

## SHOWING THE WAY

Curitiba: Citizen City



On the southern plateau of Brazil one city, Curitiba, has lifted itself out of tough circumstances, by the strength of good design and cohesive political leadership.

Its design mentality treats a wide variety of needs not as competing priorities to be traded or compromised but rather as interlinked opportunities.

The results are highly visible and show how to combine a healthy ecology, a vibrant economy and a society that nurtures people.

# Showing the way:

## Curitiba: Citizen City

Office of the  
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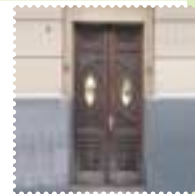
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# Showing the way: Curitiba is a citizen's city...



## 1. ORIGINS OF STUDY TOUR

What led to 20 Kiwis exploring the city of Curitiba? The visit had its origins in the Parliamentary Commissioner for the Environment's (PCE) decision in 1997 to focus on the environmental component of sustainable development in New Zealand's towns and cities. A wideranging study was undertaken, leading to a 1998 report *The Cities and Their People; New Zealand's Urban Environment*. The report outlined a number of significant shortcomings in the way New Zealand's towns and cities had been developing through the 1980s and 1990s. It also reviewed international trends in urban evolution and this led to identifying the Brazilian city of Curitiba.

The literature indicated Curitiba had overcome many obstacles associated with rapid growth and delivered more to its citizens than many more wealthy cities. A brief visit by the Commissioner in February 2001 confirmed that it was a city that had taken a very different developmental path to the New Zealand norm and that there would be merit in examining Curitiba more closely.

So the idea of a study tour was born. It was facilitated by the Commissioner, drawing on contacts he established in 2001 and enthusiastic support from the Brazilian Embassy in New Zealand. Invitations were sent to over 60 people who had expressed an interest in Curitiba—many from Auckland in local and central government, from urban research, university and business spheres. Participants funded their own way.



*The tour members*

The range of organisations visited are listed in Annex I.



*The inner city*

# The focus is on systems thinking, visions...



The primary purpose of the tour was to examine Curitiba's strengths in the following areas:

- leadership
- urban research
- environmental management
- governance and delivery
- the role of the private sector in delivering public good outcomes
- liveability
- cultural and urban design
- the provision of infrastructure and management of growth.

This report records the main impressions and insights of the tour group. Members are listed in Annex II. They had wide-ranging interests, all of which can be grouped broadly under the umbrella of 'urban sustainability'.

The report is deliberately brief and pictorial. It is intended to be an introduction to Curitiba and its achievements and a stimulus to encourage discussion with tour group members about potentially transferable ideas or concepts that could be moulded into a Kiwi context. We en-

courage all readers to seek out a group member or members and find out more about how a second world city has attracted so much international attention and what New Zealand cities can learn from Curitiba's example.

Talking with people who were on the tour is critical because what this report cannot do is adequately articulate the initial difficulty the group had in relating to the 'Curitiban way'. This is the focus Curitibaans have, for example, on relationships, quality of life, systems thinking, master plans, long-term visions, smart public/private partnerships and a bias for action. It was difficult to relate to the way Curitibaans have approached their development. As a group of Kiwis we have had nearly 20 years exposure to a diet heavily laced with process orientated legislation and policies (an outputs as opposed to outcomes focus), intense application of commercial competition models, separation of policies from delivery functions, effects based environmental legislation, and the rights of the individual having supremacy over the collective (community). Initially we were too focused on the processes, the accountabilities, a mechanis-

*One quote that stayed in my mind was from Governor Jaime Lerner who said,*

*"In a city we get not its 7 or 77 wonders; we get the solutions it offers to our problems."*

*This statement captured the Curitiba way for me, which is about letting the people, and your immediate surroundings, determine your well-being and your future. My strongest impressions came from Curitiba as a people-driven city. This city takes the simplest approach; deals with an issue where it is and doesn't try to move it off the landscape. For example the football court in the plaza that lets young people be themselves, the hospital buses that bring people to care, the childcare centres on bus routes that create practical solutions to real problems for families.*

*....Sonia*



# The sense of identity starts with the pines...



tic frame of reference. Our challenge was to realise that in many ways they have had a very different set of values driving their evolution.

They value relationships highly. They create longterm visions of what might be; delivering results to all in their society by iterations. They champion and grow leaders and are very focused on people and enhancing the quality of their lives and maintaining consistent governance. Above all they focus on getting things done in ways that constantly turn every challenge faced into an opportunity somewhere in society. This very systems thinking approach is woefully absent in many New Zealand social and environmental programmes. Translating the Curitiba experience into 'a what is relevant to New Zealand story' requires some appreciation of the big differences in cultural context. Our task as a group is to convey the relevance, despite the cultural differences, of some of the most valuable parts of the Curitiba 'lesson'. We would like to share this with you.

## 2. THE SETTING

Curitiba, the Capital of the State of Parana, is situated in Southern Brazil about 400 kilometres south of Sao Paulo, at a longitude of 49 degrees. It was originally a crossroads of trade routes, particularly via the Iguaçu River to the sea, also a place for gauchos to stop with their cattle and latterly a stopover en-route for the coffee trade.

Parana has a unique terrain that is divided into the coast and the first, second and third plateaus. Each region is well defined by mountains or cliffs. Curitiba sits on the first plateau at an elevation of 900 metres, at the top of an escarpment along the route from Rio Grande do Sul to Sao Paulo. The climate is not significantly different from Auckland's although temperatures are slightly more extreme with moderate rainfall.

The name Curitiba comes from the local Parana pine tree, *araucariae*. The word *Curii-tyba* means a large number of seeds or pine trees. The tree species is reasonably prominent throughout the city.



*Parana pine trees in the urban setting*

Founded by the Portuguese in March 1693, Curitiba has become the home of a diverse ethnic mix. Inhabitants came in a series of waves

# Transformation of urban development...



from Italy, the Ukraine, Poland, Germany and more latterly, Japan. Despite this ethnic and cultural diversity there seems to be a common Curitiba identity along with the recognition of separate origins.



*Parts of the historic town remain*

Today 1.6 million people live in Curitiba, a city of 432 square kilometres. About one million people also live in the surrounding metropolitan districts. Growth has been rapid (from 0.5 million in 1965), a result of successful urban development, which in return brings further challenges as people pour into the city from the outlying areas. As a result there are what is known as 'invasions' where a community establishes subsistence dwellings virtually overnight on the outskirts of the city on public or private land. These favelas or slums have provided some of the biggest challenges for the developing city but also some of the opportunities for innovation.

From the beginnings (in the 1960s) of the current development phase the city took a proactive approach towards ecological issues, with restrictions on tree felling. Today Curitiba has twelve municipal parks, including two environmental protection areas totalling 18,680 hectares, 10 public preservation woodlands and 600 small squares and public gardens. Therefore they boast a relatively high amount of green space per capita, which has earned them the title of Ecological Capital in Brazil. The approach to the environment, which will be ex-

panded on later, is integrated with social and economic needs, as are many facets of this city. While the environment is regarded as important in its own right, the overriding impression for the visitor is that the Curitibaans see it as a key component for a good quality of life and hence integral to healthy city living.

As with much of South America, military dictatorships formed a dominant part of Curitiba's political past. Into that context a mayor was chosen in 1972 by the then State Governor, to oversee Curitiba. That mayor, Jaime Lerner, is credited with being the key figure behind a transformation from the prevalent model of sprawling urban development to a well managed, comprehensive, socially inclusive and integrated approach, which has led to the city being praised worldwide for its innovations.



*High density living*

*At first sight of Curitiba driving in from the airport in the dark, nothing special about the city is apparent. Peri-urban industry business sprawl is evident. On closer inspection "in daylight" and with the economic constraints on social programmes in Brazil in mind, then the achievements that have been made are remarkable*

*....Charlie*



# Consistent, cohesive leadership...



In Curitiba, the mayor is a powerful figure whose influence is seen in many strategic planning and operational matters. He maintains a close and interactive interest in all the key projects in the city.

## 3. IMPRESSIONS

The following sections outline general impressions and specific examples that stood out for the group. Impressions are grouped under eight headings:

- Leadership and Vision
- Values
- Strategy/ Planning/ Integration
- Urban Form
- Transport
- Environment
- People's Needs
- Policy tools.

### 3.1 Leadership and Vision

Consistent, cohesive leadership has been a key ingredient of the city's success since the late 1960s. Those in leadership roles—mayors, councillors, city agencies and departments, business leaders—have strong values. They care, they are inspirational, they display genuine leadership qualities, working together to develop solutions to problems and they appear to have had fun doing it. They genuinely seem to 'live the dream' of the Curitiba they want future generations to inherit.



Mayor Cassio Taniguchi (right)

Mayors over the last 32 years have consistently articulated a vision based on the quality of life for all. A clear direction has been established

and a framework set that allows for innovation and flexibility. Risktaking appears to be encouraged, in line with a philosophy of finding simple, pragmatic solutions and implementing them quickly.

*"When you don't take risks, you lose the opportunity to intervene"*

—Jaime Lerner, Governor, 2002



Jaime Lerner explains the planning

The Curitibaans have very deliberately fostered a leadership group, to a large degree from within the central planning organisation for the city (IPPUC), and thus built capacity in the institutions and community over the last three decades.



Jaime Lerner's 'thinking tree house'

There are several instances of professionals from the planning institute going on to stand for election, or being appointed to head key agencies. The current mayor, the President of the Urban Transport Authority (URBS) and the State Governor all started their careers in

# Using a continuous planning cycle...



## Jaime Lerner:

Lerner is credited with being the visionary leader who has made an enormous contribution to the development of present day Curitiba. As a 33yearold architect, engineer, urban planner and humanist he first became mayor in 1971. He is, as the study group found, a cheery, informal and intensely practical man. As one of our group members said:

*"He might have given the same talk a thousand times over, but it was still fresh and captivating. He is a man with a vision and ability to change the wider community. A thinking person who also likes action. The sound bites came thick and fast—simplicity with commitment; be bold; sometimes quick decisions are needed, not quick and dirty but quick; strategy is a daily balance between needs and potentials."*

It is easy to see why he became Brazil's most popular Mayor and more recently State Governor.

IPPUC. All of this has contributed to the organic feeling of integrated leadership, consistency, continuity and integrity.

The fact that the Curitiba vision has been shared by most senior politicians, over most of the past 35 years, has led to consistency of development.

The city appears to invest a lot of effort in listening to its citizens. The mayor holds regular public hearings in the regional offices and there are an array of webbased resources and hot lines. These have very high user rates because they are a means for citizens to convey how they would like their rates spent in their area or where they would like a new bus stop or route. These communication tools are also used for reporting problems.

Their political structures have helped significantly (see ANNEX V).

Considerable political will and skill has been needed in delivering practical steps to implement the plan in the long term. This has included a continuous planning cycle and a determined policy of constructive incentives to induce appropriate land use (see section 4.2 Strategy and Planning). But despite the powers of the mayor it has not all been plain sailing. When Jaime Lerner stepped down in the late 1970s from one of his three alternating terms of being mayor, his replacement adopted a pro-motorway programme. He threw out the master plan, and attempted to force through a new plan that envisaged a network of motorways into the heart of Curitiba. However, institutional inertia and resistance within IPPUC slowed his plans and he left office at the end of his four years with little to show for his efforts. Jaime Lerner was voted back in and the master plan was restored. As Jaime Lerner told us: "Motorways can kill a city."

*"Our main philosophy is to bring people together to talk, not gossip...  
...but to talk to progress".*

*—President, Curitiba City Council, 2002*



*President Joao Derosso*

*Parks, pavements, public places for encounters, and pedestrian precincts have planning priority over the private motorcar in Curitiba. These hard and courageous decisions taken years ago underpin the emergence of a city that is a delight to walk and live in.*

*...Joel*

# Focus on quality of life for all...



Facilitating economic development is also a major activity for the City Council. The master plan called for land to be set aside for industry on the outer edges of the city—in some cases requiring private land acquisition. Promotional material indicates that industry was attracted by the combination of quality infrastructure (especially transport), an educated workforce, quality of life (heritage, parks and public 'settings for encounters'—the description given to pedestrian precincts), and the presence of other industry. Today Volvo, Bosch and a total of nearly 500 other international and South American companies are located in and around Curitiba.

## 3.2 Values

It was clear to the group that underpinning the leadership is a set of values that have grown out of the culture and history of the people of Curitiba. These values are holistic and integrated and include:

- respect for all people
- according dignity to people's social responsibility
- civic pride
- solidarity (unity of fellowship arising from common responsibilities and interests)
- passion
- focus on the quality of life for all



*Recreation: skateboard parks*

When Lerner listed his three most important 'key' to Curitiba's progress they were: quality of life, qualifications/education and infrastructure/logistics. Notably, the Vice President of the Federation of Industries (Luiz Guilherme Pauli) had the same list, with quality of life and education as the two priorities to pursue. Get those right and successful commerce will flow

was his sentiment—and that of the Federation's promotional literature.



*Recreation places—the life of the city*

There is a genuine commitment to improving the way of life for citizens of Curitiba. To achieve this there has been major focus on participation and access: participation in the life of the city via provision of good sports and recreation places and spaces, and transport to access them all; and access to education, health and housing and employment. The result is that while incomes are low by New Zealand standards, satisfaction with quality of life in Curitiba is high.

## 3.3 Strategy/ Planning/ Integration

In 1965 the city's population was 450,000 living in an area of 430 square kilometres around an old city centre. In contrast the Auckland City isthmus area today has a population of 380,000 in an area of 130 square kilometres. Curitiba now has a population 1.6 million. Curitiba was beginning to experience growth pains by 1965 and to encourage an influx of new urban planning ideas the City Council held a competition for the best city plan among local and national professionals. Following this the Curitiba Research and Urban Planning Institute (IPPUC) (see Annex III) was established to analyse and further develop the winning plan. The resulting master plan's implementation began in 1971, when IPPUC's president at the time, architect Jaime Lerner, was appointed Mayor of Curitiba.

Land use, transportation planning and road network definitions were key master plan tools



# Linking mobility, landuse and services...



in guiding and coordinating growth. Expansion of the existing city centre as a compact form was restricted, and 'linear centres' were established as an alternative along transport corridors extending toward the outskirts of the city. This has led to the development of growth corridors or radial centres—instead of compact centres or growth nodes. Allowable building densities vary in relation to available transportation. Thus land zoning is in the form of varying density contours parallel to and along main transport corridors.



*Transport corridor*

The Curitiba administration recognised the importance of developing a long-term vision for their city and the need to consistently apply it. In developing this plan they had a good understanding of the likely pressures and problems fast growth would bring, and they systematically put in place processes and mechanisms to deal with them. In other words they anti-



*Section through transport corridor (IPPUC)*



*Plan of transport corridor (IPPUC)*

pated. The proposed new monorail is a good example of this (see Annex IV—Monorail).

Once the longterm plan (a city vision) was developed and in place 'Lerner's men' decided its future implementation was dependent on a deep understanding of the objectives and opportunities in it. Given that implementation was, as always, a politically dependent process they slowly promoted themselves to the key political positions and controlled the implementation from thereon! Governance consistency was created by ...promoting the technicians! For over 30 years the political implementers have had a deep understanding of the great complexities of city evolution and have been able to share that understanding with citizens and investors alike.

What seems like a genuine enthusiasm accompanies the adherence to the vision all the way down to the weekly 'Thursday meeting' when five key players get together to discuss and agree on the tactical alterations to executions of the plan. The obvious systems thinking approach was very impressive to us, perhaps because we expect that type of approach from engineers, architects and planners...but not from those who usually fill the ranks of local government politicians in New Zealand.

*Curitiba looks and feels as though it is a good place to live and an efficient city to operate in. It oozes connections between city and business leaders, places and spaces, institutions, solutions to many needs, the needs of today and the opportunities for tomorrow.*

*...Morgan*

# Coherence and integration, maintained by IPPUC...



This systems thinking approach clearly consists of two elements:

- what do we need to do now?
- what must we do for and in the future?

Lerner highlighted how important it was to focus on balancing the 'needs' (the now) and the 'opportunities' (the future). Both must be advanced together, he stressed. Both Governor Lerner and Mayor Tachiguchi have weekly sessions, with their state and city ministry and department heads. In the mornings they focus on the future and in the afternoons on current needs.

Underlying the vision and everything they do is good information. Good information is the lifeblood of good decisions, and in Curitiba they put significant resources into urban research and making the information available.



Growth corridors in red (IPPUC)

## Curitiba's Industrial City:

In 1972, under the first master plan, an industrial city was planned 10km to the south-west of the city centre. To prevent speculation, and provide funding for future developments, the city purchased 4,200 ha in 1975 and set about developing affordable housing (in partnership with private developers), schools, cultural facilities and bus links, meanwhile protecting nearly 50% of the area as green space. Over 460 low polluting industries, which have generated 200,000 jobs, have been attracted to the city.

They well understand the 'interconnectedness' of the city and the need to take a holistic view of the city's growth and development. They know decisions made will in some way affect other aspects of the city, the social, economic and environmental dimensions, to a greater or lesser extent. For example, they know they need to have an attractive and clean environment if they are to attract businesses to relocate to Curitiba.

Coherence and integration are maintained through the planning agency for the whole city (IPPUC). This has clearly been pivotal in maintaining consistency and commitment through different administrations and mayors. Comprehensive and integrated solutions appear to be second nature to the Curitibaans. They think holistically and strategically about the relationships of plans, implementation and their outcomes.

*"Build a scenario, an idea for a project that everyone will understand is desirable and they will help you make it happen. You need to have a desirable dream, a collective dream."*

—Jaime Lerner, Governor, 2002

*Having experienced some excellent public transport in Curitiba and a couple of other South American cities I decided it might be educational to try out the much-maligned Auckland train system and to check whether it really is as bad as reported! It was—both educational and unbelievably bad! If asked now which are the 2nd/3rd world cities, in terms of their public transport—Curitiba or Auckland?, then based on its current train system it is Auckland by a country mile! One can but hope that Britomart, duplicating the west line, newer rolling stock, more frequent and later services and importantly a change in attitude by operators then the general public will eventually see some change for the better.*

...David H

# Places and spaces for people...



They do this in a way that includes public participation. They have also fostered the need to develop means of private/public partnerships, in key areas such as transport and housing. The business community is a key player, working alongside the council in the development of Curitiba. Community ratings of the current administration are high.

The actual implementation of strategy appears directive and prescriptive. The council is keen to start making a difference, based on the information they have. Social action programmes start out as pilot projects, advertised widely to the community.

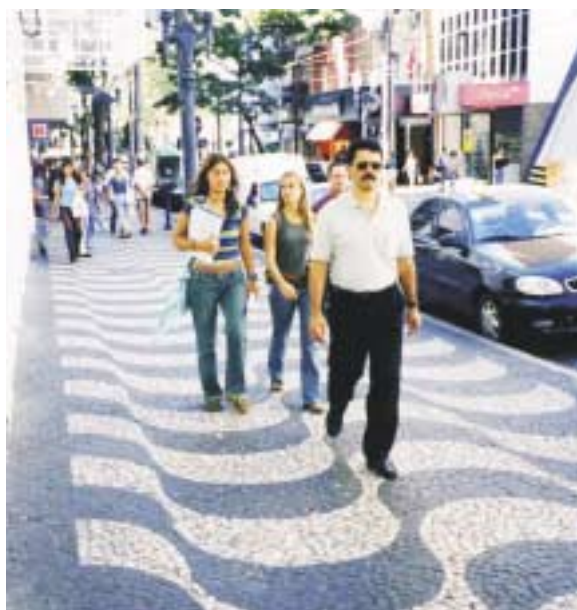
There is a continual process of adaptation and refinement of projects and logical improvements are made (without sacrificing the original direction) in response to ongoing evaluation and consultation with the community. Planning for Curitiba is based on spatial thinking, and a focus on outcomes and systems, rather than an emphasis on process, legislative framework and outputs such as narrowly focused reports or projects. There is a strong degree of integration across departments, which encompass functions that in New Zealand would span both local



Street murals

and central government. There is also a strong reliance on relationships, partnerships and co-responsibility and buy-in from the community.

Funding for infrastructure, urban transport and employment initiatives comes from a mix of city, state, federal, World Bank and Development Bank sources. Following an interactive process with the mayor and council, the planning institute, IPPUC, makes the final decision on what will be funded each planning period and to what level.



Central city street

## Pedestrians reign supreme:

The master plan focuses on high density development along the five structural arteries. This helped reduce traffic movement within the city centre while providing easy access via the bus exchanges. Low inner city traffic densities enabled the development of a pedestrian network covering nearly 50 blocks in the downtown area. Although retailers were initially opposed to the creation of pedestrian streets they quickly found the pedestrian zone was a more profitable place to trade. More space is now available for customers, rather than cars, and more people spend more time in the area because the shopping environment is more pleasant.

*I was most impressed by the emphasis on action, low tech practical solutions, integrating infrastructure and landuse planning getting things done rather than concentrating only on process, law and plans. We need to be smart (like the Curitibaans!) and adapt good ideas to our cultural and political landscape.*

...Dave B



# Innovative architecture and design...



*"You don't need all the answers to make a start" and ...*

*"Do it – don't wait to start"*

*—Jaime Lerner, Governor 2002*

## 3.4 Urban Form

Curitiba is designed to accommodate the needs of people at macro and micro levels. At the macro level, transport needs are integrated with the location of housing, hospitals, schools, childcare and work centres. At the micro level, the city is filled with places and spaces that enrich encounters between people and offer opportunities for recreation, reflection and leisure.

Things that particularly impressed the group were:

- central city shopping centres that are full of life and not dominated by cars
- parks and trees everywhere, many tiled seating areas for 'people encounters'
- location of parks and recreation spaces in high-density areas—skate-board parks, soccer pitches, running tracks, basketball courts at the citizenship centres, and children's play equipment in pedestrian streets
- creative craters; imaginative use of old quarries—now housing an opera house, Open University for the Environment, outdoor concert area and parks
- the enormously successful passenger transport system
- innovative architecture and design—mosaic footpaths, opera house, tree house for the State Governor



*Inner city high density accommodation*

- knowledge lighthouses, community libraries and now internet centres attached to schools, all highly visible
- heritage buildings and green areas—creating light spaces between tall apartment and office blocks
- ethnic parks—celebrating cultural diversity, even a Hansel & Gretel story trail in the 'German Woods'.



*German Woods—retained historic facade*

All these initiatives are evidence of the city focus on amenity values; places and spaces for people—important components of the quality of life in Curitiba. They are examples of intensive development planning and liveable spaces.

## 3.5 Transport

Curitiba's public transport system is entirely based on buses, though there are plans to introduce a high capacity monorail system in the near future (see Annex IV). The system emphasises accessibility, mobility and quality of life and is one of the most heavily used, yet low-cost, public transport systems in the world. It offers many of the features of an underground system, for example, high capacity vehi-



*'Red' Volvo bi-articulated buses*

# Efficient, reliable public transport...



cles, dedicated lanes, fare collection prior to boarding, quick passenger loading/unloading, efficiency, and reliable service. At the same time this transport system is above ground, visible and safe.

There are four main types of bus service—all of which interconnect at terminals. Conventional 'orange' buses provide feeder services. Articulated (bendy) 'green' buses provide clockwise and anti-clockwise services around the city's three orbital or loop networks providing inter-district links. Conventional 'silver' buses—known as 'speedy' buses—provide direct links without stops between highly travelled destinations. All of these run on normal roads—with cars—without priority lanes.



*Rapid loading is a feature*

'Red' Volvo bi-articulated buses—each carrying 270 passengers—were introduced in 1991. These run on 60 kilometres of dedicated bus lanes within city streets planned as growth corridors (the 'linear centres') and run north, south, east and west. 'Tube stations' are spaced regularly along these bus lanes. Passengers pay a flat fare (also called a 'social fare' because short haul rides subsidise long haul rides) of about NZ\$1.35 at the turnstile on entering, and wait less than three minutes for a bus. There is no ticket. We found a hundred people could get on and off the bus in seconds. The fare entitles passengers to four bus changes if necessary, enabling people to go two blocks or right across the city for a single fare. At peak travel times these 'bi-artics' are shifting 28,000 people an hour—and are at the limit of the system's capacity—hence the monorail development.



*Central city bus interchange*

The different types of bus service interconnect at integration terminals. These terminals are often situated by large shopping centres or civic destinations. There are no parkandride carparks. We were advised that the aim is to ensure that everybody, no matter where they live, should be within 500 metres of a bus stop with a bus frequency of less than five minutes.

Publicly owned Urbanisation of Curitiba Co. (URBs) is responsible for implementing and managing the transportation system. Ten private operators own and operate their own fleets of orange, green, silver and red buses. Public investment covers the cost of roads and stations, while the fares cover all bus operation and purchase costs. URBs sets the fare level annually after negotiations with operators who get paid daily according to how many kilometres their buses run.

URBs has access to all turnstile and trip data, and varies bus route frequencies on a daily basis. Emphasis is emphatically on the provision of a reliable city-wide service. There is no distinction made between commercial and subsidised routes as in New Zealand. The total income is used to provide services across the whole network.



*'Yellow' bus interchange*

# Environmental protection and enhancement...



Transport corridors are fundamental axes for urban growth. Urban growth planning for high-density development around the corridors is integrated with transport planning and traffic management. URBS is the single authority for transport that plans the network, specifies routes, vehicles, timetables, the flat fare, contracts operators, and designs branding, communications and public consultation.

The efficiency of the public transport system is impressive, as is traffic management in general. Using the network is simple, with the single fare providing citywide access. There is little evidence of traffic congestion even at peak times—something that is possibly assisted by the staggered starting times of schools, businesses and retail 7.00am, 8.00am and 9.00am respectively.

From 25,000 public transport trips per day in 1974 the buses now carry 2.1 million trips a day—75% of all passenger trips. This is despite Curitiba having a car for every 2.5 persons—the highest car ownership/capita in Brazil. (There are 1.8 persons/car in Auckland.) Parking is prohibited in large parts of the inner city, and whole streets and other central city areas are now dedicated pedestrian precincts.

Public transport is not subsidised, in terms of the operational costs. However, all infrastructure (roads, tube stations etc) is funded by the city as is normally the case in New Zealand, while discounted loans (currently 18% per annum) are available from the Federal Government Bank for private operators to purchase buses. This is regarded as a necessary public investment.

## 3.6 Environment

A core element of the original city vision was for Curitiba to be the 'Ecological Capital of Brazil'. This vision translated into a huge park acquisition programme, protection of heritage buildings, prioritisation of pedestrians over cars, the provision of cycle ways linking the parks, and a massive expansion of the public transport system. Today, parks and city squares cover 18% of the city area, there are 170 kilometres of cycle ways linking them, and a transferable development right incentive scheme is ensuring heri-

tage building preservation so the city 'does not lose its memory'.



*Riverside park, cycleway and grazers!*

As the master plan has developed and while the city has changed its slogan from an "Eco" focus to a people focus, "Curitiba-Capital Social", this has not lessened the emphasis on clean water, clean air, and environmental wealth of the city. In effect its people focus has more greatly empowered and involved the community in environmental initiatives.

Curitiba environmental protection and enhancement programmes are working because they have clear goals and programmes that work together to enhance environmental quality. The focus is 'people's needs' first and then the programmes have been developed to meet those needs. This ensures Curitiba's environmental improvement schemes are well supported and integrated. Curitiba's 'walk the talk' in terms of implementation of appropriate pathways and initiatives to improve urban environmental quality.

Notable environmental initiatives in Curitiba include the following:

- Environmental education focus is across the population through Unilivre, with the 'Open University for the Environment'. As well as the programmes one might expect for students, community groups and industry groups this centre targets workers across the community, for example, taxi drivers—a group that talks to many citizens in any city.
- Wasteland and quarries are reclaimed. The reclaimed quarries previously derelict are now centres of education, cultural and tourist attractions



# An environmental education focus...



- There is a focus on clean water, air and soil linked to recycling and reuse. Extensive programmes involve the poor in recycling with a 'garbage that is not garbage' programme.
- Water care programmes, involving students and community to protect and restore rivers and streams, are incrementally spreading

## Unilivre: Open University for the Environment.

Unilivre was born out of the belief that the quality of life in the 21st century will be directly proportional to people's understanding of their relationship to the environment. It is an independent cultural and educational organisation, undertaking research and outreach learning on all dimensions of environmental management and sustainable development. The building itself (see photo) is located in a revegetated quarry, complete with lake and bush tracks and is an example of innovative and appropriate design, using recycled materials, used power poles and colours that reflect its purpose.

Courses are provided for everyone: school pupils, shopkeepers, building managers, journalists, teachers, homemakers and even taxi drivers (a compulsory course!). Unilivre is funded from public and private sources, employing a small number of educators and an organisational group, contracting in many of the course deliverers and charging fees for most of its work.



Three views of Unilivre: Open University for the Environment

*There seemed to be a genuine commitment to improving the quality of life for citizens of Curitiba. This orientation, given the poor and disadvantaged in the city, colours a lot of thinking at City Hall and beyond. I think it drove decisions on parks, green exchange, many FAS programmes, COHAB policies etc.*

...Roger

# ... 'Curitiba-Capital Social', visionary programmes.



across the city lead by the Environmental Secretariate of the City Council.

- Environmental research is at all levels.
- Environmental planning is through IPPUC.
- Environmental monitoring is through the Environmental Secretariat.
- Fundamental research is through the Curitiba "Environmental Centre of Excellence".
- Heritage parks—reserves with lakes, waterfalls, board-walks and paths—are developed with cultural awareness.

"So you don't know what to do with an old scarred quarry site? Design and build an architecturally stunning opera house at one end, flood the quarry floor with clean water and fill it with fish and turtles... simple! Don't procrastinate, don't wait for the perfect solution, but do something!!" This Jaime Lerner-style thinking has driven many clever appropriate projects, designs and initiatives all over the city, as shown on the following pages.

The overriding impression about environmental management in Curitiba is that managing environmental effects per se has not been the driving determinant of development. Rather it has been the extensive integration of development goals, including very clear environmental ones, which have delivered many highly visible environmental benefits. Only in the area of water/waste water management (which is under state not city control) have environmental qualities not lived up to the vision. But that too is now changing.

## 3.7 Peoples needs; education, health, welfare and employment

Many programmes in Curitiba support its present claim of 'Curitiba—Capital Social.' This city's social programmes are a source of pride, achieved in a country that includes many aspects that are identified as 'third world'. The population of the city ranges from the very rich, who can be seen in Curitiba's Crystal Palace shopping mall, which is more elegant than anything in Auckland—to the very poor living in favelas (slums). However, programmes to meet the education, housing, and employment aspirations of the majority of Curitibaans are impressive. A sample of the programmes:

- Children receive free primary and 'fundamental' education, up to the age of 14. Some municipal schools provide three free meals a day for the children—to prevent nutritional issues affecting learning. There are plans to improve the opportunities for education for 15–17 year olds. Literacy in Curitiba is above the national average for Brazil; currently 97%.



*Children at lunch*



# Four exciting uses for a quarry...





# The tubular theme is strong, yet simple...



# Supporting business, with start-up loans...



## Managing 'invasions'

One major problem for the city has been the influx of unskilled workers, locally called 'invasions' into unofficial, but highly organised 'favelas'. These are new subdivisions established on private property almost overnight without official sanction or engagement. Rather than attempt to evict, or otherwise move on, the problem, the city has chosen to absorb these developments once established. Civic infrastructure, such as water, drainage and power, as well as city services such as education and health are provided. This results in a community that is sometimes hard to separate from surrounding official developments.

- Free health clinics are available throughout the city. These are well attended. Maternity and neo-natal care in particular were claimed as success stories at the clinics, with a reduction in infant mortality rates since their inception. There are health professionals who work in the community, visiting homes to ensure people are accessing the help they need. The clinics also maintain close links with all families in their area, via schools. Specific community health initiatives, for example, Parkinsons disease testing, operate in the pedestrian streets.



*Business incubator*

- The city provides a start-up business programme via a series of *incubators*, which generate on-the-job training and employment for small business operators.



*Given the opportunity for creating a business*

- Those selected for the incubator programme first undergo a compulsory business management programme. They may then borrow money to establish their own businesses. Some employ and train their own staff, for example, in glass cabinetry, sewing, fitting and turning. Start-up loans must be repaid, regardless of business success; in itself, a performance incentive.
- Worker support: food vouchers are offered by employers (public and private) to all employees, as a supplement to income. For example, low-paid workers at the city recycling centre are given lunch, take-home food, bus passes and financial assistance for their children's school stationery supplies and fares.

*Back on the bus to the city centre...we pass petrol stations displaying prices of 3 grades of fuel; alcohol, alcohol-petrol blend and petrol. Walk back through the quiet grove, passing cardboard collectors with their hand carts piled high with cardboard collected from the stores and destined for recycling depots, short cut through the enclosed '24 hour street' with shops and restaurants open all day and night, to the hotel.*

*...Arthur*



# Citizenship streets, access to services...



Higher paid workers in the private sector get vouchers—redeemable at supermarkets—with their monthly salary.



*A new candle making business*

- Numerous city parks provide sites for leisure. Of particular interest are the parks representing various ethnic groups living in the city, for example, Ukraine, German, Japanese, Polish. These parks are created and maintained as joint operations by the particular community and the city. This scheme visibly acknowledges the diversity of the city population, and provides various sectors of the community with a sense of ownership and belonging.
- The city shopping precincts are safe and well lit at night. Precinct lighting levels appeared to be about double the New Zealand norm and were of a soft warm golden light. Inner city street life does not include the numbers



*Parts being made in a new business*

## Citizenship Streets:

These are architecturally innovative creations located next to transport terminals. They are borne out of the city council's philosophy that all citizens should have easy access to service providers such as power and water utilities, city, state and federal agencies and in addition, leisure, education and cultural activities at one convenient location. There are now eight citizen streets with two more to be built. Each has its own design features and they are landmarks of the suburban landscape.

of vagrants and beggars one sees elsewhere in Brazil (eg. Rio de Janeiro).

- Citizenship streets are located alongside specific bus interchanges in the different suburbs of the city, and provide all essential social services under one roof (literally).
- Runaway young people who arrive in Curitiba are offered a safe shelter, food, assistance with finding employment, or a bus ticket home. This is a particular Curitiba innovation. Abandoned street children have been adopted by various businesses and industries, including the city council, and are given safe shelter, food and a small income in return for part-time light work, including tending city gardens.



*Delivering waste at the Green Exchange*

- Green exchange: families in favela areas are encouraged to collect street rubbish, for further recycling. This rubbish is weighed in exchange for seasonal, fresh vegetables and fruit.

*Despite the problems facing Curitiba, such as water, I believe the Auckland Region could learn a lot from Curitiba's experience, particularly from the development of its public transport ...far more regional governance control is required over public transport operators if we are ever to provide a comprehensive and integrated passenger transport service.*

*...Joel*



# Partnerships for housing schemes...



*Receiving food at the Green Exchange*

- City Recycling centre: this centre which takes waste from Curitiba and some adjoining regions is built from recycled materials and provides labour intensive employment. Non-organic material is sorted and recycled and organic waste is made into compost, then used in medicinal herb gardens, alongside the recycling centre. A purpose built education unit at the centre teaches about environmental issues and teaches children to make paper and other crafts using discarded materials. In Curitiba, two-thirds of garbage is recycled, internationally a very high rate.



*Garbage museum at city recycling centre*



*Minimum sized houses—40 square metres*

- Housing for low-income people. The city has various innovative schemes for dealing with the problems of housing for low-income families. Eligibility for COHAB (City Housing Agency) assistance is measured and assessed in terms of the family income in multiples (0—4) of the minimum wage. Support for low-income housing comes through offering land and finance for a minimum sized land section and a minimum sized house (40 square metres), built to a special Class D permit standard, by the owners, using sweat equity. A renttobuy programme is also available for some people. Housing schemes are dominated by partnerships formed with owners and with housing companies as the city does not provide rental housing. City support further extends to partnerships with private companies, who are able to use transferable building rights payments to finance subdivisions for sweat-equity housing or high density accommodation buildings.



*Building and expanding with sweat-equity*

*There is much for us to reflect upon in relation to the notion of integration and its implementation. In particular, whether the "fit" of institutional arrangements and governance that has been created, and are forthcoming with local government reform, are capable of delivering the sustainable environments we seek. Addition of some of the Curitiba vision, commitment and capacity-building would go a long way to enhance our system of planning and decision-making.*

*...Jenny*

# Industry training, privately funded...



*Illegal favela housing can be substantial*



*Development housing for low income families*



*Low cost housing built in partnership with COHAB*

- Industry training via State Federation of Industries (see below).

## **The FIEP System: The Federation of Industries of the State of Parana**

The FIEP was created in 1944 to coordinate and represent the many diverse industries of the state of Parana. It consists of five entities that serve the interests of both employers and employees. All entities are privately funded per an employee capitation fee paid to the state government and then transferred to the FIEP group. The current budget is R\$70 million (NZ\$70 m). A large part of the FIEP's effort is directed to training that is done on the Federations own campuses. In the last eight years over 10,000 staff have been trained for the automobile industry. One of the training centres is a Brazilian centre of excellence in environmental teaching.



*Vice President Luiz Guilherme Pauli*

In Curitiba, the city council is responsible for delivering health and education services which are funded from the state payroll tax. A significant part of city planning is to integrate the provision of those services with access to transportation, and in relation to density and quality of housing. IPPUC planners and policy analysts use GIS mapping systems extensively for all aspects of city planning. For example GIS maps for the whole city are used to gather data on the quality of life indicator: 'risk of domestic violence'. Planners told us they needed information to guide location of further social services.

*Most of what they do in Curitiba is not new to us in New Zealand. The intriguing thing is that they are actually doing it, whereas we are still in the early stages of debate and development. Most of what they do is 'second nature' to them, it is simply part of the culture they have developed over the past 35 years*

*...Craig*



# Integration of key programmes needed...



## 3.8 Policy Tools

One of the strongest impressions the group formed, after realising the extent and durability of the city leadership, was how a whole suite of policy tools were used in both an innovative and integrated manner. Few tools were totally original, but the way they were interwoven was impressive.

These tools included:

- a single master plan for the city's development, constantly innovated and kept on course by the Urban Planning and Research Institute
- incentives of various kinds, for example, to protect and restore heritage buildings
- transferable development rights for example, of building rights that then generate income to fund low cost housing
- public-private partnerships and other forms of co-responsibility—highly developed for public transport and housing
- community education/information about public projects and programmes, contributing to sensitisation of the community towards an ethos of sustainability
- community participation for example, in a water quality monitoring programme called the Olhod Agua Project, that involves thousands of children
- multipliers (cascading networks of message-spreaders)
- business training/incubators to stimulate small business innovation
- green exchange programme and other solid waste programmes (although incomplete in terms of a minimisation approach)
- a pragmatic approach to keeping costs low, using affordable technology and looking for ways to enhance employment opportunities
- compulsory voting, for those over 18 and under 66. Those aged 16–18 may vote.



*Knowledge lighthouse for community education*



*Development rights for restoring heritage buildings*

*Health clinics, schools, environmental education centres all appeared to have high levels of integration—working together to provide education, health and employment opportunities for all ages, socio-economic groups and cultures. Moreover, they managed this with less money and more cooperation than is apparent in NZ. All the people we talked to took integrated planning as a 'given' and were openly proud of how their programmes make a difference for Curitibaans.*

*...Pam*



# Increased urban research capacity...



## 4 WHAT SHOULD WE BE CONSIDERING—FOR NEW ZEALAND?

Despite the fact that Curitiba has the problems inherent in any city with a rapidly increasing population and limited resources, there are certain aspects of Curitiba city leadership, planning and programmes that we could learn from to help us improve the 'liveability quotient' for all New Zealanders.

Curitiba does not present itself as a turnkey model for literal replication, for no two cities are alike enough for copying to work. Rather, Lerner calls his city "not a model but a reference" (Hawkins et al. 1999).

### 4.1 Leadership and Vision

The ability of Curitiba civic and business leaders to hold to a common vision for the city's development against a national backdrop of transition from a military dictatorship to a democracy and wild fluctuations in the nation's financial fortunes, is awe inspiring. What are potentially transferable elements of the leadership itself, and things they did or created, that could be crafted to meet New Zealand's needs? The Commissioner has two thoughts:

- The first—on leadership: How do we encourage people, with complex systems based experience, into local government politics? Such people can come from many professional backgrounds but the Curitiba story indicates they must be able to weave together, in a synergistic way, a very complex matrix of human and technical needs and also be able to enthuse others with opportunities when spotted.
- The second—how leadership and vision is supported. The most significant institutional element of the Curitiba story is the urban research institute IPPUC, which has generated ideas and solutions to support the

city since 1965. If New Zealand's development potentials are to be realised, then a major expansion of urban research capacity, tied into local government responsibilities is absolutely essential.

It is essential to develop a strategic approach to urban planning in New Zealand, and to ensure proper understanding of the relationship between urban growth and transport. A critical issue will be to ensure that new council plans prepared under the Local Government Act and those prepared under the Resource Management Act are integrated.

Our current urban research capacity is dispersed, under-resourced and utterly incapable of delivering the breadth and depth of city design (social and infrastructural) that has emerged from IPPUC for 30 years. New Zealand has the building blocks for a greatly enhanced urban research capability but they need a lot of mortar to hold them together plus policy and/or legislative instruments to tie them into our urban/town planning regimes.

### 4.2 Strategy and Planning

#### THE CURITIBAN FUNDAMENTALS

The most fundamental part of the Curitiba story is that city leaders, in the mid 1960s, realised (as did some New Zealand civic leaders of the same period) that a strategy to deal with rapid growth was needed. The key component of that strategy was a master plan for shaping the physical elements within a cultural/human context. The plan's basic principles were simple—movement and land use must be inextricably interlinked. The corridors along which people and goods move shape a city. Locating people, businesses, health services etc. in appropriate proximity to the access was therefore the underlying guiding principle. Thus Curitiba sorted out the basics in the late 1960s and since then

*My first impression of the city was of cleanliness and colour, buildings, buses and pavements.*

*The bus system was the most obvious indication that the city was well organized and our subsequent visits revealed a very clever synthesis of planning by IPPUC, management by URBS and the performance of individual bus operating companies. The system whereby URBS organizes the routes, and timetables and the collection of fares and the companies provide the buses on a mileage basis seems to achieve most of the desirable aims of a public transport system. This system has aspects that can probably be adapted to NZ, particularly in Auckland.*

*...Arthur*

# Alignment of urban development strategies...



has focused on making it happen, depending on needs and available finance. This approach succeeded by combining farsighted and pragmatic leadership with an integrated design process, strong public and business participation and a widely shared public vision that appears to have transcended partisanship.

Regular round table meetings with successive mayors and major players in the city have assisted in sorting out problems as they arise. We could not of course readily determine the extent of consultation with non-governmental groups or the political opposition, or the extent of political tradeoffs that might occur. Nonetheless the city demonstrated some very effective outcomes of a managed approach to growth.

## THE NEW ZEALAND WAY

The Curitiban approach, based on 'getting things done', following clear articulation of a longerterm vision, contrasts directly with our style of legal formalism in New Zealand. Partly in response to the system we have created, a growing complexity of statutory and non-statutory planning instruments is being produced by various agencies to manage different components of our environment. The complexity of our approach can easily become counter productive in terms of achieving desired outcomes, and can undermine intentions for integration. There is much for us to reflect upon in relation to the notion of integration and its implementation. In particular we need to ask whether the 'fit' of institutional arrangements and governance that has been created—and is forthcoming with local government reform—is capable of delivering the sustainable environments we seek. In addition, some of the Curitiban vision, focus on integrated solutions, commitment and capacity-building would go a long way to enhance our planning and decision making.

There is clearly room for improvement in the alignment and implementation of urban development strategies to achieve desired outcomes in New Zealand. Ideas to improve realisation of our potential 'liveability quotient' include:

- shifting the balance away from an over-emphasis on process and consultation, particularly at the individual consents stage, to-

wards better participation in the policy and planning phase, followed by a focus on action. RMA processes need to be better balanced with the need for community development planning

- developing a strategic approach to urban planning, by creating a mechanism for an integrated implementation plan, especially for Auckland. The new Local Government Act could be such a mechanism
- ensuring that proper understanding of the inter-relationship between transport access (mobility) and urban growth is reflected in the implementation plan
- promoting incremental steps to move New Zealand cities more rapidly towards an attractive and integrated public transport network—comprising buses, trains, and ferries, with integrated ticketing and standardised fares
- promoting much stronger regional planning and management of core infrastructure, for example, transport, water and wastewater, major facilities and heritage. This may require involving structural change and re-regulating such things as public transport.



*Creative use of quarries*

# Improving our 'liveability quotient'...



## 4.3 Transferable Ideas for Action

Within New Zealand there are already a number of local, imaginative solutions being proposed to help raise the 'liveability quotient' for our communities. However, our experience in Curitiba has resulted in a conviction that there are a number of easily transferable actions that should not be too difficult 'to do', sooner rather than later.

These include:

- **More pedestrian streets**—imagine most of Lambton Quay and Lower Queen Street without all the cars and emissions
- **More and improved 'people encounter' spaces**—with permeable paving and seating areas arranged to encourage interactions
- **Creative use of quarries**—for music, recreation and community activities
- **More recreational areas**—'dead' sections of the city could be made into informal sport and activity areas
- **Heritage parks**—to celebrate our cultural diversity, for example, Samoan, Chinese, Indian, Tokelaun ...and more
- **Better lighting**—brighter and soft-toned in public areas, especially where people have to wait
- **Integrated transport fares**—in all regions, with discounts for regular commuters
- **Transferable development rights**—to preserve heritage areas and provide income for community programmes.

We invite you all to become active participants in taking all available opportunities to advance, where appropriate, these relevant and transferable ideas.

At the same time we can be working together to advocate for better coordination and integration of the innovations, and the urban research and planning, already in progress in Aotearoa.

## 5 NEXT STEPS

The study tour group resolved to continue networking and interacting to progress the ideas that emerged from the visit. Opportunities to speak and to share learning from the journey will be taken through conferences, seminar presentations and other events.

A power point presentation illustrating many of the impressions in this report has been developed by group members. A complimentary copy is available from the Parliamentary Commissioner for the Environment:  
email: [lynne@pce.govt.nz](mailto:lynne@pce.govt.nz).

Participants resolved to make commitments to personal action, to be shared with the group.

Curitibans will be invited to New Zealand, including Jaime Lerner—who has pledged to visit after he retires as Governor in October 2002. An invitation initiative is underway.



*Study participants at 'tree house'*



## ANNEX I SOURCES

### Organisations or Centres visited in Curitiba:

- Research and Urban Planning Institute of Curitiba (IPPUC)  
www.ippuc.curitiba.pr.gov.br
- Urban Transport Authority (URBS)  
www.urbs.com.br
- Municipal Housing Company (COHAB-CT)  
www.curitiba.pr.gov.br
- Unilivre: Open University for the Environment  
www.unilivre.org.br
- Social Action Foundation (FAS)  
Email: fas@fas.curitiba.pr.gov.br
- Municipal Health Centre
- Mayor of Curitiba; Cassio Taniguchi  
www.curitiba.pr.gov.br
- President of the City Council of Curitiba; Joao Claudio Derosso
- Governor of the State of Parana; Jaime Lerne  
www.pr.gov.br
- Volvo South America Ltd  
www.volvo.com.br
- Federation of Industries of the State of Parana (FIEP)  
Luiz Guilherme Pauli  
www.fiepr.com.br
- Curitiba Industrial City (CIC), Development Company of Curitiba  
www.cic-curitiba.com.br
- Viacao Cidade Sorriso Ltda (private bus company)
- City Recycling Centre



Medical Centre

### More reading and Websites:

- Hawken, Paul; Lovins, Amory and Lovins, L. Hunter (1999). Human Capitalism; Weaving the web of solutions; the Curitiba example. IN: Natural Capitalism; *Creating the Next Industrial Revolution*. Ch. 14 285–308. Little Brown and Co. Boston.
- McKibben, B. (1995) Chapter 2 "Curitiba" IN: *Hope, Human and Wild*, Little Brown and Co. Boston.
- Rabinovitch, J. (1996) *Urban Planning in Curitiba*, Scientific American 26–33 (March).
- Ravazzani C. and J.P. Fagani, eds (2000) *Curitiba: A Capital Ecologica*, Natugraf. LTDA Curitiba



Jaime Lerner's 'thinking tree house'

## ANNEX II

### MEMBERS OF CURITIBA STUDY TOUR

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Pamela Williams	President NZ Association of Environmental Education	pamwilliams@xtra.co.nz (04) 380 0432
Arthur Williamson	Chairman Sustainable Cities Trust	a.williamson@cape.canterbury.ac.nz (03) 364 2943

### ANNEX III

#### IPPUC: THE URBAN RESEARCH AND PLANNING INSTITUTE, EST. 1965

IPPUC is a semi independent agency of the City Council. It is governed by its own President and council and currently employs about 250 staff with skills in sociology, design, statistics, economics, urban planning, architecture, geographic information systems, engineering and transport. All staff are contracted. IPPUC income comes from the city, state, Federal Brazilian and International banks and recently the Japanese government. Individual staff of IPPUC undertake consultancy work on various types of leave, but the Institute as a whole does not do contract work.

IPPUC is without doubt the key agency in Curitiba when it comes to researching and designing the city's paths to the future. Its finance director described IPPUC's central role in the annual plan process, prioritization of projects (done over a 15 day period) and their central role in deciding what will be funded and when. IPPUC design all city infrastructures. This years annual plan is working with R\$60 million (=NZ\$60 million) for new infrastructure.

IPPUC, with the ultimate say over what is funded, is a very influential agency - distancing the raw politics of the council chamber decision making. A high level of council input does go into the decisions, via a weekly meeting between the Mayor and IPPUC's President. We gained the impression from both IPPUC and the Mayor that IPPUC's role in prioritization of projects is a valuable arrangement in that it separates funding allocation from the pressures of day to day politics.





## **ANNEX IV MONORAIL PROJECT BRIEFING BACKGROUND**

**G**rowth of the city from the 1940's occurred in a traditional radial pattern around a Central Business District. In 1966 a new master plan was prepared which challenged conventional planning by:

- Limiting centralised CBD growth.
- Planning structural axes or transportation corridors for both public transport and vehicles to guide land use planning.
- Encouraging linear growth along and in support of transport corridors by insisting that high density development occurred adjacent to the transportation corridors and that density could reduce in proportion to the separation between the transportation corridor and the development.

### **REVIEW OF PLAN SUCCESS**

**T**he plan has lasted 30 years but it is now considered necessary to have a vision for the next 30 years. One reason for needing a new plan is that the public transport capacity of the southern corridor bus system has been reached and extra capacity has to be created.

The reason for the corridor capacity being reached is that while the annual population growth in Curitiba is of the order of 2.5—3.0% per annum, the metropolitan area surrounding Curitiba is growing more rapidly. The corridors serve the areas beyond Curitiba and growth in these areas is much higher.

A new plan is being developed which will cope with growth beyond the boundary of Curitiba City. The plan is based on the 1966 philosophy and provides for existing transportation corridors to be extended out into the metropolitan region.

### **CAPACITY ASSUMPTIONS**

**T**he bus operation in the southern corridor has reached its capacity at 28,000 passengers per hour. A new twin track monorail has the capacity to carry an average of 33,000 passengers per hour with a peak of 42,000 passengers per hour.

## **OPPORTUNITY**

**A** Federal Highway connects from south to north on the eastern side of the CBD. The Government agreed to the City taking over the Federal Highway corridor and to use it for both public transport and roading.

The new structural axis for the proposed monorail is in place ready for construction. The proposed monorail system is intended to be used to create a pattern of land use development and induce growth in the southern part of the city.

The monorail plan is seen as supplementing the vision rather than as a radical change.

### **THE VISION**

**T**he 80 – 100 metre wide ex-Federal Highway reserve is to be converted into a linear park. The land uses along the route will be transformed to avoid the environmental impact of the monorail.

It is believed that running the electrified monorail along the centre of the very wide road reserve will minimise any noise or visual intrusion. In fact elevation of the track is seen as being positive because it will enable pedestrians to cross the reserve at ground level unimpeded by the monorail tracks. Similarly side roads will be able to cross the road reserve transversely without creating level crossing situations and allow for bus access to the monorail stations with vertical transfer by escalation. Another deliberate planning strategy is to use the elevation of the track to allow vistas of the city in terms of overall urban design.

### **THE PROPOSED SYSTEM**

**S**alient features of the system follow:

- It is based on the twin track system already operating as the Kokura Line in Kitakyushu City, Japan.
- The system will be built in three stages and be some 25 kilometres in length.
- The three stages are:

Stage A Southern suburbs to city  
 Stage B City to northern suburbs  
 Stage C Direct south to north allowing a bypass of the CBD.

- The costs are a third of a conventional underground system.
- Trains will operate on rubber tyres.
- One track will operate in one direction and the other in the opposite direction. The difference with this new monorail system is the ability to switch trains from one track to the other.
- A monorail was chosen to avoid forming a barrier at ground level between communities located on either side of the corridor.
- Provision will be made for east/west connections to the monorail services.
- The intention is to take heavy trucks off the north-south route in the monorail corridor.
- The same cross-section principles will be used as for current Busway corridors.
- The fare will be part of the flat fare system. The flat fare for all will be increased to pay for the monorail system.
- The carrying capacity of any train is assessed as follows:

No. of Units	Capacity (people/hour)
3	320
4	420
6	630

- The choice was driven in part because ground water is high in the corridor. Going underground would have been very costly.
- The design of stations and trains will follow the form of the existing bus system. For example tube like stations. Trains will be treated in a similar way using local body manufacture on imported chassis.
- Volvo is expected to be involved in the construction of the vehicles.
- There has been no need to incur land purchase cost because of the gifting of the Federal Highway road reserve.
- The transportation modelling undertaken to evaluate options was undertaken by URBS.
- The intent is to decrease the number of people using buses in the southern corridor and at the same time, to give new connections to the monorail system. The current bus trans-

fer stations on the Busway system will be shifted to the monorail system.

- There was acknowledgement that there is a state organisation responsible for planning transport infrastructure (COMEC) and that it had been consulted during the development of the project. We were not able to meet with COMEC.
- Escalators will be used to give access to elevate stations with lifts for the disabled.

## IMPLEMENTATION:

Key actions are:

- A decision has been made to implement the project and all land use zoning changes have been made.
- The Mayor is going to Japan to sign the contract for construction in May 2002.
- 85% of the funding of the track structure is being provided by a Japanese Bank and repayments of a 40 year loan will not need to be made for the first 10 years. The balance of the capital funding will be provided by the Inter America Bank.
- Private enterprise will purchase the monorail vehicles funded by Japanese loan money.
- Planning began in 1998 and tender for the construction of a monorail will be let in 2002. This is a very short time for implementing such a major project.
- The aim is have a ribbon cutting ceremony to mark the completion of the first stage before the end of this term of political office in two years time.

## SUMMARY

The Curitiba Governance structure ensures swift implementation of schemes. Four years from project inception to signing a contract is very swift by New Zealand standards.

An interesting and relevant quote was provided by a young member in their design team. He observed that:

*"Solutions are behind the curtains."*

Wayne McDonald  
 Regional Manager  
 Transit New Zealand

## **ANNEX V**

### **CURITIBA CITY GOVERNANCE:**

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The City Council consists of 36 elected councilors and a Mayor. There is a four year electoral cycle for the Mayor, who cannot hold consequent terms but may be re-elected. The council is elected bi-annually and is presided over by a President, elected by the Councilors. The President's role appears similar to that of the speaker of our House of Representatives.

The Councilors and the Mayor are aligned with various political parties, with the current council having a majority (24 members) on the council. The Mayor is currently of the same party as the council majority, which in combination with his statutory role, gives great powers to the Mayor. He is responsible for health and education services as well as all the usual local government functions.

There is an operational hierarchy of Federal, State and local laws, For example, rivers are Federal, waste is now a State matter, roads within the city are local. Shops, schools and banking hours are a local matter, hence the ability to adjust them to manage transport capacities.

The Council operates via administrative departments (staffed by a mix of civil servants and contract staff) plus a suite of semi autonomous agencies such as COHAB (housing), URBS (transport), IPPUC (urban research), FASA (social action foundation) and CITIPAR (economic development).

The cities current budget is R\$1.6 billion (NZ\$ 1.6B) raised via local rates and sales taxes (R\$50M) plus state and federal monies.



49° 16' 15"



25° 25' 50"

CURITIBA

