19. Port Lands

19.1 Current conditions

The Port Lands area that is in focus of this work is constructed land from the time when Toronto did massive lake filling (see chapter x). Since the Commission transferred land to TEDCO, they are the primary land owner at the Port Lands (marked with blue on map below), but also the Port Authority, the Province and the Municipality own some land.

19.1.1 Greenery and bluestructure

Man made by lake filling and functioning as Toronto’s port, the Port Land area is surrounded by water. Industrial plots stretches all the way to lake Ontario with a couple of places where the public can get water contact and a view of the Toronto skyline, the Spit, and the Islands. Most of the ground at Port Lands is hard surface with some green leftovers and some trees along the streets.

The major green area at the Port Lands is Cherry Beach, also referred to as Clarke Thompson Park, from the man who created it in the early 1930s. Even though the park is situated in a rough port and industrial area it is a gathering place used by Torontonians for recreational purpose. The water is clean enough for swimming and the beach is frequently used especially in summertime. Cherry beach park is made up by trees and brushwood and through it runs the Martin Goodman waterfront trail as well as a couple of beaten tracks. The isolated location has resulted in the use of Cherry beach as a party place. Recently the park has undergone improvements. Two new artificial soccer fields are under construction as well as planting of new trees on contaminated ground.

There is also a municipal allotment garden at the Port Lands called The Leslie Street Allotment Gardens with about 240 lots that Torontonians can rent and use for growing vegetables, fruits and flowers.

19.1.2 Communications

The port and major roads

The Toronto Port situated in the area provides container and storage service and takes in cargo containing for example; cement, asphalt and salt. Since the port is serving for a wide market with large shippings in both Canada and northeastern U.S the roads at the Port lands are wide and straight, connecting to major highways and the rest of the city net in north. The Port has also access to rail facilities and of course marine routes.

There are a couple of bridges that stretches over the different channels. The one over the Ship Channel is a folding bridge so that larger ships can enter.

Parking

Most of the parking is done on private property and on the wider roads, but there are also a couple of arranged parking lots.

Pedestrians

A separate bike lane stretches from Downtown to the Port Lands where it ends. Sidewalks are found here and there. There are traffic lights on the major intersections so that pedestrians can cross. New investments on extending bike lanes and side walks have been done in the eastern part of the area.

Public transportations

The public transportation at the Port Lands is made up by two bus routes with a couple of stops in the Port Lands area. One connects with the subway station at Pape (north) and goes further to Union Station, Toronto’s major mobility hub. The other bus line goes between Union Station and Cherry Beach. Both lines have limited service, Cherry beach is a seasonal stop. The estimated time from Port Lands to Downtown is about 10 minutes.
19.2 Analysis

19.2.1 Four key subjects

Our analysis of the Port Lands and particularly Cherry Beach has resulted in four key issues with their positive and negative aspects. The issues are presented below and depending on their specific character together with our theories on sustainable community development and public transit, we have chosen to design our proposal by this.

19.2.1.1 Connections

Connections in and to/from the Port Lands and Cherry Beach are currently relatively few and the railroad tracks and The Gardiner Expressway acts as barriers when entering the Port Lands. Within the area there is only one bridge across the ship channel, and the road system is fairly simplistic with few, long, and car-oriented roads, although there are a few pedestrian and bicycle paths. Thus the Port Lands and Cherry Beach have few connections to the city of Toronto as well as within the area. There are visual connections to downtown, the islands, and the spit.

19.2.1.2 Public transit

Public transit in Toronto is of a relatively high standard but the Port Lands is poorly served. There are no residential communities and mostly heavy and noisy industries in the area and the lack of public transit is to some extent understandable. And because the road system is car-oriented very few people come here by other means besides the car. A few buses pass through northern Port Lands daily in a few stops at Commissioner’s Street. During the summer season the bus also stop at Cherry Beach.

19.2.1.3 Buildings, density, and functions

The Port Lands is not dense since the main function of the area is industrial with a focus on industries connected to the port or other noisy activity. There are several large buildings with no cohesive architecture and most of the vast plots are not well maintained and concentrated on functionality. There are currently plans for new functions in the Port Lands directly north of Cherry Beach with the Filmport project as well as the new soccer field which will attract people to Cherry Beach. The different functions with their character create barriers; elements such as large industrial plots hinder people from using the entire area. Architectural elements such as the bridge over the Ship channel, the port, the Ontario power generation building all acts as landmarks in the area.

19.2.1.4 Greenery and blue structure

There is an abundance of water and greenery surrounding Cherry Beach but it is hard to reach because the land surrounding it is often private owned. Cherry Beach is one of the more popular recreational areas in Toronto but connections (seasonal bus stop) to the area are poor, and some of the green areas are run-down and of poor quality although plans for the Spit suggest an upgrading of Cherry Beach. The Ship channel acts as a barrier as there is only one bridge crossing the channel and the problem with the amount of private land also acts as obstacles to reach the water by foot.
PROPOSAL
20. Cherry Beach community

"The community is like a playing board made by builders and architects. Then the players take over." (Malmö stad, 2002).

As the analysis shows Cherry Beach currently consists of large industrial plots. The vision is to place a net or a frame that controls the most fundamental sustainable aspects in the community to reach an environmental sustainability and at the same time in a high degree involve Torontonians in the planning process to let them develop the community so that it will become socially sustainable. Emphasizing on Everyday Urbanism the new community will be planned with a bottom-up approach that will give people a sense of place and encourage them to act and understand why you should act in an environmentally sustainable way.

The area will be open for a diversity of people with attractive public spaces as well as backsides open for creativity of everyday life. In a mixed use community of high people intensity during day and night and over the year, and a diversity of public space, people will attract people. People acting in Cherry Beach will make the heart and soul of the community and form urbanity. The key is letting Cherry Beach grow slowly and over time a Cherry Beach identity will take form.

The thematical maps in the planning proposal shows what the committee can decide as fixed elements, or frame, in striving towards an ecologically sustainable community. The figure ground and model is a way of showing “the soft filling” as a result of an Everyday Urbanism approach with public participation to reach a socially sustainable community. This shows that the two parts of sustainability, ecological and social, can be woven together by using both a New Urbanism approach as well as an Everyday Urbanism approach in planning a new community.

The frame decided by the committee could comprise the following:

- The whole area is to be developed
- Arrangement of blocks and standard of streets, including walk and bike paths
- Expected density
- The area must have a main park and two new bridges across the Ship Channel, space for allotment gardens and ponds.
- The area must have at least one Community Centre – for information and coordination
- Each builder can own and develop maximum one block
- 10% of the housing units in each block must be affordable housing
- Each block must be connected to the district heating system and deep lake cooling system
- Each block must be connected to the water system. The water system take care of the surface water from buildings and other hard surfaces to open water channels that leads to ponds where it is delayed and later used for irrigation of parks and gardens or returned to Lake Ontario
- Each block must provide space for separation of waste (“green rooms”). A future system can use the PRT to transport the garbage.
- Each block must have activities both day and night – mixed use
- Each block must have a public space
- Cherry Beach is to be self-sustained of energy and each block must contribute – solar panels, wind turbines, passive house technology etc.
21. Public transit

21.1 Comprehensive structure

As it is vital to include the different functions in the city or community when planning for a PRT network, in the Port Lands case it is also very important to include the future desired functions. The study area is currently mainly industrial land with hardly any residential use, but the vision with 68 000 new inhabitants at the Central waterfront requires a good transit system. For the last three decades planning has been carried out for this area with the main purpose to give the area a more residential character. Several plan and policy documents have recently pointed out the phasing of the Port Lands depending on the different kinds of ownership of the land. The PRT track network is also dependent on developments adjacent to the Port Lands; hence both close and far-off connections are vital. As described in our common theoretical part, there is a lot of new development initiated along this part of the waterfront which has also affected the comprehensive structure of the proposed PRT track network. West Don Lands, Lower Don Lands, East Bayfront, the Filmport project, the soccer field project, and Lake Ontario Park are all adjacent areas that need to be connected with the PRT system from the start. The most obvious connection in downtown Toronto is Union Station which is the major public transit hub in the city and where the PRT system should connect to. Around Union Station a lot of the city’s most interesting features are localized such as the Air Canada Centre (where the NHL hockey team Toronto Maple Leafs and the NBA basketball team Toronto Raptors play their home games, as well as concerts from international artists and performers), the Rogers Centre (where baseball and Canadian football are played), and the CN Tower (which is one of the City’s major tourist attractions). Connecting Port Lands with these functions is essential and also a future vision must be to connect the whole city to the PRT network. In long-term development there should also be connections to the Ontario Food Terminal as well as the Pearson Airport. The comprehensive plan displays the network of the PRT which covers the Central waterfront as well as the Portlands. It complies with the Toronto By-Law with its transit structure. Stops have been placed with intervals of 500 metres and in areas where development/planning is currently on-going. Hence, consideration has been taken to the different functions and our plans for Cherry Beach.
Comprehensive PRT track network for the Toronto waterfront
22.1 Street hierarchy and Block structure

The street hierarchy and the block structure follow the typical grid in Toronto. The basis is blocks about 90-110 m long and 60-70 m wide. The block structure is simple but its size makes the area attractive for walking and for bicycling. The Toronto city grid is also suitable for the PRT system. Cherry beach’s position makes the area optimal for passive heating with long facades and windows towards south.

22.1.1 Main street
The main streets are the existing Cherry street and Unwin Avenue and a new central main street going in an east-west direction. A new bridge over the Ship channel is proposed between the Filmport area and Cherry Beach area which creates a new north-south connection. The main streets have space for cars and large sidewalks and separate bike-lanes with roofs to protect from rain/hail or snow. The PRT line for most often follow the main streets (see following map).

22.1.2 Local street
The local streets run mainly in north-south direction and forms the typical Toronto grid. The PRT line is placed along the side of the street and creates parking lots underneath and between the PRT pellars.

22.1.3 Bicycle and pedestrian path
To offer close distances for pedestrians and bicyclists these paths stretches through the blocks from east to west. A new pedestrian bridge across the Ship Channel is centrally placed and connects the park area planned for in Lower Don Lands with a new park area and sports fields in Cherry beach.

22.1.4 Promenade
The main attraction in Cherry beach is the water. As the analysis shows public access to the water is poor. Along the Ship Channel a public promenade with plazas is proposed to increase public access. Jetties and stairs into the water will increase the connection between the community and the Ship Channel.

22.1.5 Two new bridges
In the analysis we found that there are few connections across the Ship Channel. To increase the connection over the Ship Channel, especially to the FilmPort and Lower Don Lands, we propose two new bridges, one that is a continuation of the main street with separate bike lanes and PRT guideway, and one for pedestrians and bicyclists only. The latter is important for recreational possibilities in the Port Lands, since it will connect two community parks. The new bridges can be of extraordinary character and become new landmarks.

22.1.6 Ferry connections
Another way of increasing the connection between Port Lands and Downtown is with a connection by ferry between Cherry Beach and the Harbourfront Centre, a popular feature used in Hammarby Sjöstad.
22.2 Personal Rapid Transit

The public transit system of the proposal for Cherry Beach consists of a Personal Rapid Transit system. The system is laid out based on the functions and residential areas that is part of our proposal, and on the individual study on PRT systems earlier in this thesis. Podcars move along the network in one direction connecting to other districts within the Port Lands and Downtown Toronto. The transportation plan contains the PRT loop with a separate line where the guideway has a roof attached underneath it to shelter pedestrians and bicyclists, three different kinds of podcar stations, which are planned for with a 250 meter radius around every station which is the minimum recommended distance to a podcar station. The PRT network displays a satisfying supply of transit for the whole proposal area and its future inhabitants. The single station is the most common within our proposal for Cherry Beach as there is only one building-integrated station, and one 50/50 station. A detailed study of the 50/50 station has been done within the framework of this proposal, and has been located in the heart of the proposal area in the green corridor connecting western and eastern parts of Cherry Beach. The building-integrated station has been placed inside a proposed mall which will increase the comfortness for passengers going shopping in the mall. As mentioned above the PRT guideway has been fitted with a roof to shelter pedestrians and bicyclists from rain, hail or snow along the main streets. In Cherry Beach this means Unwin Avenue and the new bridge across the Ship Channel. Here, bicyclists are prioritized with a separate fast-lane bike path. The PRT network goes through Cherry Beach and connects to adjacent areas such as development areas north of the ship channel, as well as the Ontario Park (“The Spit”).
Cherry beach is closely situated next to one of Toronto’s largest recreational areas, Lake Ontario Park. Greenery is of great importance in neighbourhoods for well being, visually and for recreational use. What to strive for is green space with quality, something that is today lacking.

A larger park is proposed central in Cherry beach. The park will become a connection between the beach, the newly built sports fields and, Lower Don Lands via a new bridge. A part of Lake Ontario park is suggested to become an area for allotment gardens and greenhouses open for the public, serving restaurants with seasonal fruits and vegetables.

Surface water is taken care of locally. Open water channels from every block run along the pedestrian and bicycle paths and the surface water is stored in the new water pond, illustrated to the right.

Every block can be given a green ratio as a percentage of the block area to encourage private greenery such as green roofs, walls, and growing of vegetables both indoors and outdoors.

New bridges and short cuts through the blocks will serve for many alternative choices for promenades, running and adventures, and public access to water is emphasized by the promenade path along the Ship Channel. For sports and water activities people are also directed to Lake Ontario Park.
22.4 Density

To fill Cherry Beach with life, day and night, the proposed density is quite high, but ranges to low densities to avoid losing the human scale and avoid bringing down wind.

The building density (illustrated to the left) combined with main block functionality will lead to a mix of use that will make Cherry Beach full of life at different hours.

Medium density meets the water and higher density is proposed along the main streets and in the north-eastern part of Cherry Beach to meet up with the still existing industries.

One of the most important aspects to decrease energy use in buildings is natural sunlight. The correspondence between depth of the yard and the height of the building depends on which latitude the building is erected (Bokalders & Block, 2004, page 370). In Toronto, on latitude 43 N, yards should be 2 times in depth of the height to avoid negative shadow effect in walled blocks.

Elevation sketch depicting designed building flow regarding densities, from the Ship Channel in north to the beach in south.
22.5 Main block functionality

In order to achieve mixed use and a mix of users in Cherry beach the following block functionality is proposed. The colors mark the suggested main use within the block.

Noisy activities are directed to the eastern part of Cherry Beach, close to the old Power Generation Plant. Retail and offices are directed towards the two main streets and housing towards the water and the greenery surrounding the beach. Affordable housing is placed in the western part close to the port, and floating homes in the Ship Channel. Two school areas are proposed close to the sport fields, and the PRT station in the central park.

Culture, cafés, small botiques, and water activites are preferably placed along the water’s edge.

The two blocks marked in red are proposed to be centres. The western marks a ferry and PRT station and the eastern a building-integrated PRT station docked to a shopping mall.
23. Detailed study

23.1 Figure ground

Since the ambition is to let Cherry Beach evolve in its own pace the figure ground illustrated to the right is to be seen as an example of what Cherry Beach can become if the thematical maps and ideas presented in this thesis are followed.

As the perspectives on page 63 display the street layout together with the density and scale of the building blocks have been designed after our conclusions in the individual parts. A variety of densities, building types and scales, and a varied street layout creates heterogeneous and versatile building blocks and urban space. The new bridges acts as links across the South ship channel and increases the interaction to the northern parts of the Port Lands. The bridges also enhance the integration of green links especially regarding the proposed green parks planned in a north-south direction in the middle of the area connecting adjacent parks and sport fields. The area’s waterfront has been emphasized to a greater extent compared from existing conditions. The closeness to the water is essential in our proposal and the Ship Channel has a great potential to pose as a quality for the new community as housing has been extended out in the water with floating homes.
The Eastern part of Cherry Beach

The western part of Cherry Beach
23.3 PRT station

This detailed study deals with the proposed PRT system and with the station in the new sustainable community development plan for Cherry Beach. The design guidelines have guided the work with designing a type of podcar station discussed in the proposal discussion in Part II of the thesis – the 50/50 station. The purpose with this type of station is to make the ground level of the urban space meet with the elevated PRT station. This station in the heart of Cherry Beach is thought to be the connecting transit hub in the area with green features, as it is placed in the main green corridor of the area and between a proposed park in Lower Don Lands and the artificial soccer fields south of Cherry Beach. Connections north-south and east-west within the Port Lands, and connections to the downtown of Toronto makes the station attractive and accessible for its users. The design guidelines have been implemented in the PRT station proposal like for example trees and grass slopes, bike parking and air re-fills, wheelchair ramps, multi-option entrances, elevated places for integration, possibilities to sit down, glass facades, and solar panel roofs.

23.3.1 Functionality

The PRT station is a two-storey building where the podcar berths and departure halls are located at the 2nd floor. The station is designed so that departure can be done from the inside (northern part) and from the outside (southern part). It has also been equipped with several entrances complying with the design guidelines, concerning safety and accessibility matters. Retail and service is included in the station at ground level/1st floor which is part of the aim to give Cherry Beach a mixed use character. Different kinds of retail are desired and especially a kiosk that sells podcar-passes is suitable. The bicycle can be parked outside the PRT station at the monitored bike parking area. This makes it easy for people that choose to bike to the podcar station and then commute to the city via the PRT system. Additional bike parks are found around the PRT station. It is also possible to re-fill your bike’s tires.

23.3.2 Design

The station’s design should be seen as a wave-movement through the green corridor. These thoughts are derived from previous plans for the area, Making waves. Additionally the design guidelines regarding building materials such as glass, vegetation, and solar panels have affected the design. The station is designed to be used as a meeting place besides acting as a transit node in the area. These design ideas are exemplified by steps on the south side of the station, and grass slopes on the north side which both generates possibilities for people to sit down when the weather is good. The lower parts of the big glass panorama windows can be opened during the summer months to let in fresh air. During winter the panorama windows let in a lot of light and warms up the indoor area; both solutions highly energy efficient. The solar panels create energy to the station but can be replaced by green roofs which absorb rain water and decrease the amount of surface water.
Situation plan for the PRT station

- Glass - open
- Grass - seats
- Wheelchair ramp
- Solar panel roof
- Entrance
- Steps - seats
- Bike parking & air re-fill
24. Conclusion: A Personal Rapid Transit System

24.1 General thoughts

Studying the Personal Rapid Transit system has given me an insight of the problems that may occur when implementing such a system, although these problems may vary in complexity depending on the proposed context of which they are inserted into. Our main question was to look on what planners can do to make our cities more sustainable and within this topic I chose to focus on the PRT system. Regarding sustainability, this system seems to be a highly efficient, attractive, and environmentally friendly transit system, compared to current technology. Although, as I proceeded to my secondary question (how a PRT system can be made usable and an attractive component in the urban space) a sense of apprehensions for the public space became evident. PRT literature focus mainly on capacity and economic aspects, although, a critique to current work on PRT is that the urban space doesn’t get the attention it should. Despite this, literature on urban planning and the urban space suggests that planning has an important task as multiple levels in the urban space may bring isolation between people – instead of contact.

My main point was to see if Toronto is suitable for these types of architecture elements, and if so, how it would look like at our study area Cherry Beach. I also wanted to explore what design guidelines can be used to ease effects of isolation in the public space. The conclusion is that Cherry Beach and Toronto is suitable for these systems, and there is no real urban environment to take into consideration at the Port Lands. The design guidelines that I propose have affected our proposal.

24.1.2 The public and Torontonian space

The PRT system is suitable to implement in urban spaces, although it should be done with caution to the existing built environment as well as to the urban space. Elevated architecture in North America is very common according to our own experience. The Toronto urban environment is no exception and also possesses these elements, and the street layout with its grid pattern is appropriate for implementing a PRT system. These transit systems are also aiding in the shift of focus from car priority in the urban space towards a bigger focus on biking and walking. This shift is a direct consequence of the PRT system which frees space in the urban environment that today belongs to cars and general public transit. It is also my personal belief that North America is a suitable market for the PRT system as the people have entirely embraced the car, which is quite similar to a podcar, hence individual travel.

24.1.3 Multi-use

Studying this interesting subject of public transit, questions connected to this have arisen during the completion of this thesis. These issues couldn’t be further explored within the work of this thesis but deserves a place in this conclusion. The PRT system is an efficient people-mover but there are some synergy effects that may be received when contemplating to move more than just people. To some extent, the track network may also be designed after the needs of transportation of goods and waste. If this is well-planned, the PRT system may also transport goods and waste if the system is linked to a waste disposal facility and, in the Toronto context, the Ontario Food Terminal at the outskirts of western Toronto. Noisy garbage trucks could be replaced by separate waste podcars which could run at night not bothering the public. Of course, both of these ideas require separate podcars for these purposes.

24.1.4 My final thoughts for Toronto

In my opinion Toronto has a unique opportunity. Planners and politicians in Toronto seem to be eager to choose a more sustainable development, as many of them have read about other city development projects around the world. The City of Toronto has an ambition to become a highly sustainable city, although consistency in sustainable goals and sustainable action is not always the case, as for example the high-rise condominiums that have been built at the central waterfront. Regardless of system, when it comes to transit planning Toronto has a unique opportunity as the city poses as an economic generator in the whole of Canada. No municipality or city can finance and build a PRT system on its own so cooperation between the government and private companies is most likely the only solution when implementing PRT systems. As Toronto is an attractive market for investors, focus for politicians should be to seek partners within the private sector.

There is also an economic difference between regular buses and podcars. Economic security can be reached as when planned for a PRT system, since a podcar station likely won’t be moved in a near future. Hence, this gives economic stability and incentives for investors who are interested in buying real estate close to a station. If Toronto wants to become one of the world’s most sustainable cities they should sincerely at least look on new transit solutions. Toronto could pose as a role model of sustainable transportation development in the future if they have the political will and courage to make the decision to study new technologies; hence, I propose an exploration of the PRT system.

24.2 Conclusion: Synergies of social and environmental sustainability

As planners we believe that we can design how people act in public space and make the world a better place by attractive architecture. My belief is that we can affect how people behave by placing benches where the sun reaches, using human scale on buildings, forming the streetscape etc, but we cannot control how people act. Travelling the world has made me realize that the best places I’ve visited and the memories I bring with me are from cities and countryside where I’ve met people that I find interesting. Architecture and design can make you go wow but later on fades. The most attractive part of a city is people.

Further in my view the backside, darkness or “ugly” part of a city is equally important to the attractive and well designed to make a community balanced. “Perfect” homogenous communities are quite boring. But health of human communities is harder to grasp than natural ecology. The ideas presented in this thesis move on the edge to what planners can control. This naïve approach can be used by strong groups for their own profit and the result might be an unattractive new city part.

Toronto is one of the world’s most diverse cities by percentage of non-Canadian-born residents, as about 49 percent of the population were born outside of Canada (Electronic source: All about Toronto, 2008). Writing this thesis I have asked myself what other city is more suited for a diverse new community than Toronto? Take off and plan for the unpredictable!
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