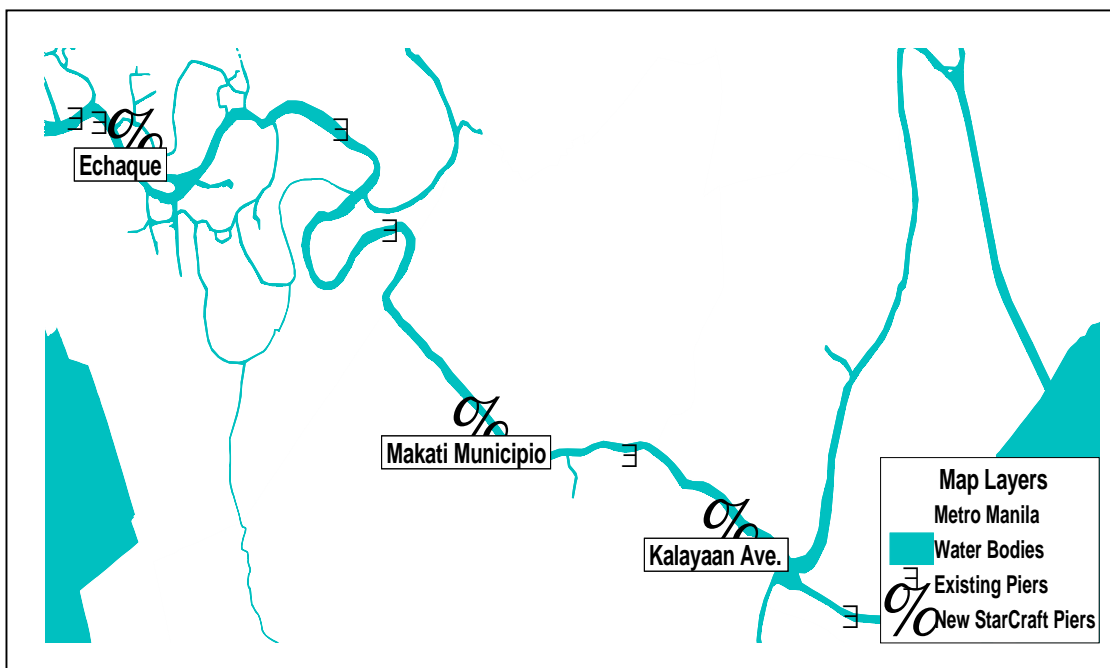
Pier	Status
Farola	Proposed
Ft. Santiago	Proposed
Escolta	In Oper.
Lawton	In Oper.
Santa Ana	Discontinued
PUP	In Oper.
Hulo	In Oper.
Punta	In Oper.
Guadalupe	In Oper.
Bambang	In Oper.
Pasig (Rizal) High School	Proposed
Roasrio	Proposed
Marcos Bridge	Proposed
Taguig	Proposed
Muntilupa	Proposed

All piers are owned by the national government and managed by the PPA. Service operators might build their own and turn them over to the government under a BOT scheme.

The idea of transit-oriented development (TOD) has been introduced to speed the creation of such piers. These piers would have ticket selling and waiting areas on the ground floor, plus two floors of air-conditioned commercial space above. It would provide comfort and diversions for passengers waiting for the boats. This program is intended to help beautify the river and make it more appealing to travel by.

StarCraft has proposed the creation of new piers along the Pasig, and obtained permission to build new piers under a BOT scheme including transit-oriented development. These piers would include fast food stores and other amenities for passengers waiting to board boats. They will be integrated into the boardwalk proposed along the Pasig River. There are immediate plans create TOD piers at the following points: Echague; Kalayaan Avenue; and Makati Municipal Building (Figure 5.1). These piers will be built under BOT scheme.

FIGURE 5.1
LOCATION OF TOD PIERS TO BE CONSTRUCTED ALONG THE PASIG RIVER



StarCraft is also considering the construction of more piers on the Pasig and nearby rivers. These new piers will be constructed at Fort Santiago, Main Terminal (opposite current Escolta pier), Quiapo (across from Lawton pier), GSIS, Beata, Santa Ana, Makati Avenue, Rockwell Piers, Colgate/Palmolive, Barong Ilog (i.e. Rizal High School), Rosario, Marcos Highway, and Floodway Terminal (Figure 5.2)

Save for Barong Ilog, the last three piers proposed by StarCraft are on the Marikina River and will not be operating any time soon. The depth of the river, eutrophication, and other conditions prevent traffic on the Marikina at present.

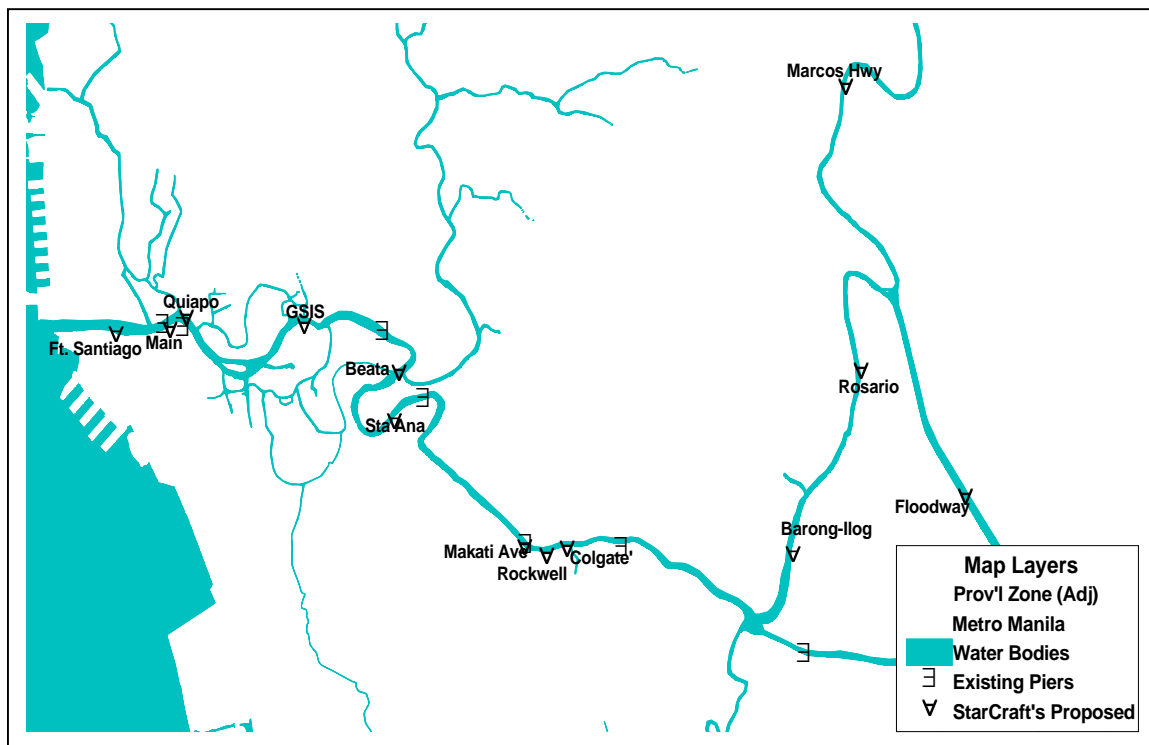
Floodway Terminal is on a different part of Metro Manila's waterways. No further information is available, and it is not clear how service would operate on this pier.

5.1.2 Land Use

At present, land use along the Pasig riverbank is predominantly industrial. Most land is either devoted to industry or low-income housing. Squatters are no doubt attracted to the area by industrial employment. Industry is responsible for much of Pasig River's poor water quality. Squatters are being blamed for much of the solid waste.

Plans are being made to convert land use along the river to high-density residential and office uses. This has implications for transportation; movement in goods will eventually yield to passenger service. These plans include the creation of a boardwalk extending the length of the Pasig River, and linking Manila with Makati. This will help beautify the area and make the riverbanks a more attractive place to live and work in.

FIGURE 5.2
LOCATION OF PIERS BEING PROPOSED BY STARCRAFT FERRY



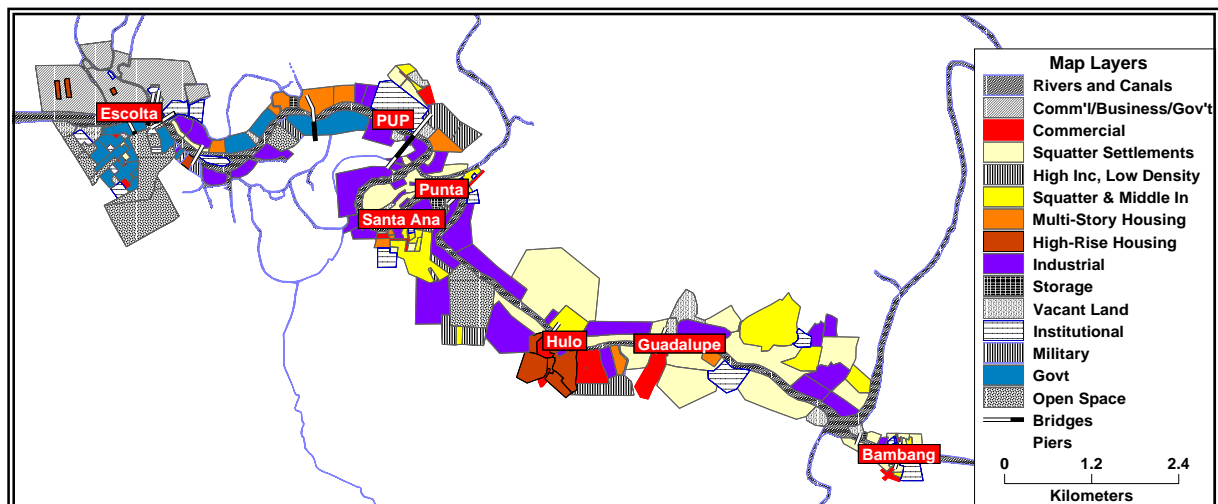
The main goal of a still-undefined plan is to remove industry from the riverbanks and re-house squatters in denser, more modern housing areas. Most new housing envisioned near the river would be more attractive, "up-scale" housing designed for higher income groups.

This has a number of implications:

- The land cleared would be converted to middle- and upper-income housing. Residents of these housing units would be more likely to ride the Star Craft Ferry.
- Land cleared might also be converted to high-density commercial purposes (e.g. Rockwell Center), which would attract many ferry passengers.
- These plans, however, may create other problems. Industries located at the riverbank rely on the waterway for the cheaper movement of its inputs and outputs. Relocating industries to another location has some important implications for traffic in goods:
 - Heavy transport cost burden to be born by industry if forced to use other means of transport for the movement of goods (eg., raw materials);
 - Increased traffic in goods on roads, disrupting passenger flows on already over-burdened arteries.

Proposals to relocate industry to other locations with better access to waterborne transportation are not well thought out. There are proposals for alternative locations with ports at reclamation west of Engineer's Island at the mouth of the Pasig (i.e. in Manila Bay). But it will be an a very expensive option. The shores of Laguna Lake are another option, but the LLDA is not interested.

FIGURE 5.3
LAND USE MAP OF THE PASIG RIVERBANKS



There are other human and environmental concerns such as the following:

- Proposals to relocate squatters to modern apartment buildings have been sharply criticized by community leaders.
- The largest source of pollution in the Pasig River is not industry, but the households. In 1999, high-density housing developments will be required to put up sewage treatment facilities. This should help improve water quality.
- However, industry and households located along upstream tributaries feeding in to the Pasig River will presumably continue to harm the Pasig's environmental quality.

The plan described is still in its early stages of formulation. Nothing has been committed to paper yet. It is impossible to criticize the plan or suggest modifications. Still, those interested in waterborne transportation must explore this options further.

5.1.3 Inter-Modalism

There are no programs or plans yet to improve transfer between existing piers and other modes of public transportation.

At present, transfer is very weak. Lawton is the only river pier that is near a transit center. However, walking from the pier to a jeepney or bus is a long and slow process. No LRT stations are near existing piers.

The *banca* piers depend upon transfer. The piers with the highest passenger volume are located in areas with good access to jeepneys and buses. Santa Ana pier is a short walk to jeepneys and Tamaraw FX traveling into Manila. Hulo is located at a strategic junction where Jeepneys provide access to the heart of Makati. Pandacan Pier has a bus depot servicing Lawton and other parts of Manila.

5.1.4 Pedestrian Bridges Spanning the River

Bancas provides a useful service to the public. They provide cheap and convenient access between low-income residential areas and employment centers. A number of people depend upon *bancas* as their source of employment. It is an appropriate technology.

Some have asked MMUTIS to consider the feasibility of constructing pedestrian bridges over the Pasig River. A covered bridge spanning the Pasig would cost US\$ _____ (1.0 million.?) It is hard to justify replacing a privately provided service offering employment to low-income communities with such a substantial investment. A small number of people living and working near *banca* piers were polled, and no one felt that walking over such a bridge for free offered any convincing advantage over the one-peso *banca* fare.

Nonetheless, such bridges might be more beneficial to the public over the long term. As discussed earlier, there are plans to rehabilitate the Pasig River that would entail replacing industry and squatter settlements with higher-density up-scale housing. Upper-income residents might prefer to walk over pedestrian bridges, rather than taking an outmoded boat. So over the longer term, pedestrian bridges would be an important complement to the converted land use and offer access to places where large vehicular bridges are not available.

5.2 Laguna

5.2.1 Plans to Expand Service

The Laguna Star Ferry Corporation (Sister Company of the StarCraft Ferry), previously operated a service linking Escolta with Los Baños. The service has been temporarily halted except for charters, but is expected to begin again soon. The company is giving a great deal of thought to extending service to many other locations around Laguna Lake. Their initiative is being encouraged by concerned government bodies.

The future Laguna Lake service will probably take the form of two routes: northern and southern. Destination considered for each route are shown in Table 5.2. The locations of these routes are shown in Figure 5.4

As mentioned earlier, Los Banos is home to the University of the Philippines and the International Rice Research Institute. Three of the towns have particular tourist value: Angono is an “arts village,” Binangonan has many fine restaurants, and Pagsanjan is known for its natural beauty. These areas are shown in Figure 5.5.

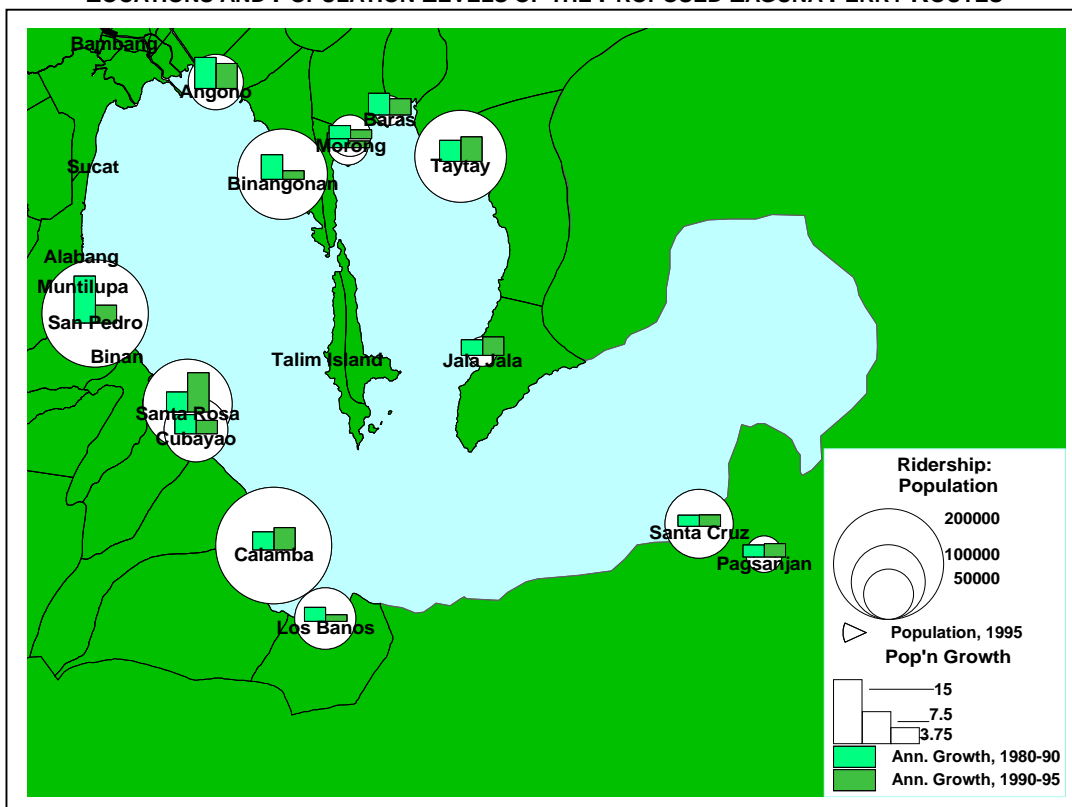
TABLE 5.2
PROPOSED NEW ROUTES OF LAGUNA STAR FERRY

ROUTE / PIER TOWN	1995 Pop
<i>SOUTHERN LAGUNA ROUTE</i>	
Sucacat	50,541
Alabang	52,901
Muntinlupa	
San Pedro	189,333
Santa Rosa	138,257
Calamba,	218,951
Los Banos	71,683
Santa Cruz,	86,978

ROUTE / PIER TOWN	1995 Pop
Pangsanjan	28,999
<i>NORTHERN LAGUNA ROUTE</i>	
Angono	59,444
Binangonan	140,700
Talim Island	
Cardonna	35,501
Baras	20,060
Taytay	144,748
Cubayao	77,302
Morong	36,048
Jala Jala	19,873

From this standpoint, Calamba, Santa Rosa and San Pedro are attractive places to extend the southern service to. Binangonan and Taytay are the most natural places to operate the northern route to. (Unfortunately, population data does not exist in sufficient detail to judge whether piers built in or near these towns would capture sufficiently large numbers of commuters or incidental travelers.)

FIGURE 5.4
LOCATIONS AND POPULATION LEVELS OF THE PROPOSED LAGUNA FERRY ROUTES



5.3 Manila Bay

Most of this chapter is concerned with plans to expand capacity in Manila Bay. This is partly a function of StarCraft's intention to begin service to Cavite. It is also a result of the considerable research already carried out by the PPA as regards expanding the bay's port facilities. This section will discuss the expanded service to Cavite and neighboring cities considered by one provider as well as the piers that might be built along Manila Bay.

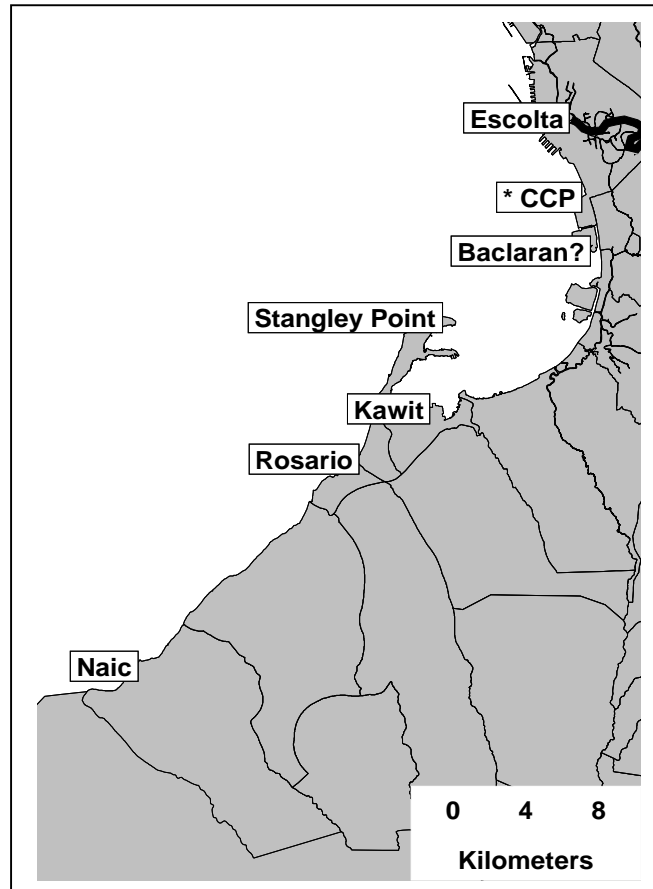
5.3.1 Plans to Expand Service Between Metro Manila and Cavite

The operators of StarCraft Ferry and Laguna Star Ferry are considering serving Cavite City and several nearby ports (Table 5.3). They are also considering running ferry services to Escolta (Manila) and some points south of Baclaran (either Pasay City or Parañaque.) It has already purchased property in Cavite and hopes to begin operations in the second quarter of 1999.

TABLE 5.3
CAVITE ROUTES BEING CONSIDERED BY LAGUNA
STAR AND STARCRAFT FERRY

ROUTE / PIER TOWN	1995 Pop
CAVITE ROUTE	
Cavite City	92,641
Rosario	54,086
Naic	58,046
Stangley Point	n.a.
Kawit	56,993

FIGURE 5.5
NEW ROUTES BEING CONSIDERED BY STARCRAFT FERRY



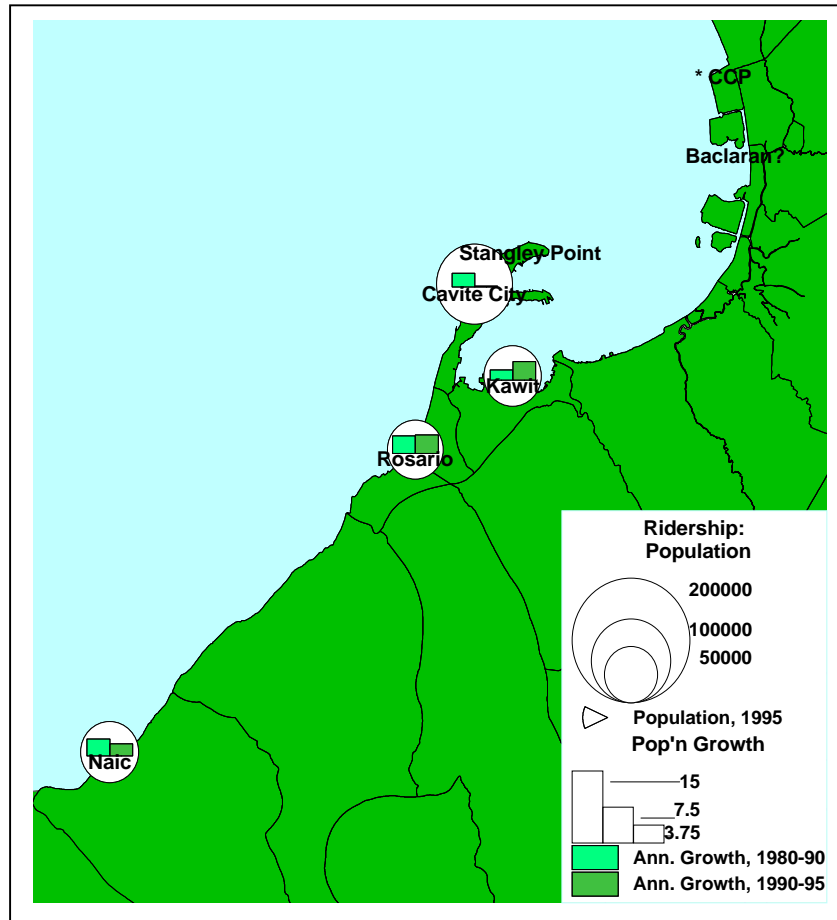
StarCraft is interested in running service to Cavite City and other points in the province in response to the rapid growth of businesses in and around Cavite, especially industries on the mainland opposite Cavite peninsula. The company estimates that there are 220,000 persons employed in and around Cavite, many of who would like to commute to Manila.

The current service operated by Marilag runs between CCP and Sangley Point, a naval station. However, a person wishing to travel to Cavite City, a much larger population center, must board a jeepney near the naval station. Current ridership is about 1,500 passengers per day.

StarCraft would operate four 80-passenger boats, and make as many as 40 trips per day. (MMUTIS's traffic assignment model anticipates that as many as 8,000 commuters might shift from land-based transport to boats between Cavite and the harbor.) So StarCraft's projection could be realistic. Fares will be 60 pesos (versus 40 pesos of Marilag's) in the first year of service.

Figure 5.6 shows the most important population centers (white circles) and growth rates (green bars) for the cities associated with the proposed piers.

FIGURE 5.6
LOCATION OF THE PIERS BEING PROPOSED FOR CAVITE



As shown in Figure 5.6, Kawit, Rosario and Naic appear to offer almost as much ridership as Cavite. However, population data is not detailed enough to indicate how many of the population shown are living within easy access to the where the piers might be located.

5.3.2 Expanding Piers on Manila Bay

The creation of new piers along Manila Bay requires negotiations with local municipal governments and the Philippine Tourism Authority.

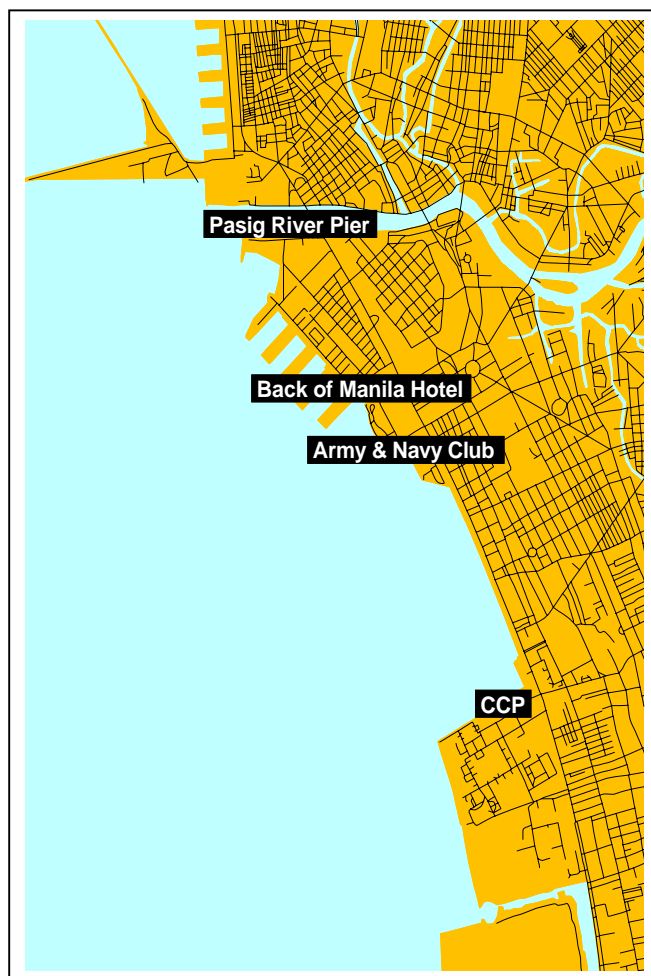
Meanwhile, PPA has plans to:

- Expand and improve facilities for passengers at the North Terminal.
- Create a “Cruise Center” facility at either CCP or Luneta/Pres Quirino grandstand. In addition to providing facilities for international cruises, domestic vessels would operate from this point to various destinations around Manila Bay (Subic Bay, Corregidor.)

- Establish ferry ports at Mariviles (Bataan) and Cavite, plus ferry service linking those ports with Manila. (Ferry in this case means automobile ferry.)
- North Manila Bay Domestic Port Project: terminal in Bataan or Pampanga to reduce congestion

Of the most interest to this report are PPA studies of different alternative sites for providing better piers for passenger traffic and the bay. Areas being considered are: (a) Pasig River Pier; (b) back of Manila Hotel; and (c) Army/Navy Club (Figure 5.8)

FIGURE 5.7
THREE SITES BEING CONSIDERED FOR PASSENGER PIERS AT MANILA BAY



The Pasig River Pier is important because it could conceivably link with StarCraft Ferry’s Escolta terminal (or the Fort Santiago and Main Terminal piers that is being considered to the west) as part of an effort to create a “water network.”

The piers at the back of Manila Hotel and the Army/Navy Club would provide alternate destinations for Cavite (or Bataan) service. They are discussed after the Pasig River Pier.

5.3.2.1 Pasig River Pier

Establishing the Pasig River Pier will probably be the most problematic. First, operation of pier for passenger traffic linking Cavite, Bataan to the mouth of Pasig River is constrained by the narrow clearance at the Jones Bridge. Clearance of Jones Bridge is only 4.88 meters while the required clearance is 6-7 meters. One possible option is to use boats with shallower drafts and lower bridge clearances (eg. Manta boats, Star Cats)

The following factors make the mouth of Pasig unsuitable:

TABLE 5.4
FACTORS MAKING PASIG UNSUITABLE AS AN ALTERNATIVE SITE
FOR A PIER TO HANDLE PASSENGER TRAFFIC

Consideration	Comment
Access to Jeepneys	150 meters; Squatters obstruct paths; Unsafe Area
Embankment	Narrow: 2.5 meters Port operations busy Heavy truck, trailer & heavy equipment traffic Traffic congestion
River Traffic	Barge & small wooden traffic already congested
Surrounding conditions	200+ squatter families

Whether the bridge clearances and draft pose real impediments to smaller craft operating on the Bay, the congestion at the river's mouth precludes smooth access.

A long-term plan is being considered to expand capacity of the freight terminals in the South Harbor. The idea is to expand the mouth of the Pasig River several hundred meters to the west. This would ease up freight movement, offer berths for lighters, and provide adequate passenger services. However, this would entail expensive reclamation efforts. There is no assurance that this plan will be implemented.

5.3.2.2 Alternate Passenger Piers on the Bay

The back portion of the Manila Hotel and the Army/Navy Club offer several advantages for passenger service (Table 5.4).

TABLE 5.5
ADVANTAGES OF MANILA HOTEL AND ARMY NAVY CLUB AS
ALTERNATIVE SITE FOR A PIER TO HANDLE PASSENGER TRAFFIC

Consideration	Back of Manila Hotel	Comment
Description	Near Roxas Blvd Near Luneta (Rizal Park) Existing pier, Existing Shed	Near Roxas Blvd 36 m bulkhead
Access	Pedestrian access to public transport	Pedestrian access to public transport, Access to open space
Draft	2 meter depth	2 meter depth
Safety	Narrow navigation channel Protected from Monsoon Breakwater not required (cost saving)	Exposed during SW Monsoon Breakwater would cost Pesos 15 million
Surrounding conditions	Aesthetically unpleasant	Clean pleasant environment Proximity to floating restaurants

In short, either pier offers the advantage of good access, and some facilities are already in place. The back of the Manila Hotel might provide better access to government offices in Intramuros and along Roxas, but the Army Navy club might provide better access to commercial employment. These aspects should be studied carefully. Still, either one would require significant investments before regular service can begin.

The PPA has recently recommended that passenger facilities in the North Harbor should be expanded. Although the North Harbor is the terminal for long-distance, or ocean-going, traffic, it could also accommodate short-distance trips across the bay.

5.3.3 Boulevard 2000

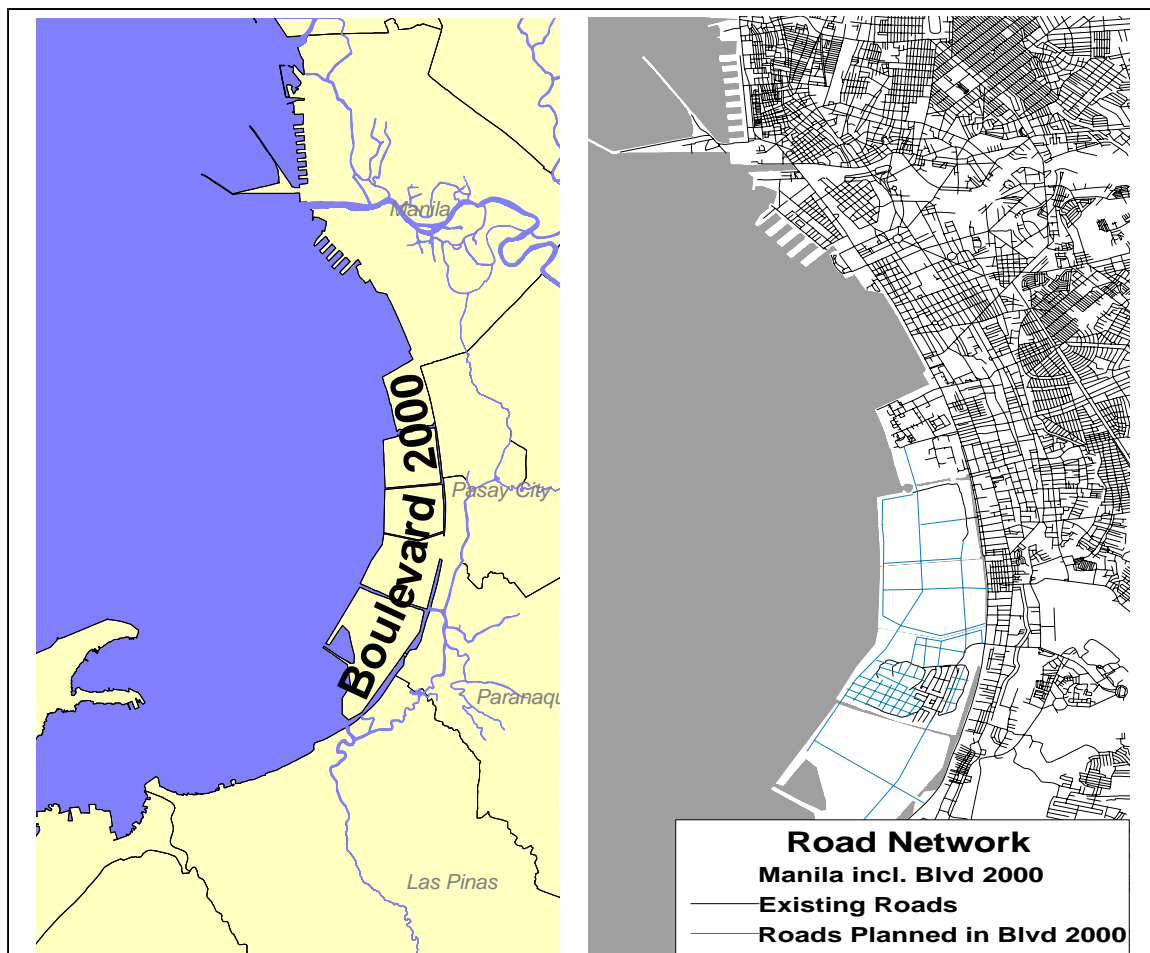
Plans for the piers are complicated by the stalled reclamation project called Boulevard 2000. A project of the Philippines Estates Authority, the project is a series of 180-hectare islands totaling 720 hectares. The islands are separated by drainage channels, and linked to each other by a series of bridges. It has been halted because of allegations about graft and corruption. Still, the Boulevard 2000 project is in place. Development activities may soon resume.

5.3.3.1 Description

Boulevard 2000 stretches from CCP in the north (a little to the north of Buendia Avenue) to Las Pinas in the south. It extends westward more than 1.5 kilometers. Envisioned partly to provide expressways and arterial linking Manila to Cavite, Boulevard 2000 includes an ambitious mixed-use plan catering to up-scale commercial and residential purposes, as well as prominent government offices (e.g. the Senate), and open spaces. It will be equipped with an internal road network.

Architectural renditions portray an area comparable to the more attractive areas of Japan, Europe or the US. Office towers will be 30 stories high. Plans prepared in 1995 envisioned almost one million people living there by the year 2010, with a population density of 1,356 persons/hectare.

FIGURE 5.8
LOCATION AND TRANSPORT NETWORK MAPS OF THE BOULEVARD 2000 PROJECT



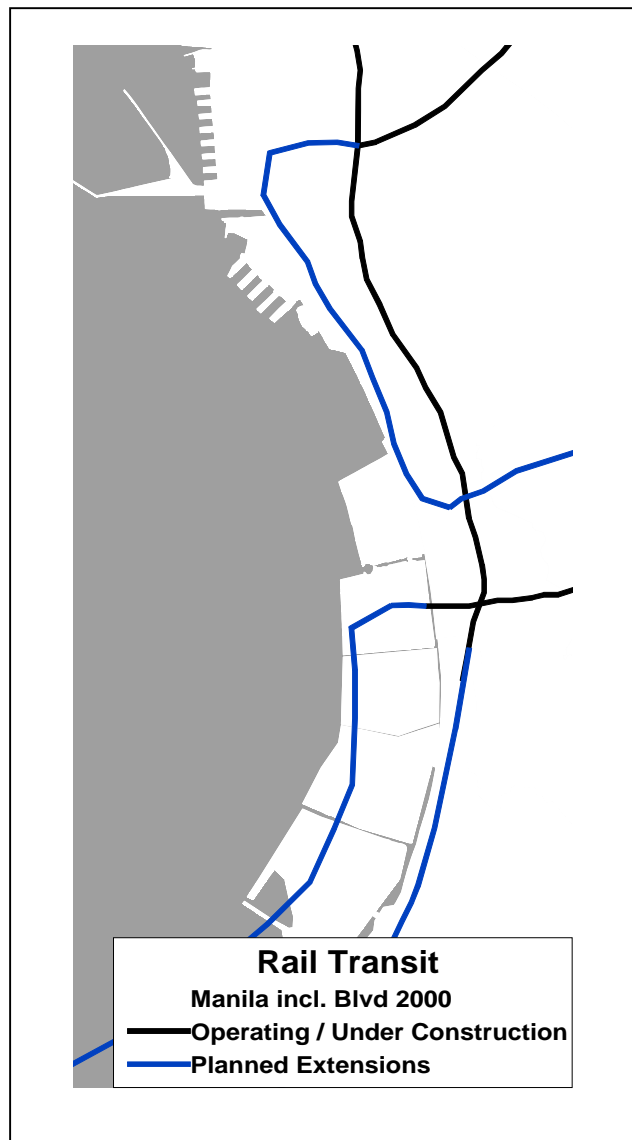
5.3.3.2 Transportation within Boulevard 2000

Boulevard 2000's plans call for a network of wide roads encouraging pedestrianization, parking controls, plus pedestrian bridges (or skywalks.)

Circulation in the area will be provided by modern diesel or electric shuttle buses. These buses would operate some sort of "figure-8" loop through the islands and extend into Parañaque and NAIA and serve transfer stations linked to Metro Manila's larger transit system.

As shown in Figure 5.10, MMUTIS's plans have anticipated the extension of LRT into Boulevard 2000.

FIGURE 5.9
PROPOSED EXTENSIONS OF THE LRT SYSTEM



This could provide an excellent links with boats operating across Manila Bay. A dock could be established along the waterfront of the LRT stations. This would allow passengers to travel to Manila and quickly board an LRT to transport them around the city. (The line closest to the waterfront would be the LRT 3, operating on EDSA.)

Passengers able to pay 40-60 pesos for such boats are natural patrons of the 10-peso LRT service. Similarly, shuttle buses should be routed to these docks.

However developers may not necessarily favor such transit. Rumors exist that they seek to create an exclusive zone for middle- and preferably upper-class residents and workers, and would prefer to exclude the informal sector and other members of the poor. This thinking would preclude the provision of LRT and other forms of transit.

6. CONCLUSIONS AND RECOMMENDATIONS

This chapter presents some basic recommendations to upgrade the services and facilities related to water transportation in Manila and surrounding areas. Relevant facts will be reviewed and will be followed by recommendations on specific areas where water-borne transport services can be expanded through private initiative. There will also be specific recommendations on the provision of piers, improvement of inter-modal access, and other issues related to water transportation.

6.1. Observations

The following observations have been made in the last four chapters:

- Water transit is a viable form of public transportation, albeit expensive. Much of the expense results from high insurance costs.
- Fares structures indicate that riders of the river ferries belong to higher income classes that usually prefer air-conditioned buses, LRT, and Tamaraw FX.
- Dwell times at each pier are long. Service can be streamlined if low-ridership piers are dropped.
- Passengers prefer boats if their ultimate origin and destination are close to the water, or transfer is very good
- Generally, transfer between boats and other modes is weak.
- It is not possible to expand ferry service into neighboring rivers.
- *Bancas* are inexpensive, and serve as valuable links in the transit network.
- The Pasig River is an important conduit for movement in goods.
- The greatest short-term impediments to ferry operations are the environmental conditions of the river: the solid wastes damage boats, reduce capacity utilization, and affects profitability.
- Poor water quality hurts ridership.
- Households are as much contributors to poor environmental quality on the Pasig as industry.
- Different water transport modes conflict with each other's operations. In particular, *banca* operation is effected by the passing barges and ferries.
- Scope exists for increased service in Laguna de Bay, especially Alabang.

- Scope exists for increased service in Cavite.
- Physical conditions on other rivers makes it difficult to expand the service on rivers other than the Pasig.
- There are many proposals to expand service along the Pasig: i.e. increase the number of piers on the river.
- It is possible to expand the number of passenger piers on Manila Bay.
- Passage to/through the Pasig River mouth would create an important link in a water network. However, current congestion and other conditions preclude use of this area until freight handling in Manila harbor is rationalized.
- Providing more piers along Boulevard 2000 is an attractive option, but it is not clear whether or not the developers are interested or are willing to provide other modes that passengers could transfer to.
- The government has an important role to play as a regulator and facilitator of water transport. The private sector can provide the service.

Based on these observations, the following conclusions have been reached:

- River ferries are viable and will probably expand. However, the river should be cleaned up.
- *Bancas* are useful forms of transit and should be preserved.
- Longer-term plans indicate pedestrian bridges may replace *bancas*.
- Movement in goods must be accommodated in any plans to “phase-out” industrial uses.
- The greatest challenge is to link both river and bay service with other up-scale modes such as LRT, air-conditioned buses and Tamaraw FX.

6.2 Service

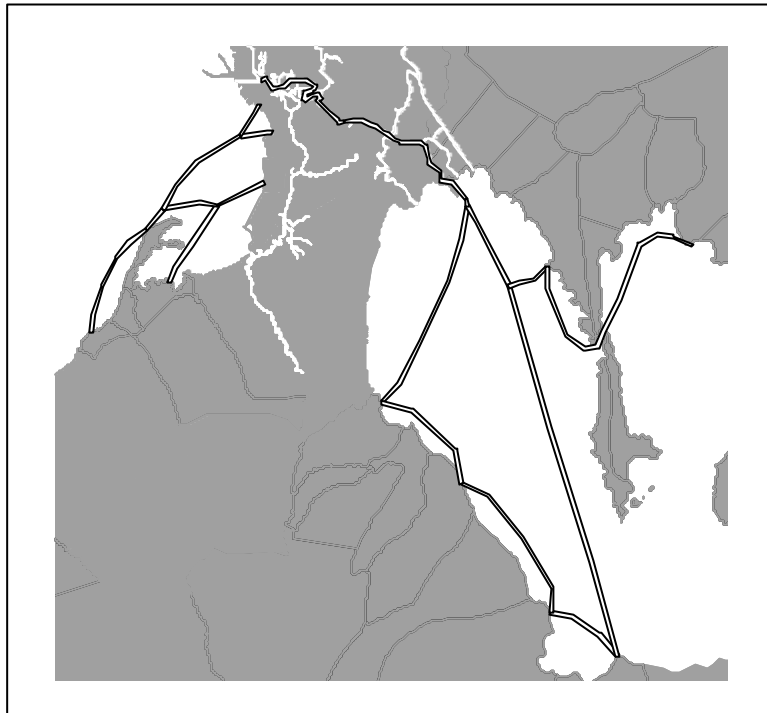
Let us try to take look at what the future holds for the future of water transportation in Manila and surrounding areas. We could expect to see:

- Service to a more rational set of piers along the Pasig River;
- No/limited service to piers with low ridership;
- Service to Laguna de Bay’s north and south coasts;

- Increased service to Cavite (and Bataan, although that is outside the study area);
- Service to more piers along Manila Bay.

Figure 6.1 below puts all these ideas in graphic form:

FIGURE 6.1
THE PROPOSED WATER NETWORK IN METRO MANILA AND SURROUNDING AREAS



In addition, the following scenario could be expected:

- Better tie-ins between ferry operators and *bancas*;
- A “bay-hopper” providing a shortcut along Manila Bay (e.g. linking businesses on Boulevard 2000 with Ermita / Intramuros.)

These are only hopeful guesses as to what services will appear in the future. Private fleets will provide the service. Anticipating the “water network” is only an effort to gauge where service is likely to occur, so that planners and decision-makers might respond by establishing supporting infrastructure: piers, inter-modal transfer, access and so on. That is the subject of the following section.

6.3 Supporting Infrastructure

6.3.1 Ferry Piers

There are several piers in operation on the Pasig River. However, most of them do not support ferry ridership. Only three or four of the Pasig River piers have enough ridership to justify their continued operation.

There is a need to create piers located near employment centers and dense residential areas. Facilities providing good transfer to other modes should be put in place. The poor-performance piers along the Pasig River do not offer any of these advantages. The CCP pier does not meet any of these criteria either. Not enough data exists concerning piers in Laguna de Bay. The recommendations concerning water passenger piers are the following:

- Identify potential sites near residential and commercial areas where such piers could be constructed.
- Enhance links between piers and other modes of transportation so that they support each other.
- Identify potential piers in Cavite and Laguna near large population centers. Offer good pedestrian access, and inter-modalism.

The Pasig River will very likely be redeveloped as employment and housing centers. Such plans should zone high-density land-uses to areas where piers exist or at least the physical conditions would allow for their construction. Links to other transit modes are also important.

The government need not be involved in the construction of these piers. Private sector providers already have agreements to build piers themselves under BOT arrangements.

The piers currently operated by the StarCraft Ferry Corporation were built for a different service. The company has offered to pursue transit-oriented development projects under a BOT scheme. Still, an individual operator need not carry the burden of risk and costs, especially if more private-sector service providers are to be encouraged to operate and use the service.

6.3.2 Banca Piers and Operations

The *bancas* represent an informal-sector mode of transit providing a valuable service to the public. It offers a shortcut to commuters and people making short trips alike. It is an “appropriate technology.” And at least some of them are registered with appropriate government agencies.

There is a need for more cooperation between *banca* and ferry operators. Ferries traveling at high speeds, as they sometimes do, disrupt *banca* service and endanger passengers. Simple navigational rules should be put in place to ensure passengers' safety.

In fact, such an arrangement exists near Hulo. Ferries try to slow down when docking, so the wake of the boat is minimal. Docking a ferryboat in this way does not interrupt *banca* service.

The *banca* piers are generally unsafe and unattractive. Much could be done to improve their quality. BOT and TOD is not very likely in this aspect considering the small-scale nature of such operations. This is an area where the government intervenes by providing or constructing the *banca* piers.

Much of the success of *bancas* is due to their access to other public transport modes. Still, few *bancas* serve bus routes. None serve air-conditioned buses or LRT. A close study should be made to identify missing links which could provide better access to these modes.

To summarize, the recommendations concerning *bancas* are as follows:

- All *bancas* should be registered with appropriate government bodies.
- Encourage cooperation between with ferry service providers and the *bancas*.
- Ensure safe navigation where *bancas* operate.
- Improve pier conditions.
- Improve links to other modes. In particular, permit the service of other modes to operate where *banca* riders can easily board them.

In the long-term, however, pedestrian bridges serving the same function will probably replace the *bancas*.

6.3.3 Inter-Modalism

Inter-modalism is the key to improved ferry ridership. Not many potential passengers live or work near piers. However, many could ride the ferries and *bancas* if other modes of transportation are available linking their service with that of boats.

Providing inter-modal links to other transportation modes integrates ferries and *bancas* with the overall transit network and expands the potential ridership. The success of Lawton pier, despite poor pedestrian access, attests to this.

Ferry service is probably the most expensive transit mode in Metro Manila. Therefore, the best modes to link to ferries are the “up-scale” one such as LRT, Tamaraw FX and air-conditioned buses.

Both water- and land-based services require a certain frequency threshold. With boats operating at relative slow speeds and long headways (10 minutes at best, often 30 minutes), passengers will not transfer between two modes unless they are assured quick transfer.

Bancas maintain five-minute headways and are probably the least expensive transit modes in the region. Therefore, jeepneys and tricycles are the best services to link to *bancas*.

It is difficult to link ferries or *bancas* to the LRT service currently in operation. At only one point (Quiapo, opposite Lawton) is the LRT within walking distance of the river. That option is not even attractive since it is a few hundred meters away and requires negotiating a large staircase. The pedestrian access is poor. In any case, it would become cumbersome to operate a third pier near Lawton and Escolta.

Access to MRT operating on EDSA is not very feasible. That would require building stairways between the promenade and the EDSA bridge where passengers would pass through and take a long walk to the Guadalupe pier. In any case, the stations will not be on the bridge, but further away from the river near local commercial centers.

Boulevard 2000 is one logical destination for a ferry service (especially an upscale one). Plans have been put forward to operate one LRT line very close to the bayshore. The developers have considered operating a shuttle bus with links to other transit modes. Yet developers are reportedly not enthusiastic about public transportation through their up-scale developments. The importance of transit to the real estate's success should be made clear to developers and the public at large.

Pedestrian access between the land- and water-based public transport modes should be short, cool (i.e. shaded), and safe.

Information regarding the availability of water-borne transport services is very important. Many passengers stopping at the Lawton transit center are probably not aware that there is a boat service nearby. It is not visible from the bus, jeepney and Tamaraw FX boarding areas. Some simple, inexpensive signs could make many more persons aware of the availability of the Pasig River service.

It is also very important to link one boat service to another water mode. For instance, the Laguna Star Ferry should stop at one of the piers on the Pasig. We have discussed the importance of cooperation between *banca* and ferry above. It would be ideal if service from the bay were linked with the Pasig River service. After all, transfer time is minimized if one transfers from two routes at the same terminal.

In summary, the recommendations to enhance intermodal transfer are the following:

- Integrate transfer to other modes;
- Link to routes with the utmost “capture,” i.e., those traveling further from the river;

- Link ferry service to “up-scale” modes as much as possible;
- Access to LRT is poor, and should be improved in the case of Boulevard 2000;
- *Bancas* are best linked to modes which are inexpensive;
- Transfer works best when frequency of service is greatest (as with *bancas*’ 5-minute headways);
- Pedestrian access between the modes must be a short distance, convenient, comfortable, and safe.
- Signage is very important.
- Links between different water boat services (River / Laguna / Bay / *banca*) represent the easiest transfer and should be sought out at the greatest extent possible.

Again, it is not too much to ask the public sector to create better piers to encourage more ridership, and make the ferry service viable. But the pier should be in the right place. Inter-modal access should be one of the key criteria in selecting the location of other piers.

6.4 Other Recommendations

We have described a number of options to expand service to Cavite and Laguna, and build more piers along the bay. (Expanding the public transportation services on other rivers is not practical, as we have discussed in Chapter 4.)

There are many communities on Laguna de Bay and Manila Bay that new routes could serve. The plans at present are a bit vague. MMUTIS was able to produce population figures, but more research must be done on the existence of piers or feasibility of constructing new ones.

The idea of building more piers along Manila Bay offers many attractive possibilities. The CCP pier has ample capacity, but building more piers along the waterfront offers more destinations for passengers. The piers considered by PPA — Pasig River, “Back of Manila Hotel” and the Army Navy Club — all offer the advantage of access to important employment centers and transfer to other modes, but their construction is far from simple.

Providing piers and transit along Boulevard 2000 is probably the most attractive option. It could provide service for up-scale passengers who will work in that area once it is completed. With LRT and other transit in place, the link to Cavite and elsewhere becomes very useful. Negotiations should be held with developers to impress upon them the importance of providing water transportation facilities and other modes of transit.

6.4.1 Environmental Clean Up

It is not difficult to see how river-ferry operation can continue unless the river is cleaned. The successful removal of sunken vessels has certainly improved operations. Still, the following tasks need to be undertaken:

- The level of solid wastes — especially plastics and woods — must be drastically reduced;
- Water quality must be improved to facilitate navigation navigation.

Service on the river will not be successful unless there is a general clean-up of the river to remove solid waste harming vessels. Reducing the smell would probably attract more riders.

6.4.2 Land Use Changes

Plans to convert the river's land use are in the formative stages; nothing has been committed to paper yet. Initial information suggests that this plan will likely involve the removal of squatter settlements and the phase out of industry. These land use will be replaced with higher-income multi-story housing. Such housing would have its own sewage treatment, and presumably better solid waste management systems. It will have a 10-meter easement (i.e. "set-back") and a riverside boardwalk.

This plan has obvious advantages for river transport since environmental conditions will improve. It will ease ferry operations, attract ferry ridership, increase capacity utilization, and enhance financial viability.

Movement in goods, however, should be carefully studied. Industries were attracted to locate along the Pasig because it provides inexpensive bulk freight transport. Relocating these industries somewhere would mean that they have to move their goods through the roads. The environmental impact of such freight traveling on roads is staggering.

Of course, the removal of squatters from the riverbanks would raise many difficult questions.

6.4.3 Rules of Navigation

In order to accommodate service to other piers along Laguna de Bay, the navigational lanes will have to be adjusted. It has been observed that many fish pens surround Calamba's pier. That prevents navigation to the city. Larger adjustments could be made to shorten travel times, particularly between Taytay and Binangonan.

Rules of navigation should be reviewed so as to prevent interference between *bancas* and other boats serving the river; and to reduce travel times along Laguna de Bay.

6.4.4 Increased Ridership

Some immediate measures that could attract more riders are:

- Discounts for senior citizens and students;
- Free or discount transfer to other transit services

This would hopefully increase the service, reduce waiting times, and thus attract still more riders.