

# THE WATERFRONT PLAN

FOR THE METROPOLITAN TORONTO PLANNING AREA





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December 29th, 1967.

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The Chairman and Members of the  
Waterfront Technical Committee

Gentlemen,

Re: E. O. 64201 Final Report

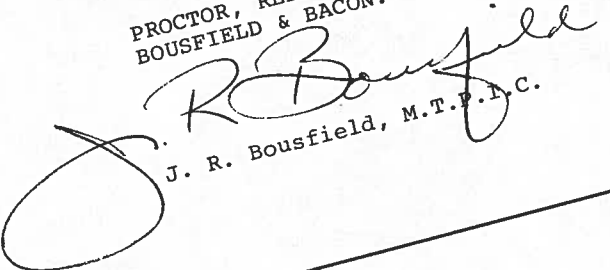
In accordance with the Study Co-ordinator's terms of reference set out in the original Appraisal, we have prepared the general text and plates for the Waterfront Plan. Sections on the individual sectors prepared by the participating agencies have been edited, and all of the basic survey material prepared by ourselves and others in the early phases of the study program has been compiled in the Appendices.

We are therefore most pleased to be able to transmit the completed "Waterfront Plan for the Metropolitan Toronto Planning Area".

May we take this opportunity to say how very much we enjoyed our association with your Committee, and with the many others who assisted in this project. The implementation of this Plan will result in one of the outstanding waterfronts of the world, and we feel privileged to have had a part in its preparation.

Yours very truly,

PROCTOR, REDFERN,  
BOUSFIELD & BACON.

  
J. R. Bousfield, M.T.P.I.C.

JRB/op  
Encl.

**TORONTO AND REGION**  
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# THE WATERFRONT PLAN

FOR THE METROPOLITAN TORONTO PLANNING AREA



PREPARED FOR

THE METROPOLITAN TORONTO PLANNING BOARD AND

THE METROPOLITAN COUNCIL

DECEMBER, 1967

METROPOLITAN TORONTO PLANNING BOARD

Waterfront Advisory Committee  
W. Grant Messer—Chairman



Waterfront Technical Committee  
Ross L. Clark—Chairman

F. L. Crann — Secretary

City Hall, Toronto 1, Ontario

Telephone 367-8121

January 10, 1968

Mr. G. Messer, Chairman, and  
Members of the Waterfront Advisory Committee

Gentlemen,

On behalf of the members of the Technical Committee, it is my pleasure to present  
"The Waterfront Plan for the Metropolitan Toronto Planning Area".

This undertaking was authorized by Metropolitan Council through adoption of an Executive Committee Report On October 30, 1962, which in addition to establishing both the Waterfront Advisory and Technical Committees, directed that a Waterfront Plan be prepared.

The objective contemplated a study of existing waterfront facilities analyzing the anticipated needs of the future, culminating in a report and plan for the integration of commercial, industrial, residential and recreational uses over the 50 miles of waterfront in the Planning Area.

Preparation of a long-range plan extending over a period of rapidly changing circumstances dictated the work be conceptual in nature rather than detailed. We believe that the plan can serve as the foundation of a dynamic waterfront for the enjoyment of this Metropolitan Community.

The Members of the Technical Committee have served on a voluntary basis over an extended period in the production of this work, and their enthusiastic and valuable participation is gratefully acknowledged. The advice, support and direction of the Advisory Committee has been invaluable.

We recommend that the Waterfront Plan be submitted to the Metropolitan Toronto Planning Board and Council for the progressive initiation of development proposals.

Respectfully submitted,

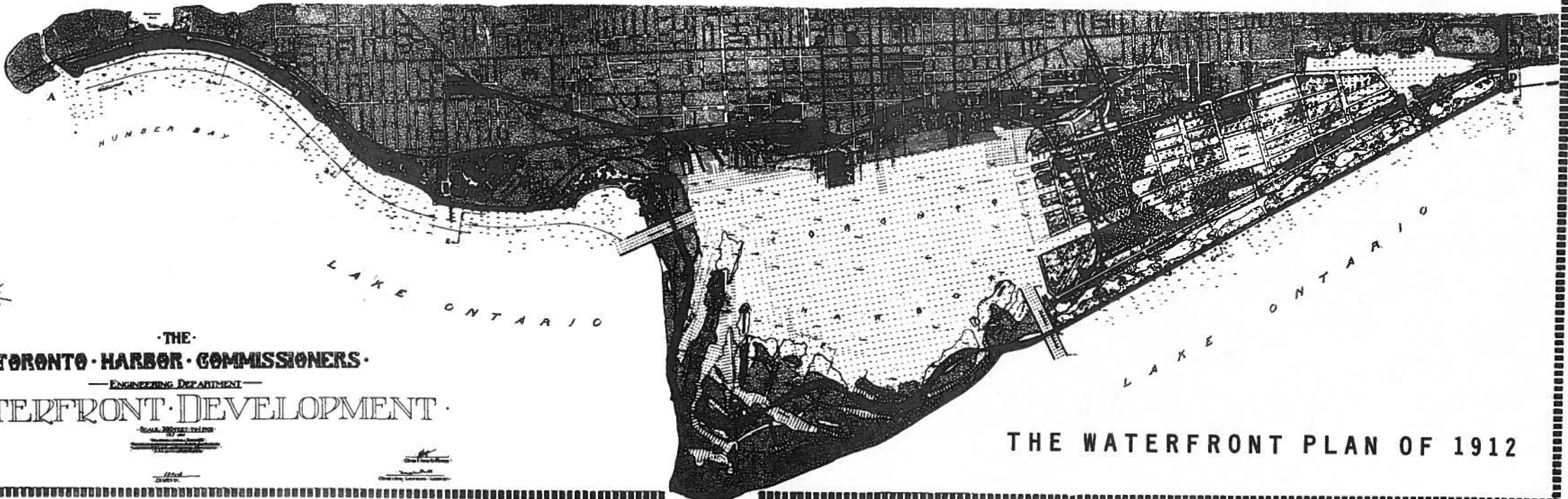
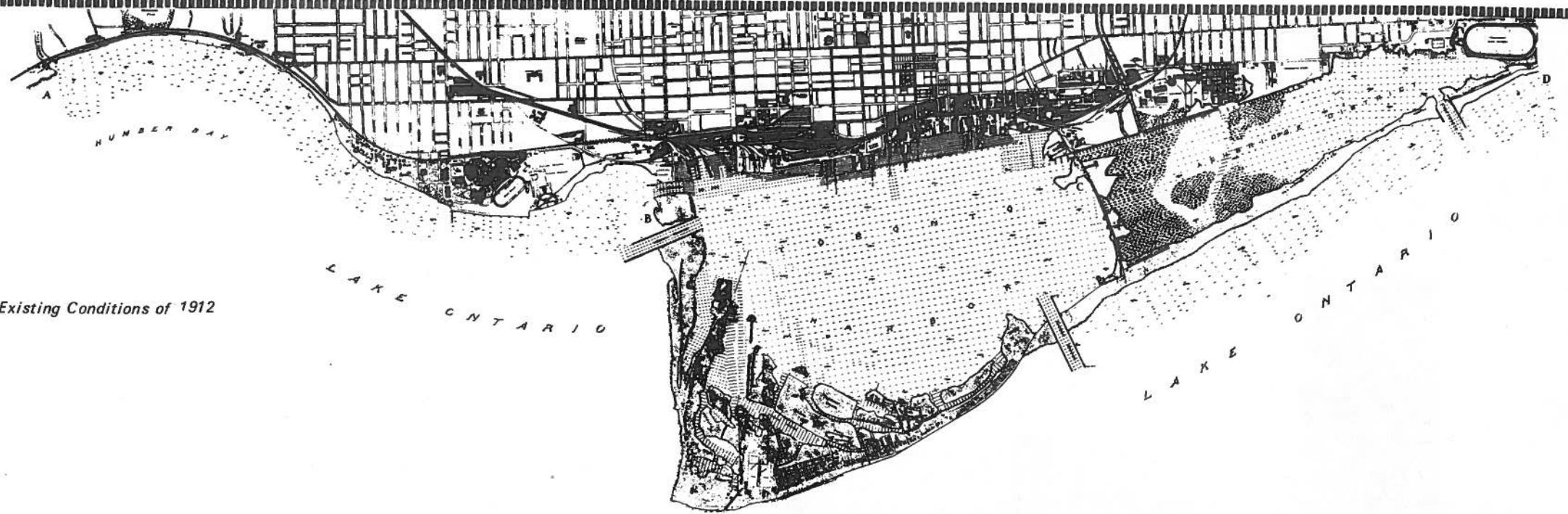
A handwritten signature in black ink, appearing to read "R. L. Clark". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

R. L. Clark  
Chairman  
Waterfront Technical Committee





Existing Conditions of 1912



THE  
TORONTO HARBOR COMMISSIONERS

ENGINEERING DEPARTMENT

WATERFRONT DEVELOPMENT

SCALE: 1/4" = 100 FEET

THE WATERFRONT PLAN OF 1912

## ACKNOWLEDGMENTS

The Waterfront Plan would not have been complete without the cooperation and assistance of many persons representing, at all levels, various Federal, Provincial and Municipal Agencies to whom we extend our sincere thanks.

The Technical Committee is grateful to those municipal councils, planning boards, and their staffs who supplied information and reviewed the sector plans covering their respective areas. Invaluable assistance was also rendered by numerous private groups, consulting firms, clubs, property owners' associations and individuals who answered questionnaires and offered constructive criticism and suggestions.

Graphic material was obtained from many sources, and our gratitude is expressed in the credits. Special mention appears appropriate for the cooperation of the Ontario Department of Lands and Forests, in arranging the services of an aircraft and photographer to obtain many of the current aerial views used throughout this report.

The kindness and courtesy extended by so many people in such diverse cities as Chicago, Cleveland, Copenhagen, Hamburg, Milwaukee, Rotterdam, Seattle, Stockholm, Vancouver and New York played an important role in the Committee's work. We are indebted to these, and the many others, who generously made contributions.



**MEMBERS OF THE WATERFRONT ADVISORY COMMITTEE  
DECEMBER, 1967**

<p>Chairman:       W. Grant Messer</p> <p>Vice-Chairman: G. Ross Lord</p> <p>Members:       Mrs. Margaret Campbell, Q.C.</p> <p>                  J. Carroll</p> <p>                  Frank C. Buckley</p> <p>                  A. M. Greenaway</p> <p>                  R. V. Doty</p> <p>                  J. R. Nutter</p> <p>                  J. H. Addison</p> <p>                  F. J. Beavis</p> <p>                  R. H. Slemin</p>	<p>– Metropolitan Toronto Planning Board</p> <p>– Metropolitan Toronto and Region Conservation Authority</p> <p>– Metropolitan Toronto Council</p> <p>– Metropolitan Toronto Council</p> <p>– Metropolitan Toronto Planning Board</p> <p>– Credit Valley Conservation Authority</p> <p>– Canadian National Railways</p> <p>– Canadian Pacific Railways</p> <p>– Toronto Harbour Commissioners</p> <p>– City of Toronto</p> <p>– Town of Port Credit</p>	<p>Secretary:</p>	<p>R. W. Speck</p> <p>G. Rush</p> <p>D. Sandford</p> <p>J. H. Cavanagh</p> <p>C. W. Laycox</p> <p>H. M. Smith</p> <p>H. Lemon</p> <p>Ford Brand</p> <p>Mrs. T.A.C. Tyrrell</p> <p>Eric Baker</p> <p>Wm. Robertson</p> <p>F. R. Longstaff</p>	<p>– Township of Toronto</p> <p>– Borough of Etobicoke</p> <p>– Borough of Etobicoke</p> <p>– Borough of Scarborough</p> <p>– Township of Pickering</p> <p>– Town of Ajax</p> <p>– Metropolitan Toronto Board of Trade</p> <p>– Toronto Transit Commission</p> <p>– Community Planning Association of Canada</p> <p>– Conservation Council of Ontario</p> <p>– Toronto Area Boating Council</p> <p>– Metropolitan Toronto Planning Board</p>
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**PERSONS WHO HAVE SERVED ON THE WATERFRONT ADVISORY COMMITTEE**

<p>Wm. Dennison</p> <p>H. M. Griggs</p> <p>H. E. Mole</p> <p>M. L. Hancock</p> <p>G. W. Miller</p> <p>H. G. Kimber</p> <p>H. Orliffe, Q.C.</p> <p>W. L. Archer, Q.C.</p> <p>Mrs. G. Owen</p> <p>G. M. Baycroft</p>	<p>– Metropolitan Toronto Council       1963–1966</p> <p>– Metropolitan Toronto Council       1963–1966</p> <p>– Metropolitan Toronto Planning Board       1963–1966</p> <p>– Metropolitan Toronto Board of Trade       1963–1966</p> <p>– Canadian Pacific Railways       1963</p> <p>– Toronto Harbour Commissioners       1963–1965</p> <p>– City of Toronto       1963–1964</p> <p>– City of Toronto       1965–1966</p> <p>– Town of Mimico       1963–1966</p> <p>– Town of New Toronto       1963–1966</p>	<p>Secretary:</p> <p>Secretary:</p>	<p>V. D. Green</p> <p>C. E. LeBreton</p> <p>H. Billington</p> <p>M. H. Johnson</p> <p>R. W. White</p> <p>J. B. Bryers</p> <p>G. Henderson</p> <p>C. A. Meadows</p> <p>R. G. B. Edmunds</p> <p>F. L. Crann</p>	<p>– Village of Long Branch       1963–1964</p> <p>– Village of Long Branch       1965–1966</p> <p>– Village of Swansea       1963–1966</p> <p>– Township of Etobicoke       1963–1966</p> <p>– Township of Scarborough       1963–1964</p> <p>– Township of Scarborough       1965–1966</p> <p>– Conservation Council of Ontario       1963–1964</p> <p>– Committee for Small Boat Harbours       1963–1964</p> <p>– Metropolitan Toronto Planning Board       1963–1965</p> <p>– Metropolitan Toronto Planning Board       1966</p>
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**MEMBERS OF THE WATERFRONT TECHNICAL COMMITTEE  
DECEMBER, 1967**

Chairman:	R. L. Clark	- Commissioner of Works, Metropolitan Toronto	N. C. Gordon	- Lands Administrator, Ontario Department of Lands and Forests
Vice-Chairman:	T. W. Thompson	- Commissioner of Parks, Metropolitan Toronto	Alternate: S. B. Panting	- Supervisor, Surveys Section, Ontario Department of Lands and Forests
Members:	W. Wronski	- Commissioner of Planning, Metropolitan Toronto Planning Board	D. A. Barker	- Chief Planner and Executive Director, City of Toronto Planning Board
	K. G. Higgs	- Director of Operations, Metropolitan Toronto and Region Conservation Authority	Alternate: Ray Spaxman	- Director, Projects Division, City of Toronto Planning Board
	J. H. Jones	- Chief Engineer, Toronto Harbour Commissioners	Secretary: F. R. Longstaff	- Metropolitan Toronto Planning Board
	G. B. Langford	- Director, Great Lakes Institute, University of Toronto	Special Consultant: E. B. Griffith, Q.C.	- General Manager, Toronto Harbour Commissioners
	K. H. Sharpe	- Assistant General Manager, Ontario Water Resources Commission	Study Co-ordinator: J. R. Bousfield	- Proctor, Redfern, Bousfield & Bacon
	Alternate: J. R. Barr	- Director, Division of Sanitary Engineering, Ontario Water Resources Commission		

**PERSONS WHO HAVE SERVED ON THE WATERFRONT TECHNICAL COMMITTEE**

Eli Comay	- Metropolitan Toronto Planning Commissioner	1963-1966	A. E. Berry	- Ontario Water Resources Commission	1963
M. B. M. Lawson	- City of Toronto Planning Commissioner	1963-1967	G. M. Galimbert	- Ontario Water Resources Commission	1963-1965
W. F. Weaver	- Ontario Department of Lands and Forests	1963	Secretary: R. G. B. Edmunds	- Metropolitan Toronto Planning Board Staff	1963-1965
J. W. Giles	- Ontario Department of Lands and Forests	1963-1964	Secretary: F. L. Crann	- Metropolitan Toronto Planning Board	1966

**PARTICIPATING CONSULTANTS**

Etobicoke and Scarborough Bluffs Sectors	Proctor, Redfern, Bousfield & Bacon, Consulting Engineers and Town Planners	Property Acquisition	A. E. LePage Ltd. Realtor
Central Sector	Comay Planning Consultants Ltd. Johnson, Sustromk & Weinstein & Assoc. Ltd. Landscape Architects, Engineers and Planners	Soil Investigations	E. M. Peto Associates Ltd. William Trow & Associates Ltd.
Hydraulics	W. Douglas Baines University of Toronto	Property Ownership Mapping	W. N. Wildman Ontario Land Surveyors
		Base Mapping	Huntec Ltd.



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## 1. INTRODUCTION

### a. Purpose of the Waterfront Plan

The purpose of this Plan is to establish guidelines for the development and redevelopment of the Lake Ontario shoreline within the Metropolitan Toronto Planning Area, that is to say, from Clarkson on the west to Carruther's Creek, which is slightly beyond Ajax in the east, a distance of some fifty miles.

In an era of increasing attention to the aesthetic aspects of urban life, the degree of separation between the lake and the city is a cause for concern and regret. At a time when interest in boating and watersports is burgeoning, the potential for additional public access to the lake is diminishing with the spread of development along the shore. Those concerned with waterborne commerce are aware of the new facilities required to keep pace with technological advances in the transshipment of goods through the port. They are also conscious of the exciting opportunities which redevelopment in the harbour offers.

The case for a comprehensive plan to meet these challenges has been stated earlier and eloquently, in this language (1).

"First, a variety of private and public developments along the waterfront are taking place and are being planned individually whether there is a general scheme of development or not. Far better that all the parts of the development make a coherent picture than to risk haphazard growth and invite misallocation of available resources. Without a study and plan, some facilities will be provided and others will go by default. The distribution of competing uses will certainly be out of balance with any rational system of priorities. Further, the projects which will go ahead in a piecemeal fashion without a general design pattern are likely to be less effective and more

expensive to carry out. The first ground, in short, is simply that thinking ahead pays both in measurable economic terms and in the more intangible realm of rightness, convenience and aesthetic satisfaction. It is the justification of the efficacy of planning.

The second reason for recommending a comprehensive plan for the waterfront is one of long term economics. A healthy metropolitan area is one which can compete with other areas. With growing prosperity it will no longer be enough to have industry and commerce, to eliminate bad housing conditions, to improve traffic and do all the other things which the public demands as normal functions of public activity. To grow and maintain its position, a metropolitan area must not only *be* a healthy place but it must be *seen* to be a healthy and attractive place. A town which has by nature certain gifts should exploit and display them to advantage. Toronto has the ravines, the river valleys and above all the lake. Not to use these gifts is wasteful, to spoil them is extravagant."

### b. Background to the Study

The Waterfront Plan of 1912 (see frontispiece) was the first and, until now, the only comprehensive plan for the lakefront that Toronto has ever had. For nearly half a century, that remarkable document served as a blueprint for development along the shore between the Humber River and Victoria Park Avenue. During that time almost all of its main features were implemented with the result that, in this section, the City's waterfront ranks second only to Chicago's on the Great Lakes. In Toronto the waterfront exhibits good balance between port uses and parkland. The Harbour fulfils its primary function well. Through foresight, there is space available for expansion to meet the future increase in port traffic, while the critical central core area can be freed for imaginative redevelopment at the water entrance to the City. On the Island, and along the Eastern and Western Beaches, there is sufficient land

to make up many deficiencies in water-oriented recreational facilities known to exist. That the Gardiner Expressway and the Island Airport were not foreseen in that early day is hardly cause for indictment of the engineers of 1912.

The lack of a plan is everywhere evident beyond the city limits, where public access is limited, the recreation potential has languished, and few residential or commercial developments have made advantageous use of the lakefront setting.

Nevertheless, nature and some sound development policies have combined to preserve the future potentialities to some extent. Although the Scarborough Bluffs pose serious problems, their very magnitude has conserved this nine mile stretch in a relatively untouched state. Provincial policy has curtailed further private ownership of the lake bottom for many years, and more recently, the subdivision control policies of the Metropolitan Toronto Planning Board and the suburban municipalities have prevented the extension of private ownership to the water's edge.

Substantial progress continues in water pollution abatement through the vigorous pursuit of positive public programs across the whole of the Metropolitan Planning Area.

In the broad sense then, the total picture is not as dark as might appear initially. In fact, there exists a very solid basis for development and opportunities beckon on all sides for dramatic improvement.

By the late nineteen fifties, it had become widely accepted that the 1912 plan had fulfilled its purpose and that the time had clearly arrived for another comprehensive look at the waterfront. This was a conviction shared by citizens' groups and government bodies at all levels. Among the former, the Community Planning Association led in urging the production of an overall waterfront scheme in a series of meetings and briefs. The City of Toronto formed a special Waterfront Committee, which of necessity had to confine its attention within the city limits.

(1) "Towards a Waterfront Plan". Metropolitan Toronto Planning Board, Staff Report 1961.

As the one public agency whose sphere of interest embraced the use of the water, the shore, and the land behind the shore along the whole fifty mile stretch, the Metropolitan Toronto Planning Board was the logical body to assume the task. The first draft Official Plan for the Metropolitan Toronto Planning Area, produced in 1959, included a "Generalized Scheme for Lakefront Development", intended as a broad frame of reference for more specific proposals. That scheme is reproduced here as Plate 1. In 1961 the Board published "Towards a Waterfront Plan", the first detailed examination of existing uses, problems, needs and possibilities. The recommendations of that report were the genesis of the Waterfront Advisory Committee and the Waterfront Technical Committee, which were assigned the task of assisting the Board to produce a comprehensive plan for the waterfront between Clarkson and Ajax.

The first step was to determine the scope and content of the plan, the method of preparation, and the time and costs involved. At the same time, some systematic means of treating interim problems had to be worked out. These matters were the subject of an Appraisal (2) conducted in 1963. During its preparation, 48 persons in 30 different agencies in 4 cities were interviewed. The findings were adopted by the Advisory Committee, the Metropolitan Toronto Planning Board, and the Metropolitan Council at the end of that year. At the beginning of 1964, the work program commenced.

### c. Method of Preparation

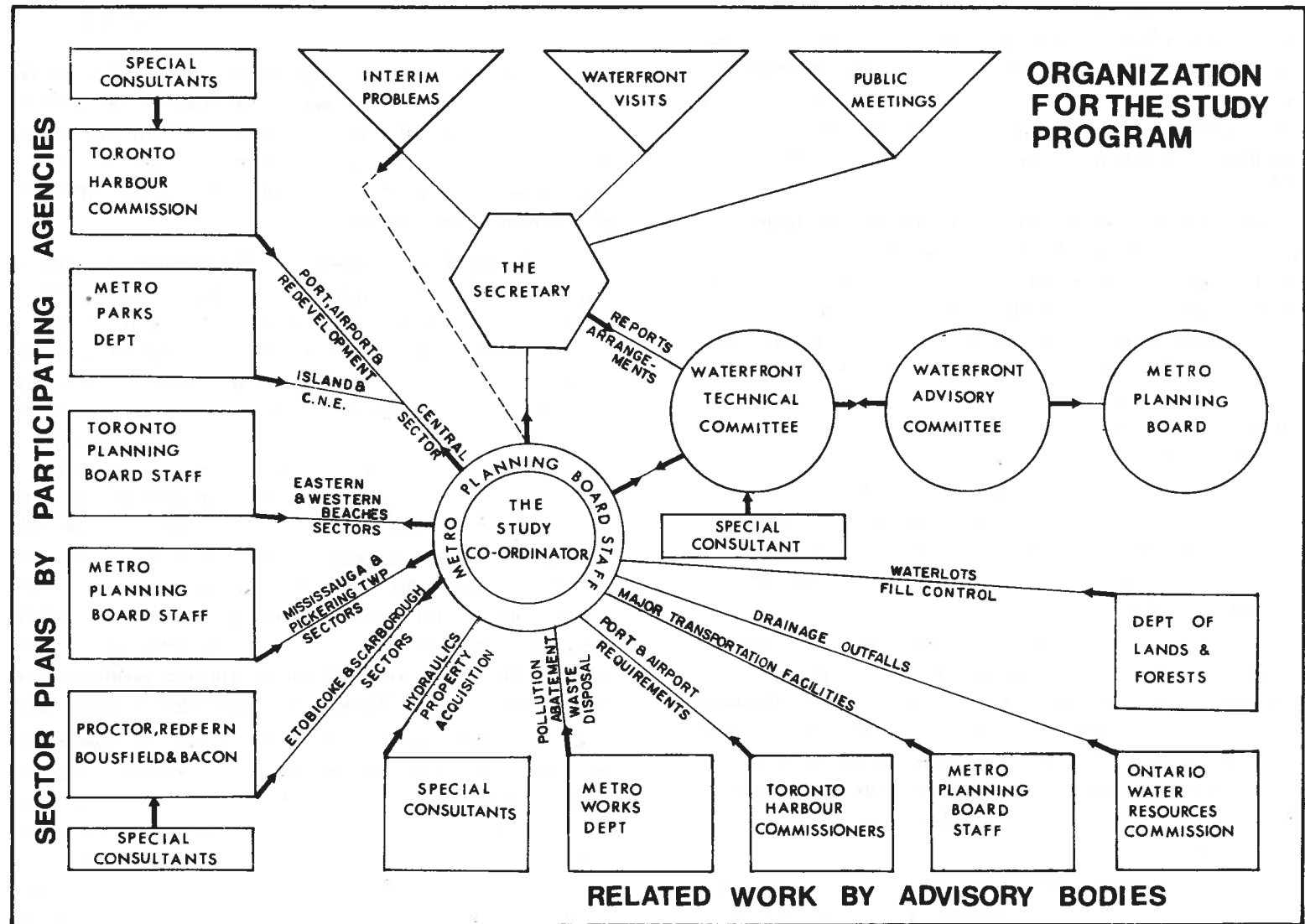
This Waterfront Plan is the product of four years' work which involved direct participation by 4 public agencies and 8 consulting firms. Advisory assistance was received from some 15 other public bodies. In the conduct of the work program, seven public hearings were held, sixteen interested groups were canvassed, and briefs were received from eight of them. The water-

(2) "An Appraisal of the Waterfront Plan for the Metropolitan Toronto Planning Area". Proctor, Redfern, Bousfield & Bacon, 1963.

fronts in a dozen major cities in North America and Europe were visited.

The accompanying figure shows the organization as it evolved during the course of the Study. The functions of each participant are set out in detail on the Appraisal, and need be presented here only in summary form. Responsibility for the total project rested with the Metropolitan Toronto Planning Board staff, and funds

for the study were included in the Board's budget. The Appraisal recommended that the "Generalized Scheme for Lakefront Development" be adopted as a basic hypothesis with which to commence, to be justified or rejected in whole or in part by the general and specific studies to be undertaken. The decision to adopt this general framework was fundamental to the whole approach to the work program. It became pos-





sible for those public bodies already involved in significant sections of the waterfront to prepare portions of the plan with a resultant saving in time and cost.

The study area was therefore divided into Sectors which, as the work proceeded, were modified to those shown on Plate No. 1. The Toronto Harbour Commissioners undertook the Central Sector, assisted by the Metropolitan Parks Department in those areas within its purview. The Toronto City Planning Board carried out the work on the Eastern and Western Beaches, and the Metropolitan Planning Staff undertook the Mississauga and Pickering Sectors. Planning and engineering consultants were retained to conduct the work in the Scarborough and Etobicoke Sectors, where special technical problems associated with the potential lake fill were foreseen.

The above is not intended to convey the impression that the Waterfront Technical Committee was clothed with absolute powers over the staffs of the participating public agencies in waterfront matters. Those agencies were responsible to their respective councils and commissions. With senior personnel from all contributing bodies sitting as members, the Committee was safely able to rely on co-operation and discussion to reconcile divergent opinions.

In each sector, the agency responsible was free to select consultants for specific purposes, and their work was carried out in consultation with the local municipalities and other governmental bodies using channels already established.

It was recognized that the advantages in time and costs saved by this approach could be offset by the inherent disadvantages of divided effort. Notwithstanding the existing channels of communication which existed, it was evident that formal machinery for co-ordination was required. In addition, the production of overall studies affecting the whole waterfront had to be assigned.

A planning consultant was retained to serve as Study Co-ordinator. The basic studies assigned to him were:

- the historical background (Appendix 'A')
- overall recreational objectives and design criteria for recreational facilities (Appendix 'B')
- land fill sources, and feasibility (Appendix 'C')
- hydraulic studies (Appendix 'D')
- property acquisition aspects (Appendix 'E')
- background information on implementation (Appendix 'F')
- port activity (Appendix 'G')

The Co-ordinator was also made responsible for the production of the final report, including the general passages of the text and the General Plan, the editing of sections on the various sectors prepared by the participating agencies, and supervision of the art work, photographs, and printing.

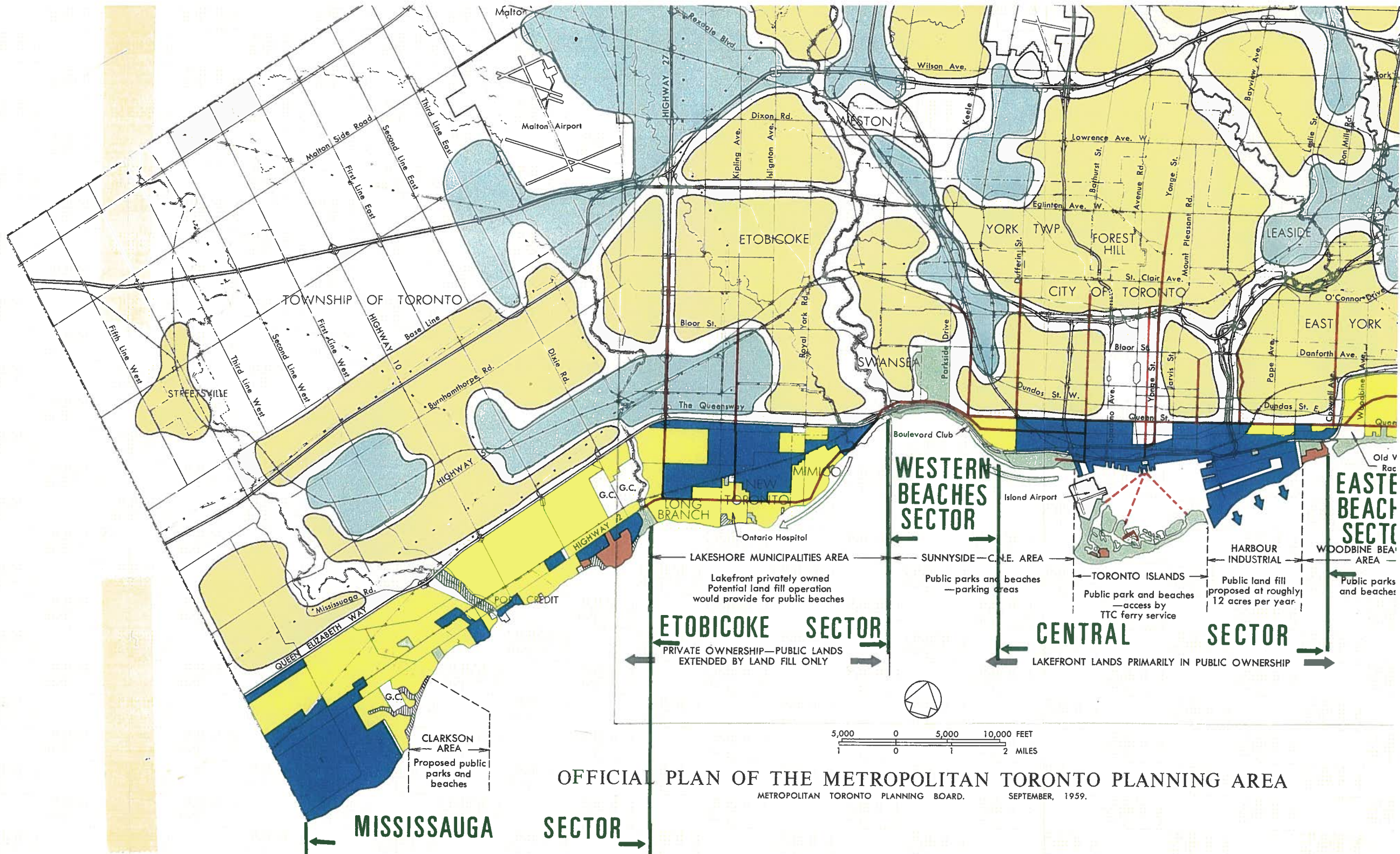
The Metropolitan Planning Staff compiled all data on public utilities sites required and major transportation facilities available. The Toronto Harbour Commissioners undertook the assessment of overall port and airport needs. The Metropolitan Works Department advised on developments in water pollution abatement and refuse disposal, and the Ontario Water Resources Commission reported on all storm drainage outfalls to the lake and problems associated with lake waters. The Department of Lands and Forests advised on lake filling problems and applications, and supplied much of the photographic material. Supplementary to his normal duties, the Secretary arranged all of the public meetings, and for the visits to waterfronts in other cities. All of the information on interim problems was channelled to the Technical Committee through him.

In the course of the work, the Technical Committee met on more than fifty occasions to receive reports, make recommendations on problems, review progress, draft budgets and consider expenditures. When significant portions of the work could be presented for consideration, meetings were held with the Advisory Committee. In return, the Technical Committee re-

ceived written comments and recommendations from Advisory Committee members, including the Board of Trade of Metropolitan Toronto, the Community Planning Association, and some municipal representatives.

The multiplicity of contributors is perhaps the best indication of the variety and complexity of the interests focussed on the waterfront. The importance and value of this plan is that it encompasses the work and ideas of these many contributors.





TOWNSHIP OF TORONTO

ETOBICOKE

YORK TWP

FOREST HILL

LEASIDE

CITY OF TORONTO

EAST YORK

SWANSEA

MIMICO

LONG BRANCH

STREETSVILLE

CLARKSON AREA

MISSISSAUGA

**WESTERN BEACHES SECTOR**

**EAST BEACH SECTOR**

**ETOBICOKE SECTOR**

**CENTRAL SECTOR**

**SECTOR**

LAKESHORE MUNICIPALITIES AREA

SUNNYSIDE-C.N.E. AREA

HARBOUR INDUSTRIAL

WOODBINE BEACH AREA

Lakefront privately owned  
Potential land fill operation  
would provide for public beaches

Public parks and beaches  
— parking areas

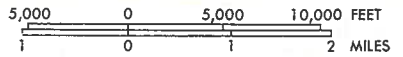
TORONTO ISLANDS  
Public park and beaches  
— access by  
TTC ferry service

Public land fill  
proposed at roughly  
12 acres per year.

Public parks  
and beaches

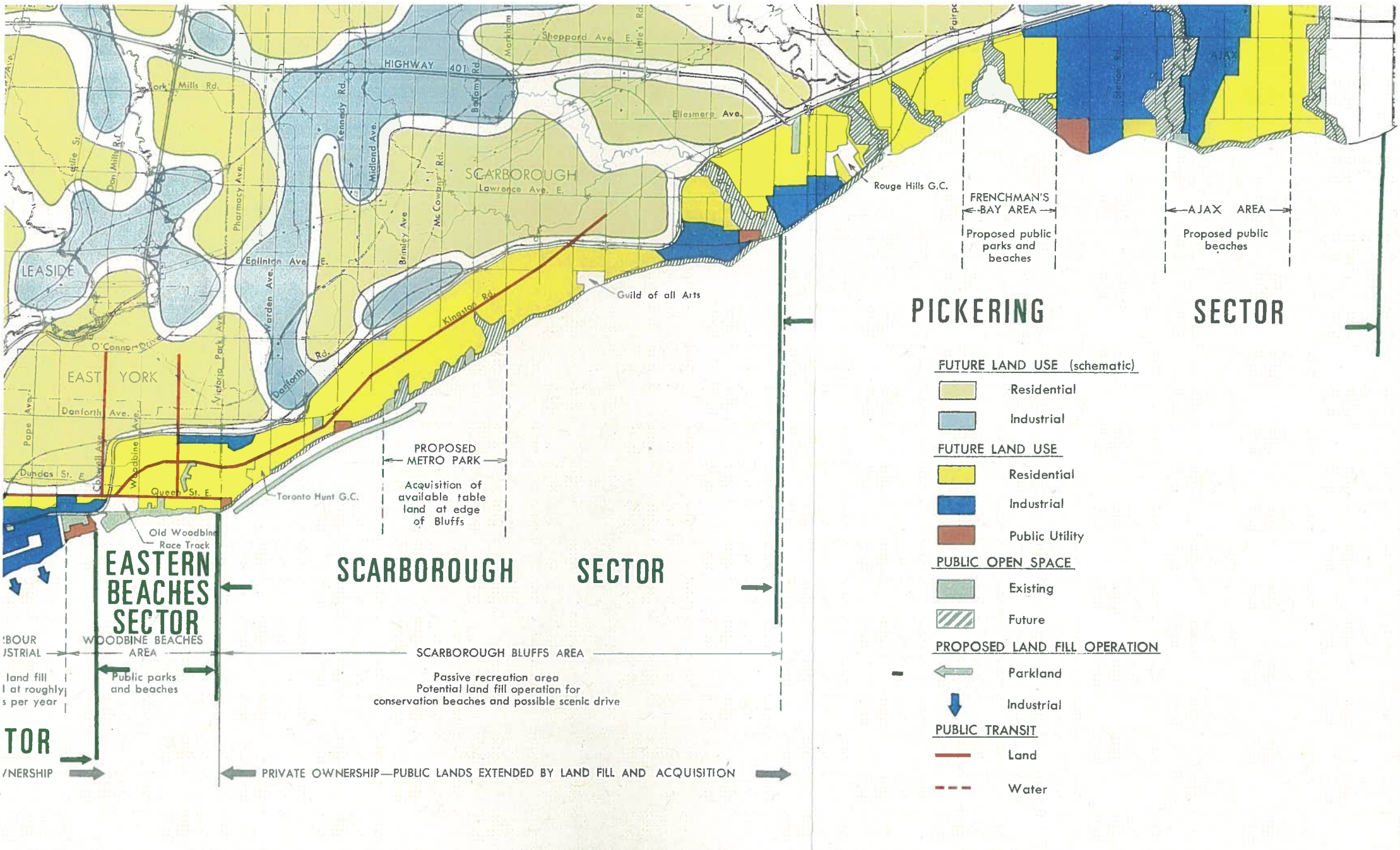
PRIVATE OWNERSHIP—PUBLIC LANDS  
EXTENDED BY LAND FILL ONLY

LAKEFRONT LANDS PRIMARILY IN PUBLIC OWNERSHIP



OFFICIAL PLAN OF THE METROPOLITAN TORONTO PLANNING AREA  
METROPOLITAN TORONTO PLANNING BOARD. SEPTEMBER, 1959.





SOURCE: Metropolitan Toronto Department of Works

**THE STUDY AREA: EXISTING USES & BASIC HYPOTHESIS**  
**GENERAL SCHEME FOR LAKEFRONT DEVELOPMENT**  
 PLATE 55  
 PLATE NO 1

REA

**Three Classes of  
Development :**

The commissioners are convinced that with the carrying out of the work projected by them the Harbor of Toronto will be second to none on the Great Lakes, and will be the equal of almost any harbor on either the Atlantic or Pacific coasts, that proper facilities will have been provided for the encouragement of water borne traffic, and that Toronto will possess a lakefront parkway and boulevard drive which will not be surpassed by anything on the American Continent.

The plans provide for development along three lines :--

1. Industrial Development in the Ashbridge Bay District and on a seventeen-acre area at the foot of Bathurst Street.
2. Commercial and Dock Development at both these points and on the Central waterfront.
3. Park and Boulevard improvements along the twelve miles of outer waterfront from Woodbine Avenue to the Humber River, with a protected waterway from the Humber on the west to Victoria Park on the east. A preliminary estimate places the total cost of the entire project at \$19,142,088.00, to be borne by the Dominion Government the City of Toronto and the Commissioners in proportions varying according to the object of the different works.

The engineer has estimated that the entire work can be carried to completion within eight years from the commencement of active operations, and this estimate has been based on such conservative figures that the commissioners believe it will not be exceeded.

*from: the Waterfront Plan of 1912*





## 2. OBJECTIVES OF THE PLAN

### a. General Aims

In very broad terms, the objective of this plan is a handsome waterfront, balanced in its land uses, complementary to adjacent areas, readily accessible and fully cognizant of the features which nature has provided. The plan must be feasible technically, and should permit flexibility in detailed design and staging. It should be capable of implementation within a foreseeable period, and must be within supportable costs.

To be merely acceptable is not enough. The plan must include dramatic proposals, for it is these which fire the imagination, and stimulate the drive to proceed. In recognition of the extent of commitment along the whole shore, however, the total concept must be evolutionary as well as revolutionary. Avenues must be left open for continued evolution under the guidance of succeeding generations.

In the beginning, considerable emphasis was placed on the need to 'plan the waterfront as a unit'. Some discussion is in order on this point, because the actual study approach might appear to be at variance with this seemingly laudable objective.

During the Appraisal, it became apparent that the whole notion of unity would not have the significance that was first anticipated. Beyond the fact that one lake and one metropolitan area are involved, strong inter-relationships between all parts of the waterfront are not too evident. Two features will be described which are intended to help knit the recreational parts of the plan together, but it is to be expected that the number of persons seeking the total experience by boat or driving tour will be relatively few. Otherwise, for the user there will be little if any connection between a park in Etobicoke and one in Scarborough, or even in Sunnyside, for that matter.

Notwithstanding this lack of close relationships throughout the waterfront, it is obvious that the provision of recreational facilities must show overall

balance, so that all of the marinas are not in the east end, and all the swimming pools in the west. Similar balance will be required when priorities are established, so that all sectors receive some attention from the beginning. These, however, are questions of elementary co-ordination, not of 'planning as a unit', at least as the Committee interpreted the phrase. The fact that the approach was comprehensive should not obscure the question. The plan is comprehensive in that it covers the whole length of the Metropolitan Planning Area shoreline, and that it deals with all facets of waterfront development within that area.

For better or for worse then, it cannot be fairly stated that a waterfront designed as a unit from end to end was one of the objectives of the plan. In the design sense, the objective was rather to fully exploit the opportunities in each sector within the guidelines of the general hypothesis and overall studies, and subject to the limitations imposed by physical conditions, existing land uses, access, availability of fill, and costs.

In addition to these general aims, specific objectives had to be met. Plate No. 1 shows the existing land uses throughout the study area. All types of urban uses are present, for the lake serves many purposes. It carries the shipping which is a vital part of the total transportation network serving the business and industrial community. Seven filtration plants draw from it the water supply for the metropolis. An eighth plant is under construction, and two more are contemplated. The lake is the ultimate receiving body for all treated sanitary flows, and for the discharge of 10 major streams and numerous storm drains. It provides cooling water for power plants and industry.

The lake is a major resource for water sports, boating and for passive recreation. For residential and commercial uses, it is a valuable asset as an amenity. In places, the lake is a constant destructive threat. Over the years, it has on many occasions been a convenient repository for fill, with beneficial results in many cases.

The specific objectives for the future must therefore be many and varied. For systematic discussion, they are grouped in the categories set out below.

### b. Recreational Facilities

Appendix 'B' offers a detailed inventory of the recreational needs and possibilities along the lakefront, in terms of type and location. The general recreational objective is to fulfil those needs, and exploit those opportunities to the full. The following is a summary of the specific objectives relating to each type of facility:

- (i) To afford virtually unlimited public access to the lake, the belt of public open space should be extended westerly from Sunnyside through Etobicoke into Mississauga, and easterly from Balmy Beach through Scarborough to Pickering Township and the Town of Ajax, by a combination of lake filling and the acquisition of shore properties.
- (ii) For boating and water sports, protected water should be provided in small boat harbours and waterways. For sailing and small craft, the targets selected are: provision for 5000 boats in slips in public marinas and private clubs, capacity for 6000 boat launchings per day on 100 ramp lanes, and winter storage space for 1500 boats on the launch ramp parking lots. Space will be made available for commercial boat works. For rowing and paddling, numerous practice areas and at least one course of Olympic specification should be provided. Plate No. 2 illustrates the new Island Marina now being completed.
- (iii) For bathing, the target selected is 16 miles of public beach, or quadruple the present length available. For swimming, artificial facilities adjacent to the beaches should be available at strategic locations along the shore. Where treatment capacity is available, artificial lakes ought to be constructed instead of conventional outdoor pools. Lake swimming at guarded beaches should

be possible, but water quality and temperature are expected to discourage the use. Plate No. 3 depicts the artificial lake proposed in front of the New Toronto Water Filtration Plant.

- (iv) For active and passive recreation, space should be created for outdoor games, picnicking, hiking, cycling, and riding, and sites for floral and artistic displays, indoor recreation centres, nature schools, private clubs, amusements and special attractions of all types. Plate No. 4 indicates the possibilities at the recently acquired Petticoat Creek Park in Pickering. Major athletic fields for competitive sports should be provided to serve the south-western and south-eastern portions of Metropolitan Toronto.
- (v) Outstanding natural features such as the Needles and the Cathedral Bluffs, and the lower reaches of the Humber, Rouge and other streams should be preserved for nature trails or wildlife sanctuaries. Plate No. 5 shows the development potential in front of the Cathedral Bluffs east of Brimley Road.
- (vi) Sites should be reserved for suitable recognition of people and events of historical significance.
- (vii) Access from parallel arterial streets to the waterfront should be provided via routes which do not traverse residential neighbourhoods. Capacity must be adequate so that peak weekend traffic is not tempted to filter through adjacent local streets. For the Island Park, improved access and parking must be provided, but this unique recreation area should be kept free of automobiles.
- (viii) Adequate permanent parking, and space for overflow parking on peak days must be provided in support of all major recreation facilities.
- (ix) For the Canadian National Exhibition, land should be created for its extension southerly, including waterways of imaginative design for competitions and watersports.

- (x) For international games, space should be created for stadia and other facilities at a location suitable for continuing public use, and where adequate transportation and parking can be made available.
- (xi) For adjacent neighbourhoods deficient in park space, land should be set aside for local recreation.
- (xii) A scenic drive must be created to knit the waterfront park system together, with as continuous an alignment as is practicable. Turnouts and restaurants should be located where the best views are available. For variety and interest, the route should include lakefront apartment projects, the port and industrial areas, and major utilities.
- (xiii) The protected waterway between the Humber River and the Eastern Gap should be extended in both directions in a semi-continuous way, by placing fill so as to create an island archipelago along the shore. Boat camping sites should be established en route. Plate No. 6 illustrates the concept as applied in the Etobicoke Sector at Royal York Road. This will be a unique feature unmatched by any city on the Great Lakes.

#### c. Port Expansion

- (i) A new Outer Harbour must be completed to provide for the efficient and economic growth of the port over a long term. The plan must afford flexibility to meet future design requirements which are unpredictable at this time. Plate No. 7 illustrates the nature of new development in the Outer Harbour.
- (ii) Adequate access for the terminal facilities and the port industrial area must be provided to the arterial street and expressway network. Rail connections must be extended.
- (iii) Viewingpoints should be set aside looking over the harbour activity and across Toronto Bay to

the city skyline.

- (iv) An airport close to the Downtown is an important asset for the business community. The present airport should be removed to a location which will permit its development to accommodate larger aircraft without conflict with building heights in the central city. Improved access is essential for its continuation.

#### d. Industrial Development and Major Utilities

- (i) Sites close to the water should be preserved for heavy industries requiring their own dock facilities, or cooling water.
- (ii) Where practicable, easement rights along the water's edge should be obtained for public access.
- (iii) Industrial development along the shore will be confined to those areas presently designated in the Metropolitan Toronto Plan.
- (iv) For major utilities, adequate space for the construction of new installations and the expansion of existing plants is essential. Suitable protection for intakes and outfalls must be assured.
- (v) Water filtration plants no longer required for domestic supply should be utilized in conjunction with artificial lakes.
- (vi) The scenic drive should provide views of the large utilities plants and hydro generating stations, and should afford easy access to those open for public tours.
- (vii) Water pollution abatement is not an objective of this plan per se, and the elimination of algae is dependent upon measures beyond its scope, but continued efforts in these directions are vital to the enjoyment of the waterfront. The hydraulics of the waterways must be such as to permit adequate circulation of water, and shore protection works should be so constructed to discourage the build up of algae.

#### e. Redevelopment Potential

- (i) The plan should provide for and stimulate re-development for apartments, hotels, restaurants and other intensive uses in such areas of apparent under use as:
- the Inner Harbour west of Yonge Street.
  - the Etobicoke Sector, mainly east of Second Street.
  - the Mississauga Sector, near the Credit mouth.
  - the blocks around the Beaches Athletic Field.
  - at certain locations along the face of the Bluffs if and when such construction becomes practical.

Plate No. 8 suggests the potential in the Inner Harbour, and Plate No. 9 illustrates the possibilities between Mimico Creek and the Humber River.

- (ii) Redevelopment must be limited to those areas where adequate access, services, schools and other community requirements are available, and where no untoward effects on adjacent low density neighbourhoods will accrue.
- (iii) The site design and architecture for such projects must show due regard for the lakefront setting, and should complement and enhance the total picture.
- (iv) Public ownership or access to every foot of lake shoreline is not an objective of this plan. Where appropriate, apartments, hotels etc. should be permitted access directly to the water.

#### f. Preservation of Stable Neighbourhoods

- (i) Existing lakeshore neighbourhoods should be protected from the impact of recreational attractions of metropolitan scale by the careful placement of heavy use facilities in relation to the closest dwellings, the use of screen planting around parking areas, and the provision of vehicular access via routes independent of the local street

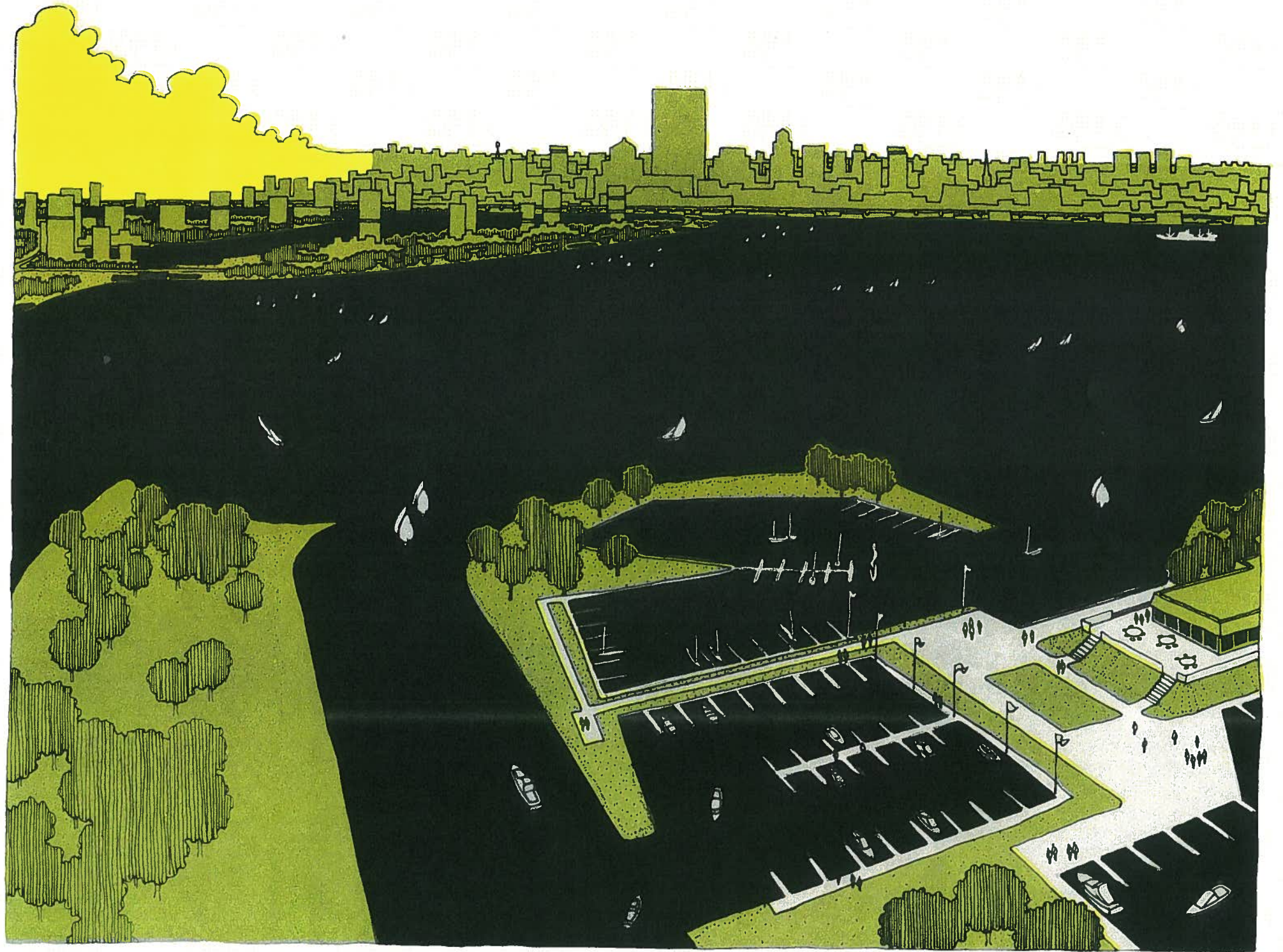
system. The importation of fill must also be via separate routes.

- (ii) Such neighbourhoods should be enhanced by the provision of additional local park space where deficiencies exist, and the construction of shore protection works where erosion is a threat. Riparian properties will benefit from the creation of protected water where exposure to the open lake has heretofore prevented full use of the lakefront location.

#### g. Constructive Use of Fill Materials

- (i) The lake should continue to be used for the disposition in a constructive way of surplus fill from building sites and public works projects within economic haul distances. In this way, worthwhile additions can be made to the waterfront, while lower construction costs can be obtained on building projects.
- (ii) Waste materials such as hydro flyash, certain solid industrial wastes, dredged silts, demolition wastes, garbage, rubbish, incinerator residues, digested sludge, etc. should be used for constructive purposes wherever feasible. All manner of waste disposal results in a charge upon the community for transport and facilities and there is a significant potential saving in capital and/or haul costs when these materials are used for waterfront fill development. Some waste materials will require secure protection against any possibility of lake pollution by means of adequate dikes, strong shore protection works, and the possible collection, pumping and handling of any seepage.





PERSPECTIVE OF ISLAND MARINA PLATE NO. 2

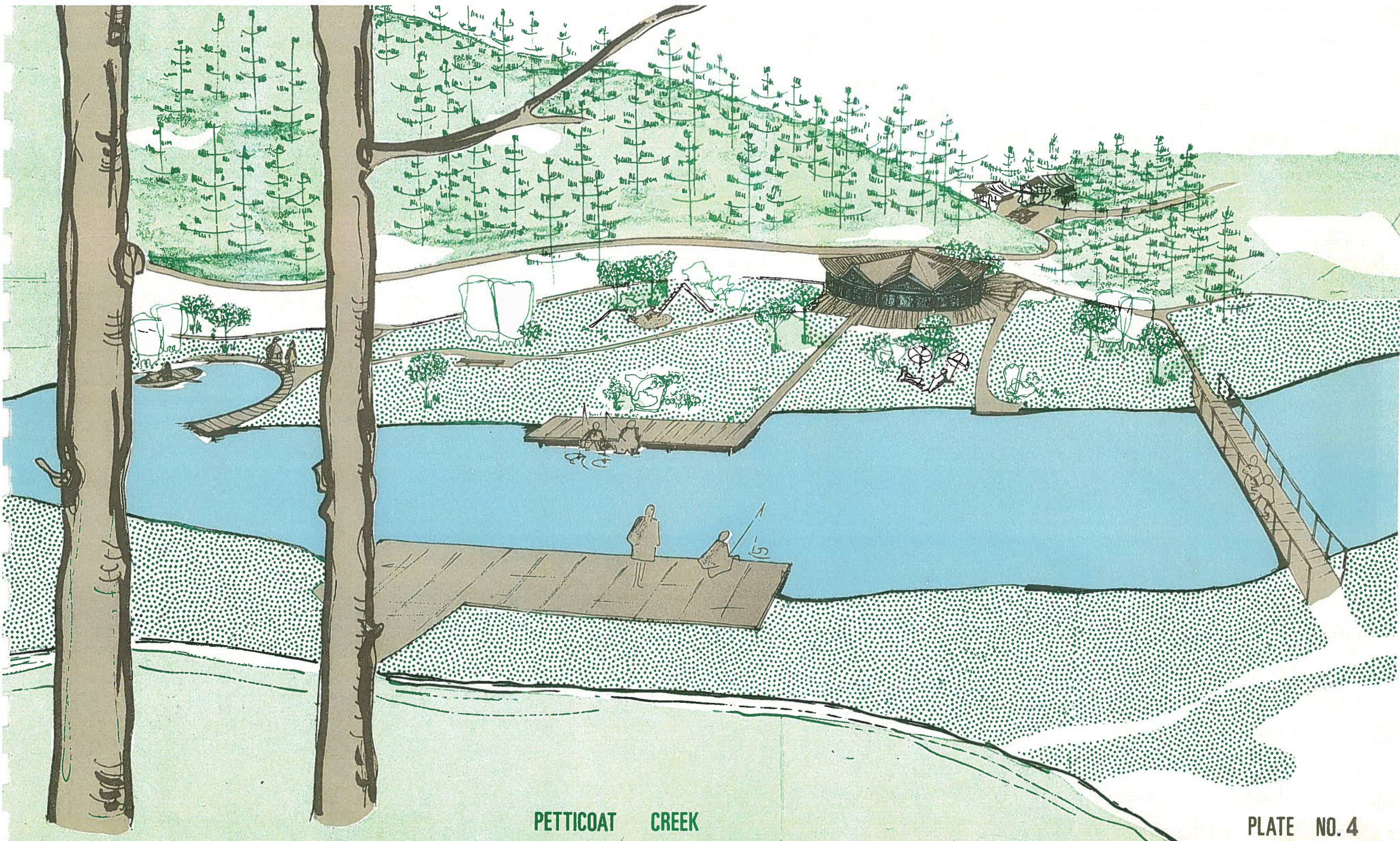




**ARTIFICIAL LAKE**

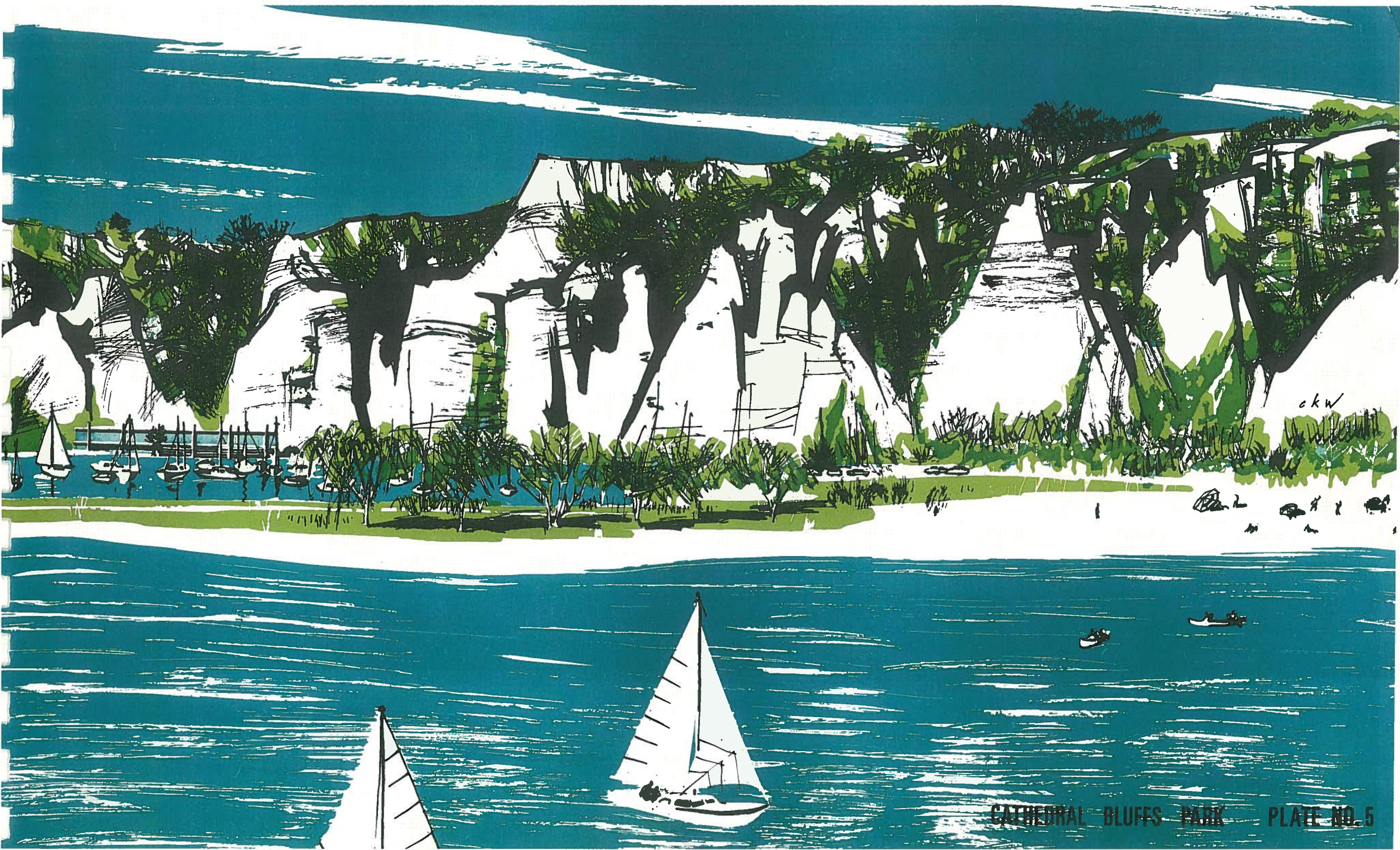
**PLATE NO. 3**





PETTICOAT CREEK





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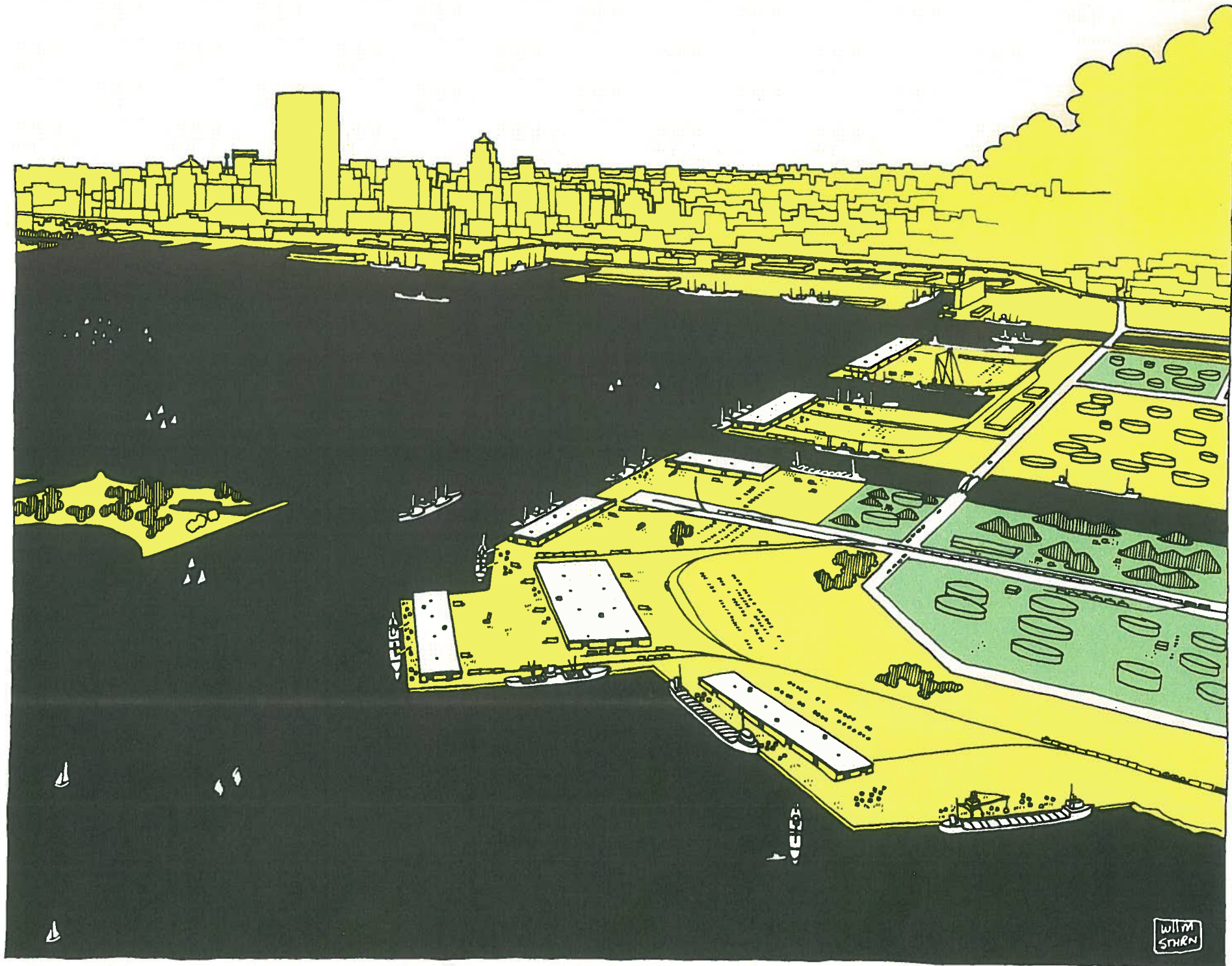




**INNER WATERWAY**

**PLATE NO. 6**





OUTER HARBOUR

PLATE N° 7

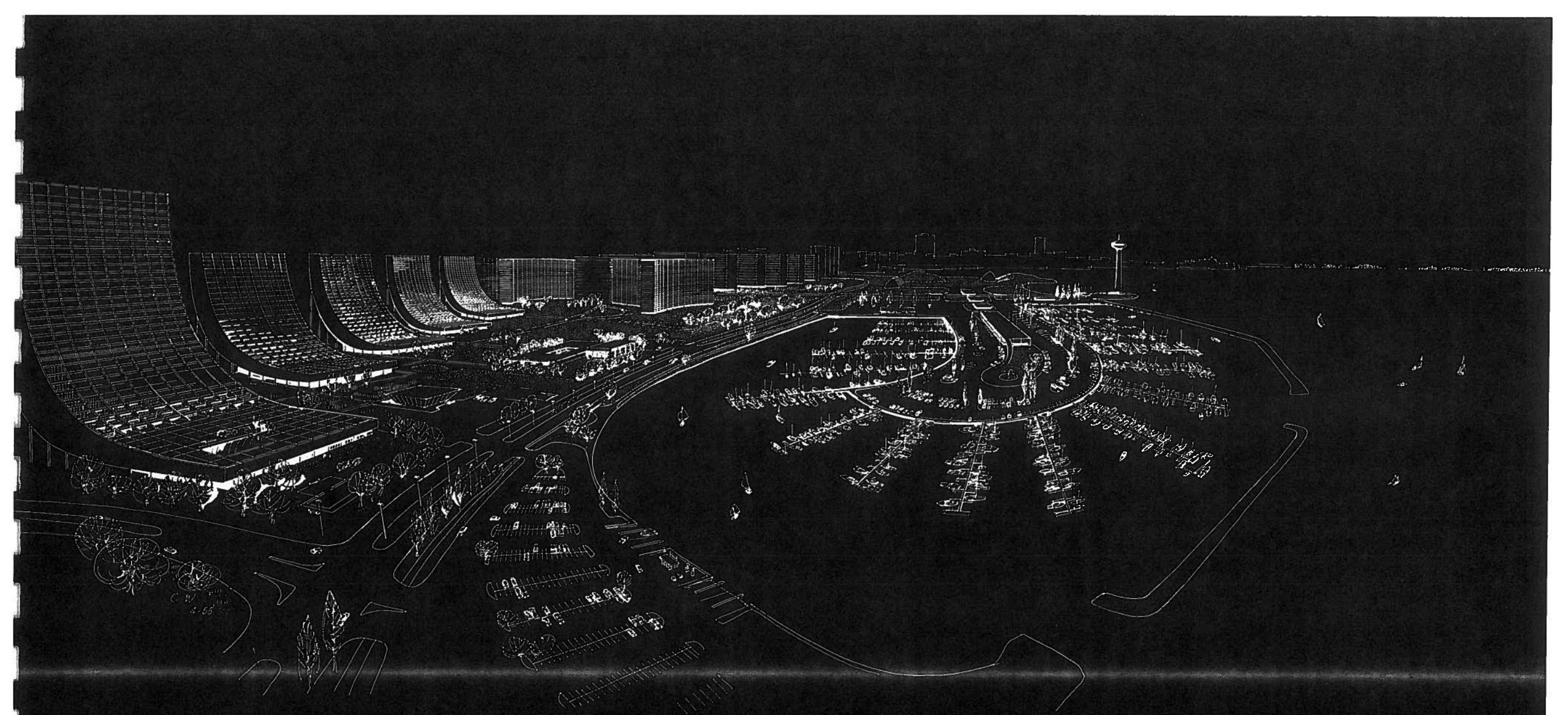
WILM  
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PERSPECTIVE OF HARBOUR CITY REDEVELOPMENT PLATE NO. 8





HUMBER BAY REDEVELOPMENT

PLATE NO. 9



### 3. DESCRIPTION OF THE PLAN

#### a. The General Plan

Plate No. 10 depicts the general plan of development proposed for the whole of the study area. The new land forms are shown in outline in relation to adjacent land uses and the main transportation network, and the major recreational facilities, including the sections of waterway and scenic drive are indicated. In this chapter, the chief elements of the plan are summarized. Detailed descriptions of the conditions and proposals in each sector follow in Chapter 4.

It will be observed that the original hypothesis as stated in the Appraisal has withstood the test of further study very well. The one significant departure from the General Scheme shown on Plate No. 1 is the removal of the Island Airport to a new location off Gibraltar Point. A new 7,000 ft. main runway can be constructed there which will be adequate to accommodate 90-100 passenger intermediate range jet aircraft of the DC-9 type. Its alignment takes cognizance of the most prevalent wind directions, and the relationship with Toronto International Airport. The approaches are well clear of high buildings in the city centre.

The scale of redevelopment in the western Inner Harbour is greatly magnified. Massive land filling becomes possible to create "Harbour City," a new residential complex in a Venice-like setting south of Lakeshore Road between York Street and Strachan Avenue. The new community could have a population potential in the order of 50,000 persons. It will include rental accommodation for a wide range of income levels and household sizes, a commercial core, a central campus for schools, and recreational and other community facilities. The Marvo project at the foot of Bay Street can be integrated with the total scheme, and the whole can complement the redevelopment proposed for the railway yards immediately north of the Gardiner Expressway. The near-Downtown location, the harbour setting, and the internal lagoons offer outstanding opportunities

for design, and a form of urban living virtually unique on the continent.

Vehicular access will be provided by extensions to York Street, Spadina Avenue, Bathurst Street, and Strachan Avenue. An intermediate mass transit facility is planned to connect to the Downtown transportation terminal and the railway redevelopment area.

These facilities will afford swift connections to the new airport and Island Park. The latter will remain a sanctuary from automobiles, but transit and large car parks will become available within short walking distance of Centre Island. These measures will complement rather than replace the ferries. The trip across the harbour will be retained as a part of the total Island Park experience.

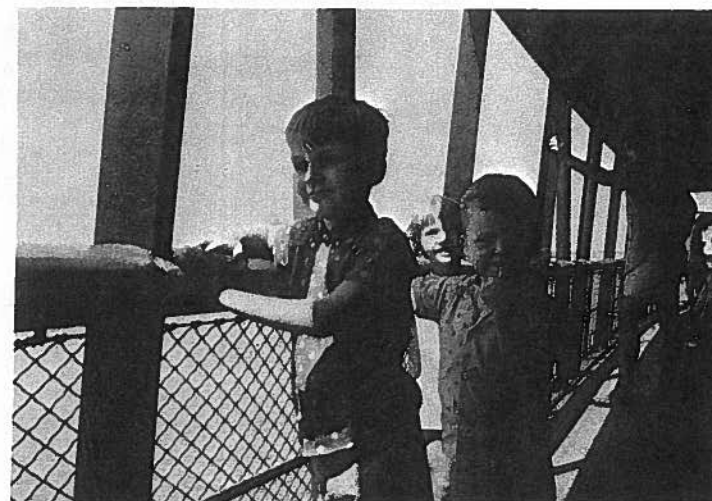
The public open space to be created around the perimeter of Harbour City, and the additions proposed to Centre, Olympic, Algonquin, Ward's and other islands will more than replace the acreage on Hanlan's and Gibraltar Point which is to be used for other purposes.

The General Plan also shows the new Centennial Marina, nearing completion on Centre Island, and proposes a large swimming pool adjacent to the beach east of the Avenue of the Islands.

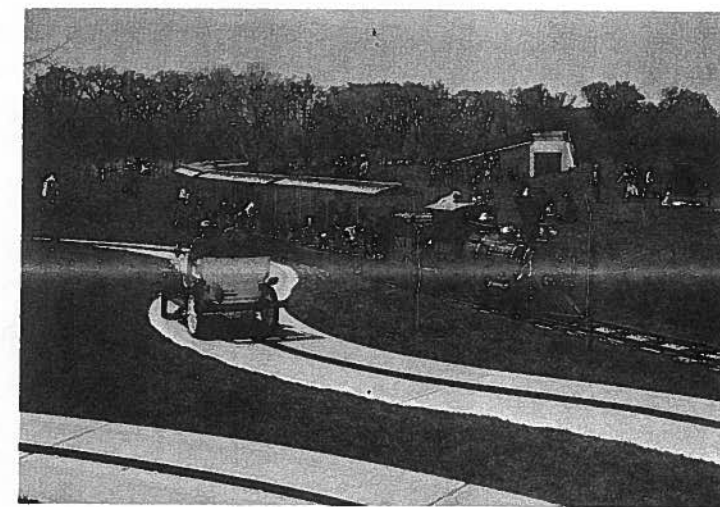
The National Yacht Club basin will be replaced in an improved setting at the westerly end of the new Western Gap. West of Strachan Avenue, substantial lake filling is proposed which will permit expansion of the Canadian National Exhibition southerly across Lakeshore Boulevard. The General Plan only suggests the opportunities in terms of scope and form.

The new Outer Harbour is shown between the Eastern Gap and Leslie Street. The new hook of land is already partially complete, and by 1970 will enclose a body of water three quarters the size of Toronto Bay, and provide ample space for flexibility in the design and development of new port facilities for many years to come.

With the development of the Outer Harbour, the Eas-



*The ferry ride is part of the Island experience*

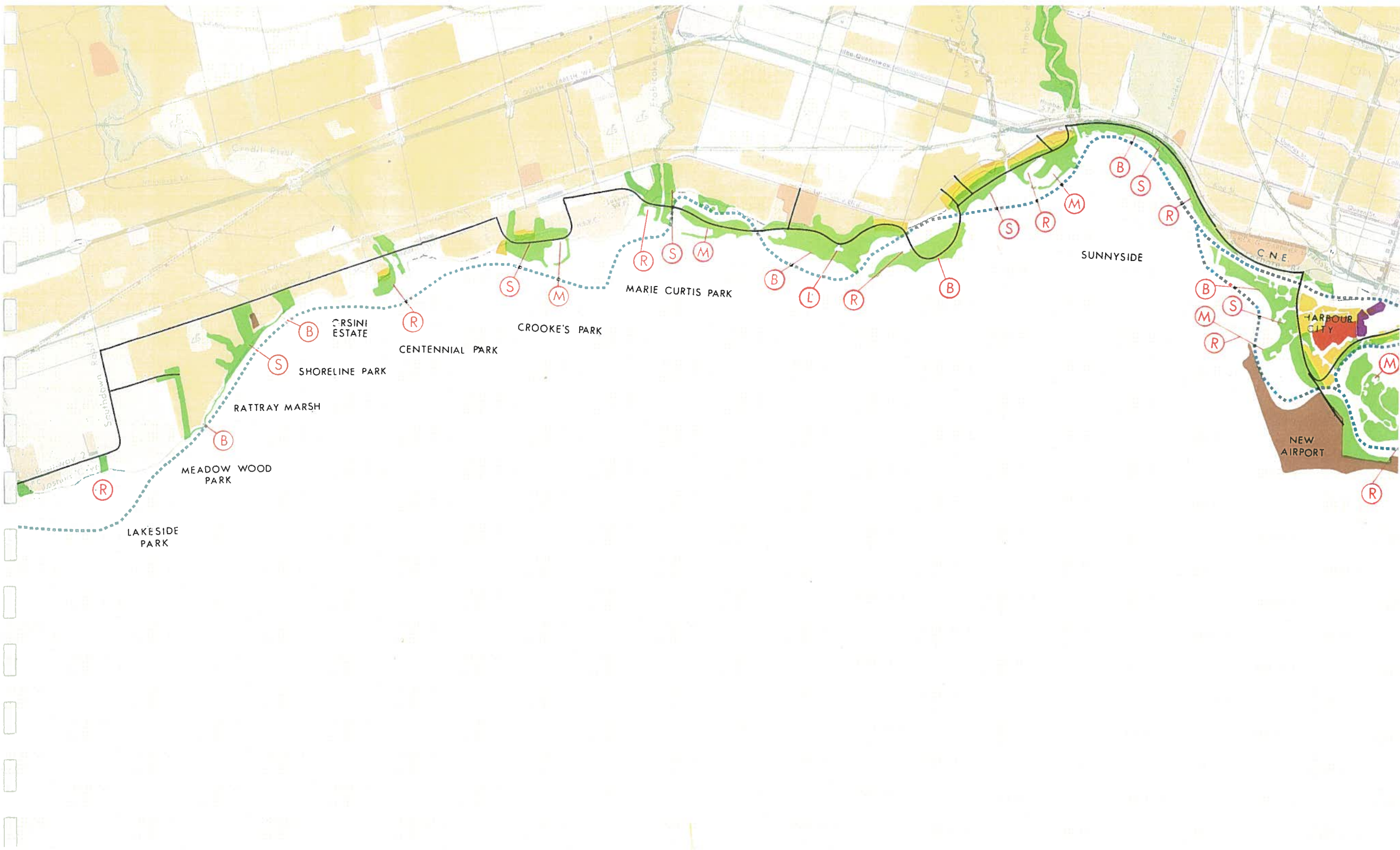


*Amusements at Island Park, Toronto*



*The Outer Harbour headland under construction, November 1967.*





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LAKESIDE PARK

MEADOW WOOD PARK

RATTRAY MARSH

SHORELINE PARK

CRSINI ESTATE  
CENTENNIAL PARK

CROOKE'S PARK

MARIE CURTIS PARK

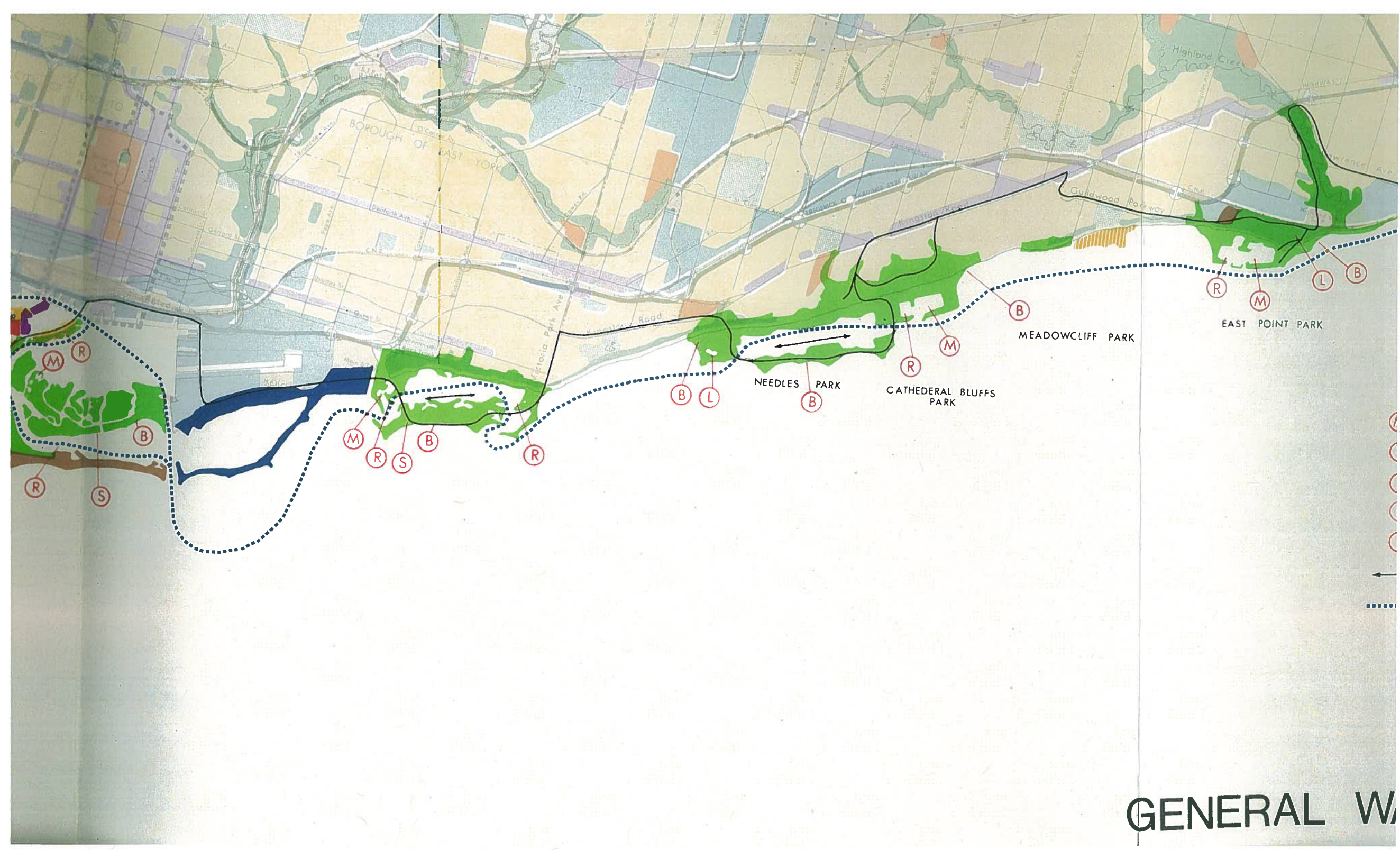
SUNNYSIDE

NEW AIRPORT

HARBOUR CITY

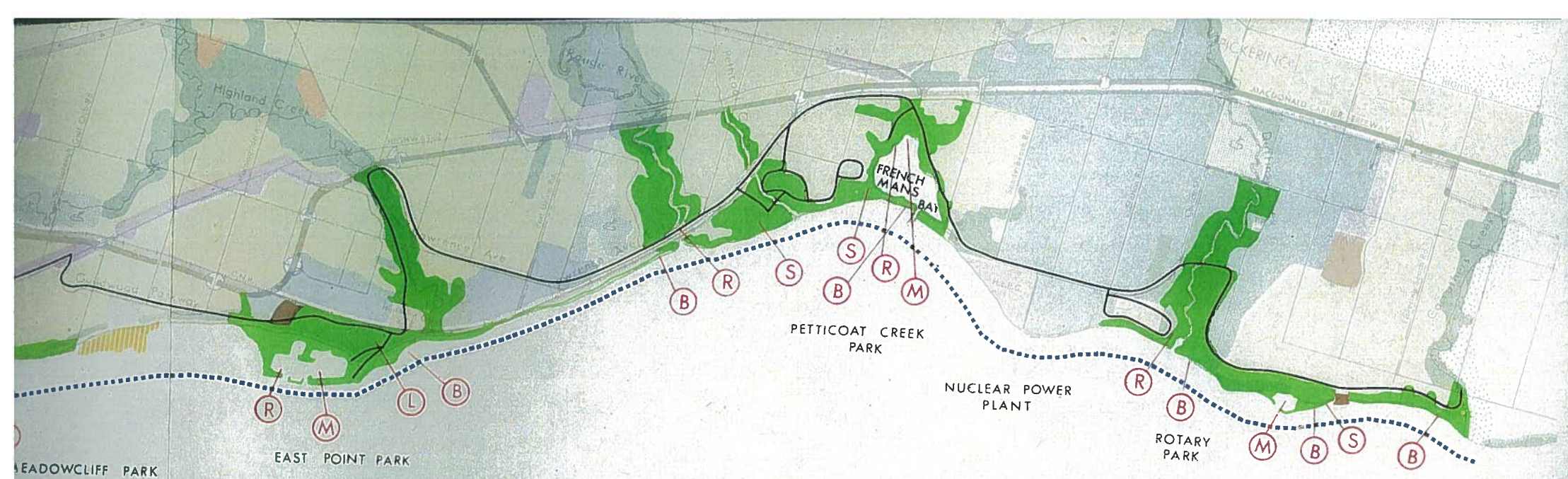
C.N.E.





GENERAL WA





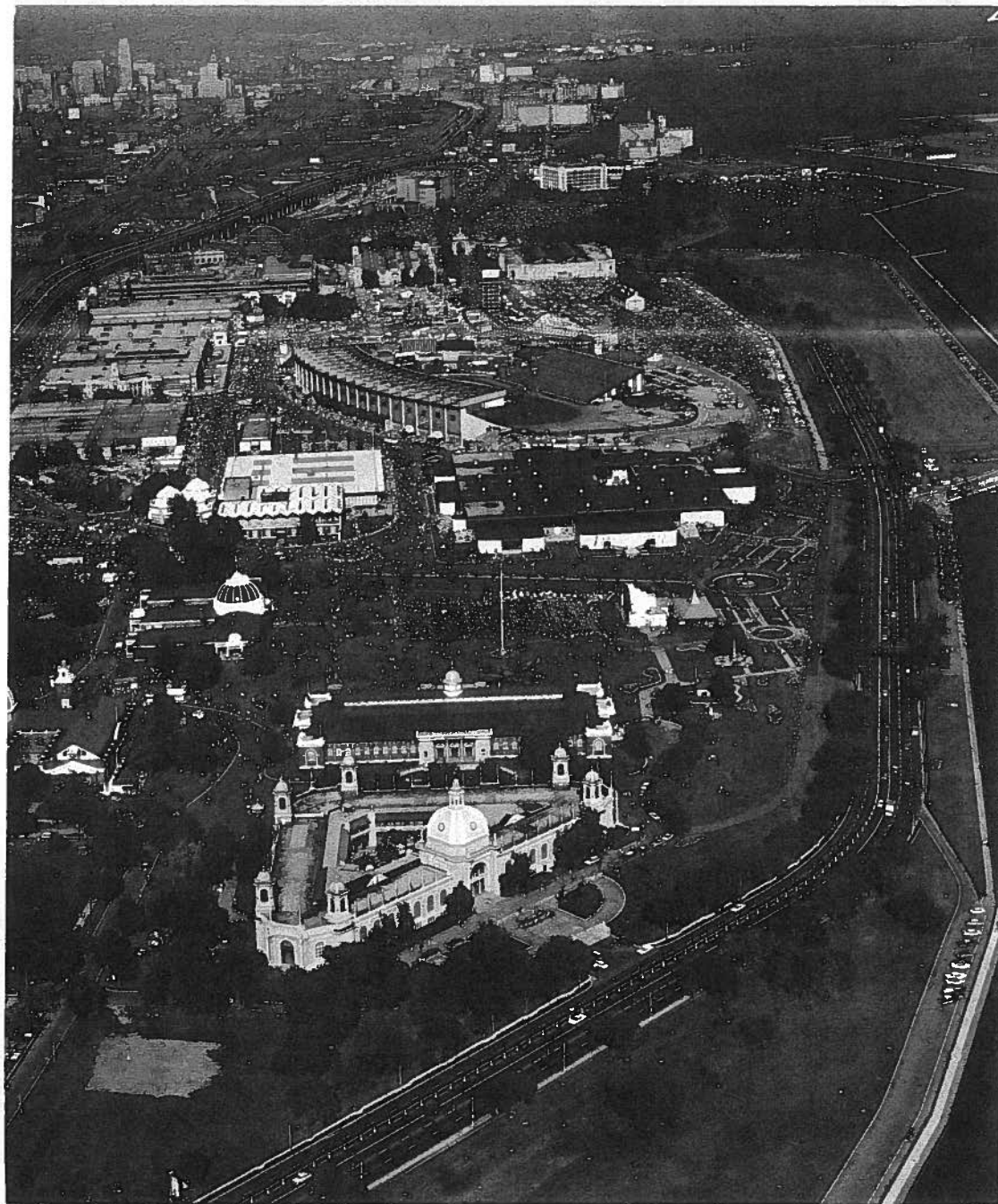
- |       |                  |              |                |
|-------|------------------|--------------|----------------|
| (M)   | NEW MARINA SITES | [Yellow Box] | RESIDENTIAL    |
| (R)   | LAUNCHING RAMPS  | [Purple Box] | COMMERCIAL     |
| (S)   | SWIMMING POOLS   | [Blue Box]   | INDUSTRIAL     |
| (B)   | BATHING AREAS    | [Red Box]    | INSTITUTIONAL  |
| (L)   | ARTIFICIAL LAKES | [Brown Box]  | TRANSPORTATION |
| →     | REGATTA COURSE   | [Green Box]  | OPEN SPACE     |
| ..... | WATERWAY         | [Red Line]   | SCENIC DRIVE   |

# GENERAL WATERFRONT PLAN





*Sir Casimir Gzowski Playground at Sunnyside.*



*Exhibition Park and the breakwater.*



*Marie Curtis Park at the mouth of Etobicoke Creek is to be extended by lake filling.*



*The Westerly Water Filtration Plant under construction and the Ontario Hospital grounds, New Toronto.*

*Apartment development in Mimico has taken little advantage of the lakefront setting. Private lake filling at right.*





tern Gap will become the main entrance to the Inner Harbour. The new Western Gap south of Harbour City is essential for water circulation in the Bay, and will be heavily used by small craft. For larger shipping, it will serve primarily as an emergency entrance. The bridge across it will therefore be opened only rarely. The resultant almost uninterrupted access to the new airport and the Island Park is the key to their successful operation.

Most of the fill required to create the lands described above will be dredged from the deep sand deposits on the lake bottom in the central sector, but excavated material from construction projects in the city will continue to be imported to assist.

West of the C.N.E., the Plan calls for the refurbishing of Sunnyside and Gzowski Parks, presently underway, and the provision of new boat launching ramps between the Boulevard Club and the Toronto Sailing and Canoe Club.

In Etobicoke massive filling using imported material is proposed to create a continuous new public waterfront between the Humber River and Marie Curtis Park. Rather than continuous filling from the shore, islands are planned in order to extend the protected waterway westerly from the Sunnyside breakwater. Facilities provided for boating will include two marinas, launching ramps at three locations, a boat storage yard, and a site for a commercial boat works to serve the western Metropolitan Area. In the centre, a regatta course and lagoon for aquatic shows are planned, and sites are reserved for boating, rowing and paddling clubs.

On shore, space is set aside for an artificial lake (utilizing the New Toronto Filtration Plant) with supporting picnic areas, a major athletic field complex for competitive sports, a floral park, and sites for indoor recreation centres, day camps, restaurants etc. A camping ground is proposed on the west bank of Etobicoke Creek. The system of walkways connects with the trails in the valley of the lower Humber, which remains a passive park and waterfowl sanctuary.

On the landward side of the scenic drive, intensive redevelopment for apartments, hotels and other commercial uses is proposed east of Second Street. Local park space and new school sites are set aside to serve the new population anticipated, and to improve existing neighbourhoods in former Long Branch and New Toronto, where the present character is to be retained.

The magnitude of the development proposed in Etobicoke presumes the use of large volumes of selected waste materials, with suitable precautions against possible pollution of the lake. In order to complete the scheme within a reasonable period of time, the acreage to be created will have to be scaled back if some types of materials are rejected on the basis of tests.

Having regard to the fact that large sections of the waterfront in the Mississauga and Port Credit sector are already developed with well established non-recreational uses, it is important that immediate action be taken to secure suitable vacant areas for recreational purposes. In the absence of sizeable quantities of suitable material, massive filling in the lake is not feasible. The semi-continuous waterway cannot be extended through the sector, but some additional protected water in small boat harbours is provided. A series of loop driveways from No. 2 Highway are substituted for a continuous scenic drive, which could not be obtained without serious disruption of residential areas.

New large parks are to be established and existing recreation areas are to be expanded primarily by land purchase, although filling will be employed to the limited extent possible. At Crooke's Park west of the Dixie Generating Station, a marina, picnic area, and all year pool are proposed. A new park on the west side of the Credit River mouth will complement Port Credit's Centennial Park north of Highway No. 2 on the east side. A new lakefront park on the Orsini Estate in conjunction with the water filtration plant planned by the Ontario Water Resources Commission will relieve the pressure on adjacent Shoreline Park. A two-mile walk-

way along the beach is proposed to link all the local and large open spaces between Lorne Park and Meadow Wood Park.

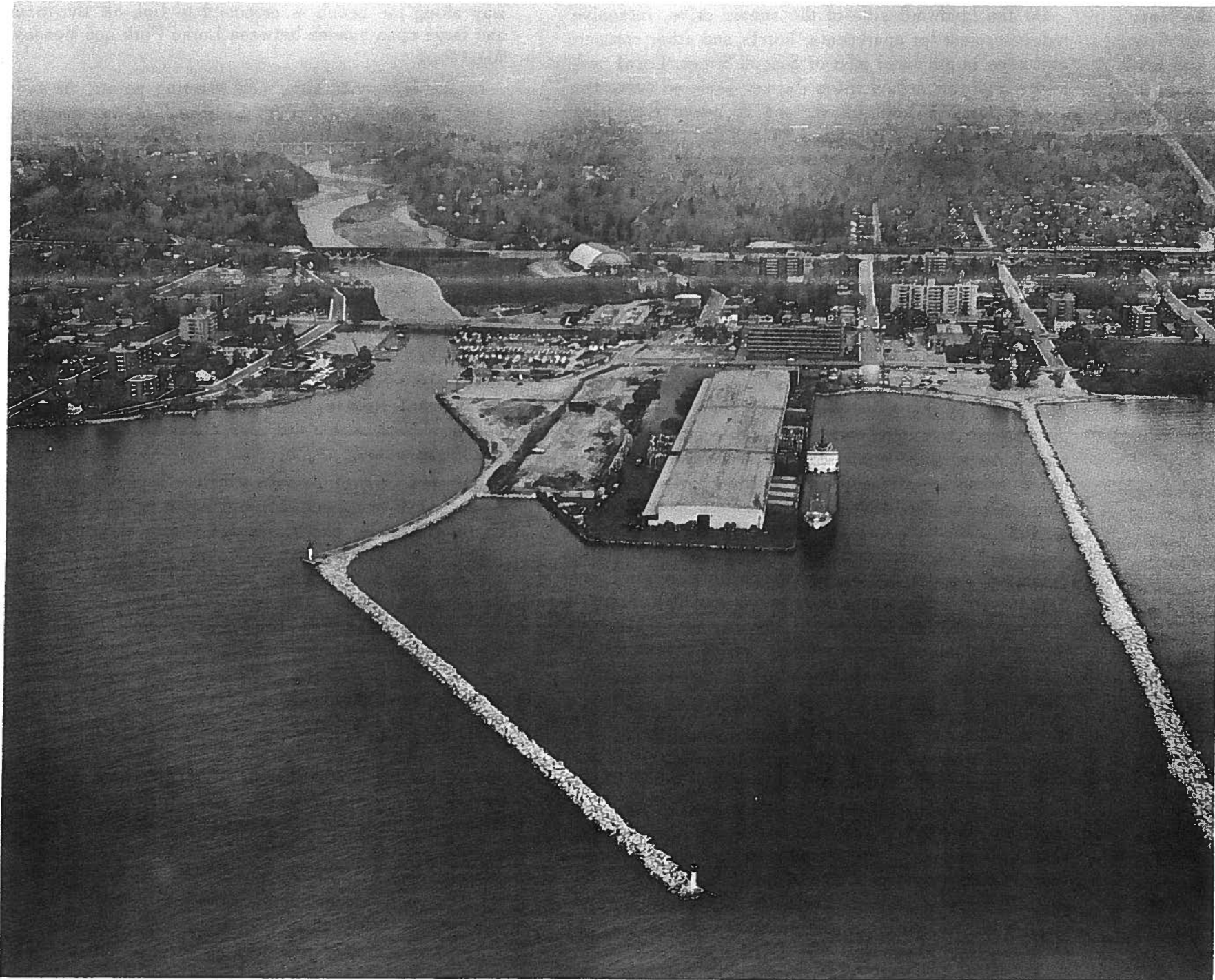
In the industrial area, new viewing points are proposed at the foot of Fifth Line and at the mouth of Joshua Creek. Boat launch ramps are suggested for Lakeside Park. Opportunities for redevelopment are limited, but new high density residential uses are proposed at the mouth of the Credit, and adjacent to Crooke's Park.

Turning to the eastern end, and beginning at Leslie Street, it will be seen that the Port may ultimately be extended as far as Coxwell Avenue, depending on what is required for the expansion of the Main Sewage Treatment Plant. It is expected that the build up of traffic to the port will, in time, require a new vehicular access via Coxwell Avenue. This in turn will necessitate the filling of Coatsworth Cut and the remaining vestige of Ashbridge's Bay.

Between Coxwell Avenue and Kew Gardens, the Plan proposes that initially fill be extended from the shore to create a new marina, launch ramps, and sites for clubs now quartered on Ashbridge's Bay. The block between Woodbine Avenue and Kew Gardens is proposed for apartment redevelopment in the New Plan for Toronto. East of Kew Gardens, the present Beaches neighbourhood is expected to retain its present character, and here the beach strip is continued essentially as local park.

The Plan also indicates how massive filling may be used to add sufficient acreage for an all weather stadium and a new Woodbine Beach and picnic park adjacent to the Summerville Pools. Offshore, a large island may be created for a playing field complex for the city's east end. It would enclose a large lagoon of protected water and would provide an alignment for the extension of the scenic drive easterly around the Beaches neighbourhood.

The initial stimulus for the large scale development proposed here may be a successful bid for the Olympic



*Port Credit Harbour.*

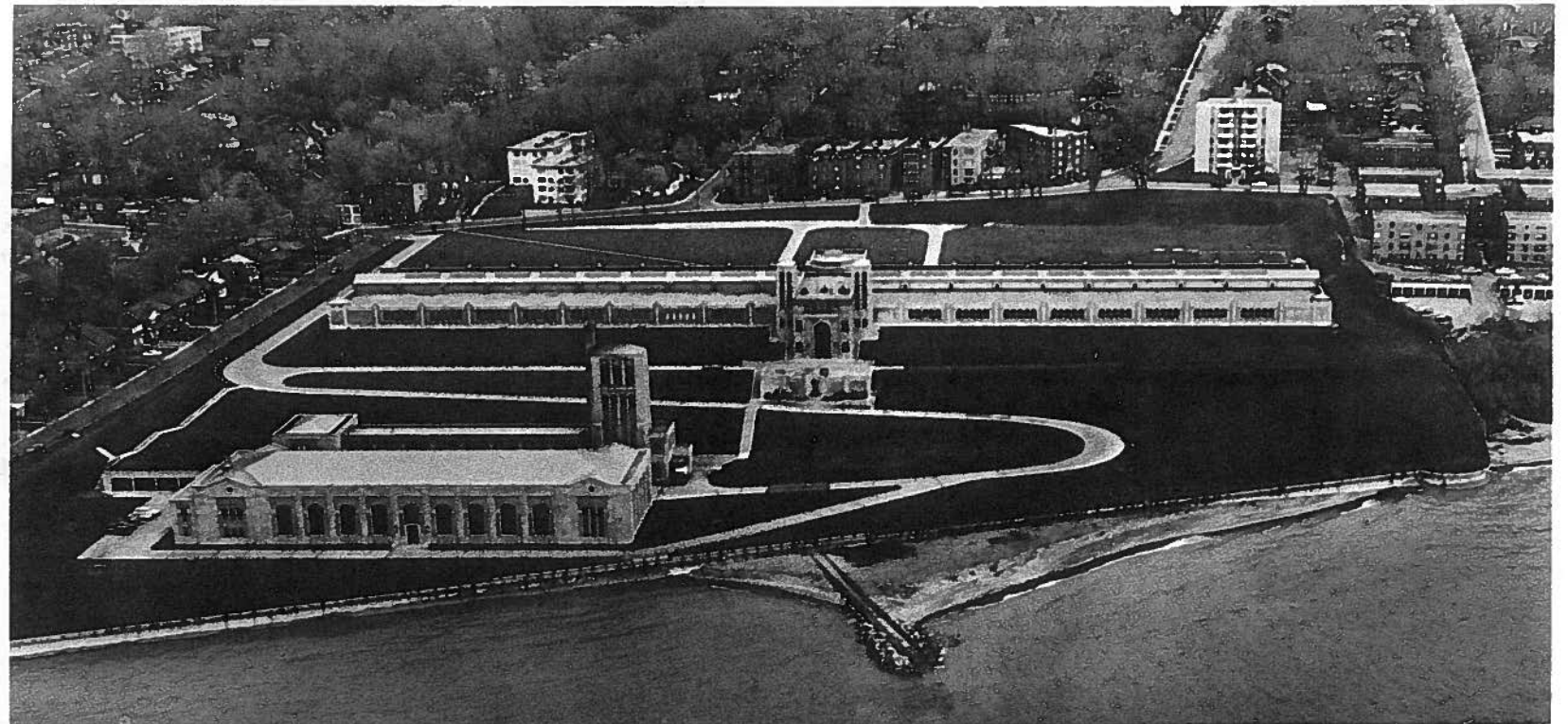
*The west side is to be filled for park purposes.*





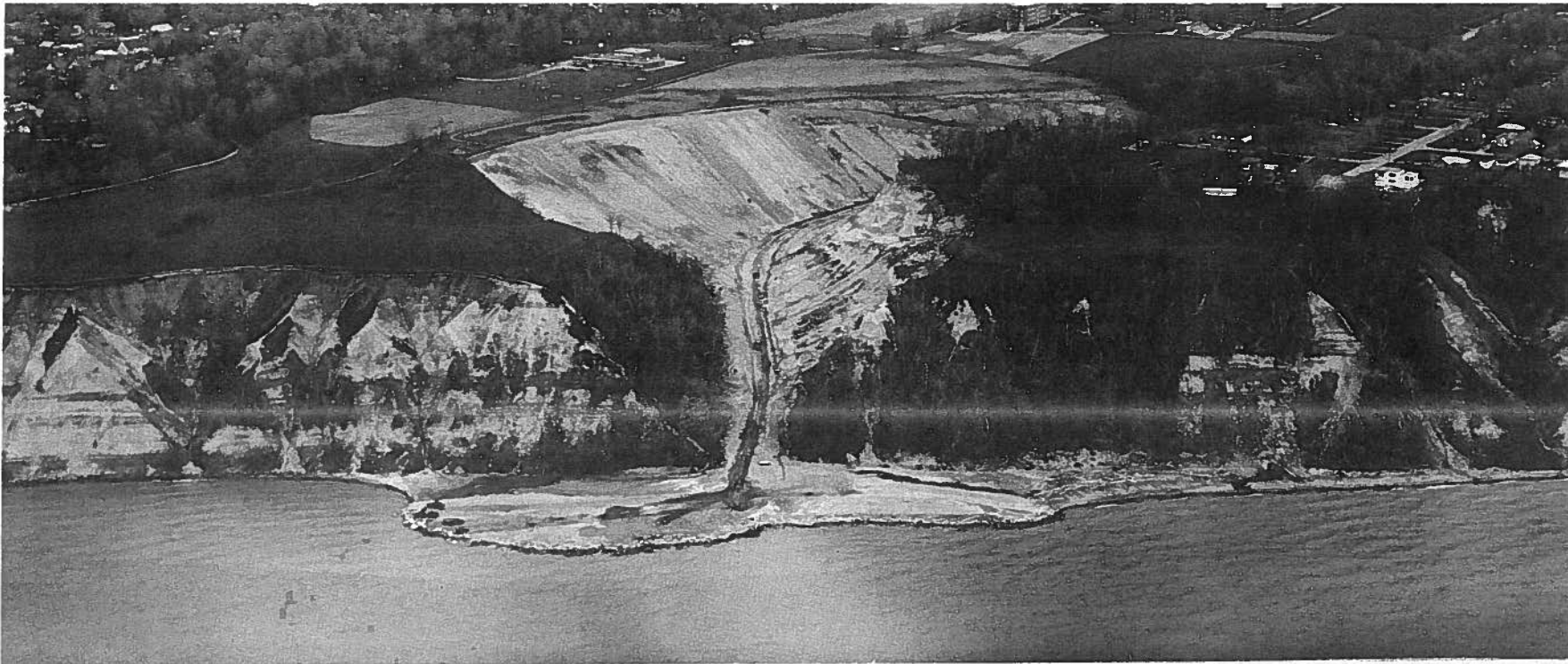
*Left.*

*Ashbridge's Bay is used as a boat basin, but the entrance lacks protection.*



*Right.*

*The R.C. Harris Plant, with a capacity of 200 million imperial gallons per day, is the largest water filtration plant serving the Metropolitan Area.*



*Left*

*Land fill project by the Borough of Scarborough in the St. Augustine Seminary ravine has created an access road to the shore.*



*Right*

*The Guild Inn. The owner has sunk a barge (left) in order to build up a protective beach.*



Games. With a stadium, marina, regatta course, track, and potential Olympic Village, all of the facilities necessary for international competitions would be available. Improved transit access would be required such as the Queen Street subway but everything provided for the Games would be well located for continuing use as a Metropolitan sports and recreation centre.

Sufficient investigation has been undertaken to ascertain that massive filling in front of the Scarborough Bluffs would be dependent on the use of waste materials, the feasibility of which has not yet been tested. The special method which might be employed in the Scarborough Sector, where some sands and clays overly bedrock at the lakebottom, is described in Appendix 'C'.

The scale of park development through the use of selected waste materials has been illustrated in the Plan for the Etobicoke Sector. The General Plan therefore seeks to show in Scarborough what can be achieved by a less ambitious fill program using conventional sources of material, that is to say, clean fill trucked in addition to the somewhat limited supply of dredgeable material available on the lake bottom. Without very extensive filling, a scenic drive along the foot of the Bluffs cannot be achieved. A continuous alignment along the rim is obviously possible, but is not recommended in view of its patent attraction for peak hour traffic, and the resultant disruptive effects on the quiet neighbourhoods it would traverse. Instead, a series of loop drives from Kingston Road are proposed, using routes independent of the local street system.

The continuous waterway concept is unattainable. Small harbours are planned in lieu, to afford refuge on this long stretch now bereft of any shelter for small craft.

New large recreational complexes are proposed in the three lakefront areas where space is available and access and other conditions permit. The development of East Point Park entails the addition of some onshore properties to Metropolitan Toronto's substantial hold-

ings between Morningside Avenue and the mouth of Highland Creek. Using material excavated from the Bluffs for construction of the Easterly Water Filtration Plant and an artificial lake, a small harbour is to be created to accommodate a marina, launching ramps, a sailing club site, boat camping space and a new beach. The section of scenic drive and the walkway system connect to the lower Highland Creek Valley, which remains as passive recreational area and wildlife refuge in its lower reaches.

In the Cliffside and Cliffcrest areas, additional properties must be purchased to establish a continuous park including the Needles and the Cathedral Bluffs, the two most spectacular natural features along the Scarborough shoreline. Using imported fill, dredging, and some material borrowed from the Bluffs, protected water is to be created to accommodate a second marina, more launch ramps, and an eastern regatta course. An artificial lake is proposed to utilize the Scarborough Filtration Plant after it is phased out of regular service. A scenic drive loop will afford a magnificent view of the Needles.

The third park, Meadowcliff, requires the consolidation of lands in Metropolitan ownership at the foot of Bellamy and Markham Roads. The woods and ravines of this section are planned for passive recreation, hiking and nature trails, and possibly a nature school. Parts of the table land are proposed for neighbourhood parks to serve adjacent residential areas. Access will be via the Bellamy ravine, and by a westerly connection through Cathedral Bluffs Park to the extension of Brimley Road.

The filled areas described above will protect substantial lengths of the Bluffs from erosion by wave action. Elsewhere, a series of groynes is proposed to trap material borne by the littoral drift and build up a protective beach. A small viewing point is proposed at the foot of Nursewood Road, in front of the R. C. Harris Water Filtration Plant.

The distance from arterial roads, and the lack of

access except via local streets limits the potential for apartment redevelopment along the Bluffs. The most promising opportunity is in front of the Guild Inn, between Livingstone and Galloway Roads.

In the Pickering Sector, the Plan seeks to take advantage of the extent of undeveloped lake frontage, the existing sandy beaches, the untouched river valleys and the natural protected water of Frenchman's Bay. Additions to the park system will be by direct land purchase, or by acquisition as parts of new plans of subdivision as the area develops. Extensive filling in the lake is neither necessary nor feasible.

A continuous scenic drive is not possible, but long loops connecting with an extended Lawrence Avenue will be created instead. Additional small boat harbours and improvements to the entrance to Frenchman's Bay will complete the system of sheltered points for small craft between Ashbridge's Bay and Oshawa.

The lower Rouge Valley has already been acquired by the Metropolitan Toronto and Region Conservation Authority, and improved access is proposed at its northern end to exploit its all year recreation potential. Petticoat Creek Park has also been purchased for a natural park and picnic area. A hiking trail is proposed along the beach linking all the parks between Highland Creek and Frenchman's Bay.

The Bay itself is to be developed as the focus of boating activity for the Pickering area. New features proposed include marinas, launch ramps and facilities for storage and repair. The purchase of additional lands along the shore and the floor of the Bay itself will be required, as well as dredging and improvements to the entrance. The western arm is to be developed as a major beach, supported by a pool and picnic area.

East of the Nuclear Power Station lies the last large tract of undeveloped lakefront industrial land in the Planning Area. The M.T.R.C.A. is presently acquiring the valley of Duffin's Creek, and its drowned mouth, like that of the Rouge, will remain a wildlife propagation area.



*The natural protected water of Frenchman's Bay will be the focus of boating activity in Pickering.*



In Ajax, it is proposed to enlarge Rotary Park and it is expected that boat launching, bathing and picnicking areas will be provided there and in Squires Beach on the opposite site. Set back regulations will preserve the Ajax lake frontage for public and private open space. A private marina and hotel are planned as a focal point at the foot of Harwood Avenue as re-aligned. Immediately to the east, and extending as far as Pickering Beach Road will be a second lakefront park and beach to serve the community. A scenic drive loop will parallel the valley rim and lakeshore.

At the extreme periphery, the development of the shallow valley of Carruther's Creek and the adjacent beach will form the eastern anchor of the park and park drive system.

If carried through, these proposals will fulfill the multiple objectives assigned to the Waterfront Plan at the outset. The metropolitan community will truly be able to use and enjoy the lake to the full. All of the needs of the port, the airport, the utilities and industrial areas which can be predicted have been provided for. Space is set aside for expansion of the C.N.E. and for the creation of a major sports complex capable of accommodating international events.

Direct public access to the lake will be available for more than thirty of the fifty-mile stretch of waterfront in the Planning Area. When the shorelines of all the islands and waterways are calculated, public lake frontage will total over 100 miles. All of the outstanding natural features are embraced within the parks proposed in the Plan. Excluding the river valleys, the public park acreage is increased from 1800 to 4500 acres, sufficient for an infinite variety of outdoor pursuits.

For boating, the marinas proposed will have capacity for more than 5,000 boats when fully developed. Private clubs will accommodate many more, and rowers and paddlers will have ample protected water for their sports. The 90 lanes of launch ramps planned falls slightly short of the theoretical target fixed at the

outset. Unless or until the waterway is continued into the Mississauga and Scarborough Sectors, it is probable that somewhat fewer small boats will be attracted than were estimated initially. Any deficiency can easily be made up if and when massive filling is undertaken in those sectors.

The length of public beach is increased to 16 miles. Where two major lakefront pools now exist, the Plan anticipates twelve and three artificial lakes. The only scenic drive now available is the four-mile stretch of Lakeshore Boulevard through Sunnyside. The links and loops proposed in the Plan provide more than 50 miles of waterfront drive. The waterway, the small harbours, and the boat camping sites will invite week-end cruising and exploration along a forty-mile route where variety, interest and activity beckon on every side.

At a time when metropolitan housing needs have emerged as a cause for intensified effort by government at all levels, this Plan contributes by offering substantial acreage in extremely attractive locations, free and clear of any untoward impact on established neighbourhoods. Harbour City is seen as a quite rare and dramatic opportunity to develop a long-term program for a wide range of housing close to the jobs and facilities of the city centre, and in surroundings of unsurpassed potential.

For the coming generation, this Plan closes no doors. When necessary, the port can be further enlarged. Filling can go on to create new recreational areas and to extend the waterway in both directions. As other lakefront areas become ripe for redevelopment, they can be incorporated into new proposals for the waterfront.

Notwithstanding all that has been described above, it is true that much more might have been planned and recommended at this time. In the process of preparing the Plan, many proposals were considered and set aside, not because they were undesirable or unimaginative, but simply because they did not appear to be attainable, physically or financially, within a fore-

seeable time.

In the Committee's judgement, the proposals here put forward *can* be realized within a period which, if not precisely definable, is certainly within the next two to three decades, and within the financial resources available to the community during that time.

Before concluding this section, it must be acknowledged that the General Plan, and even the detailed Sector Plans which follow, are far from precise. Many uncertainties and unknowns remain. A general estimate of cost has not been stated, nor have a fixed set of priorities or a timetable of expenditures been set forth. Even the extent of possible filling remains undetermined until the suitability of all potential materials has been proven.

These loose ends will be disturbing to some, but the fact is that a Plan such as this is a guide and not a blueprint. Nor is it a one shot exercise, like the preparation of plans for a building. Implementation will entail countless tests, decisions, amendments and re-amendments over the next twenty to thirty years, and waterfront planning and replanning will be continuous during the process. Not only is it impossible to decide everything now, but there really is no need. If the basic concept is sound, and there is sufficient detail for a start to be made, the Plan can safely be permitted to get underway. As development proceeds, there will be enough people with knowledge and authority to do the right thing at the right time, and to accommodate the everchanging economic and social conditions of this dynamic Metropolitan area.

#### (b) Physical Design Considerations

During the course of preparing the Waterfront Plan, the widest possible latitude was given to those responsible for the detailed planning of the various sectors. It is very frankly hoped that this will be carried over into the design of individual facilities as development proceeds.

**A Big Dredging Proposition : :** The Eastern section, with the exception of the part lying east of Woodbine Avenue, will be filled to an elevation of eight feet above mean water level, and to do this work will require 27,000,000 cubic yards of material. This can all be secured from the bed of the inner harbor and from the bottom of the lake outside the sea wall. Two large hydraulic dredges will be employed in pumping this filling into the district as the wall is constructed. This will be the largest dredge work ever undertaken in Canada, and the dredges employed will be amongst the most powerful that the American Continent has so far known. The machinery will be of 2,000 H. P. of the latest improved type, and each dredge will be capable of digging either sand or clay from a depth of 50 feet, and pumping it for a distance of 4,000 feet through lines of pipe, from which it will be distributed to the area to be filled. The dredges will be of steel, of regular ocean-going steamship type, will be propelled by twin screws and will be controlled by steam steering gear.

The Industrial area proper will be north of a line drawn east and west and 1,000 feet back from the breakwater. This line will be marked by a street 66 feet in width, which will divide the Industrial District from the park area to the south. Immediately south of this street will be a tier of lots 100 feet in depth and extending for over three miles along the north face of the park area, which lots will be reserved as locations for summer homes. In front of the cottage reservations will be a park district and a bathing beach fronting on a lagoon patterned after the natural lagoons in the interior of the Island. This lagoon will be crossed by numerous foot bridges in order to give the public free access to the park lands, boulevard driveway and promenade, which will be constructed immediately behind the breakwater. The driveway will be fifty feet in width, and in addition there will be a bridle path, concrete walks and boulevard areas to make up a total width of 200 feet.

*from: the Waterfront Plan of 1912*



In order to assist in the design of new land forms, a number of physical factors are discussed in a Technical Supplement on Hydraulics (Appendix 'D'). These relate to wind, wave action, and silting problems and their effects on entrances to marinas, river mouths, the waterway and the circulation of water in the lagoons.

In addition, there are certain aesthetic considerations which will be in the minds of those responsible for the architecture and landscape design of the parks and redevelopment areas. Without attempting to prescribe to the specialists who will undertake that work, it will be useful to describe in broad terms the approach to design contemplated for the Waterfront Plan.

Perhaps the basic question is whether it would be appropriate to adopt a single distinctive style of building, park furniture, lighting, paving, fencing, signs etc. throughout the whole waterfront park system, to afford a kind of identity and continuity. The objective may be desirable, but great sensitivity will be required to ensure that the general impression created is one of harmony, rather than uniformity or monotony.

The need to avoid incompatible styles and confusion is obvious, especially, for example, in the signs marking the route of the scenic drive. On the other hand, the number of different designers who will be involved, the possibility that parts of the Plan may be implemented by different agencies, and changing methods of construction and public taste over the years, as well as different characteristics at various locations throughout the waterfront may combine to make complete unity throughout in the design of these man-made elements an unattainable ideal. The Waterfront Plan therefore does not insist on consistency, but emphasizes universal good taste, clarity, and the expression of function as basic aims in future detailed design.

The functional planning of the park areas will require judicious grouping of related uses in the detailed layout. Active recreational facilities should be grouped and placed in complementary relationship to passive

recreation areas in such a way that restful and quiet precincts are easily accessible from, but not exposed to the active areas.

The waterfront parks will be urban parks, and large numbers of cars are to be anticipated in many locations. Juxtaposition of vehicular areas and amenity areas is inevitable, and great care is required in the treatment. In deciding on the extent of penetration of driveways and car parks into recreation areas, a balance must be struck between convenience to users and the avoidance of vehicular-pedestrian conflict.

Throughout the preceding description of the General Plan, emphasis has been placed on the creation of viewing points where the combination of foreground and the distant view is most favourable. It must be remembered however, that the waterfront should offer more than a series of static pictorial views. The scenic drive, the walkways and the waterways will be kinetic links, and the design should induce moments of surprise and excitement, tranquillity and solitude. It should arouse contrasting feelings of enclosure and openness, repose and activity. The visitor traversing the grounds will thus be rewarded by a continuous visual experience which is always varied and ever engaging.

### c. Construction Methods

#### (i) Filling

The new land forms described in the General Plan are to be created by extensive dredging of the lake bottom, and by transporting large volumes of material to the lake for filling. The purpose of this section is to outline, in a general way, the basic methods of construction which will be employed. During the actual course of construction, continuing experimentation and refinement of techniques to suit particular local conditions are to be expected.

Construction methods will vary, depending in the first instance on the types of materials used as fill. In Appendix 'C', the suitability of various materials is

discussed in detail, and estimates of the quantities likely to become available over the next twenty years are set out.

In the Central Sector, the intention is to take advantage of the deep deposits of fine dense sand on the lake bed in shallow water. Land reclamation by dredging has a long history on Toronto's waterfront (see cut) and little elaboration is required here on a technique so well known and tested.

The economies of land reclamation diminish as the depth of fill increases. A balance must be maintained between the amount of material that can be economically dredged, and the quantities of fill necessary to create the new land masses planned. This Plan seeks to do no more at this stage than confirm that sufficient material is available and suggest approximate development costs.



*Land filling -- Port of Copenhagen*

The magnitude of the land reclamation proposed in the Central Sector is about the same as the reclamation carried out during the past 50 years, i.e. about 1700 acres. From extensive off-shore borings carried out over the years by the Toronto Harbour Commissioners, it is known that this is within the geological limitations of the fill supply. Using a modern large diameter suction

dredge, such large land areas can be created for approximately \$20,000/acre.

Although only preliminary borings and samplings were conducted in front of Scarborough Bluffs, these were sufficient to indicate that adequate quantities of suitable material are available for the limited extent of dredging proposed there. Much more survey work would be necessary before a plan for a massive land reclamation scheme could be prepared, based on a balance between the amount of excavation possible and the amount of material required.

No lake bottom deposits are available for dredging in the western sectors.

Considerable engineering study remains to be completed before the sequence of dredging in the Central Section can be established, and final cost estimates obtained. The objective will be to create protected water first, which will permit uninterrupted operations. If a continuous work program can be scheduled, the rate of production will be increased, and costs for the machine reduced. Further savings will be realized if construction areas can be connected to the mainland, and new bridges built in dry conditions before the new

channels they will span are flooded. A team of engineering specialists will be required for the detailed design and supervision of successive stages of construction as they are carried out over the years.

Like dredging, the use of clean fill to create new land in the lake is a well established practice, and requires no lengthy description. The Outer Harbour headland now under construction at the foot of Leslie Street is tangible evidence of what can be accomplished by this inexpensive method.

If fly ash or waste materials are used in any form as fill, they must be contained within secure dikes, properly placed and covered, with suitable provision for the collection and treatment of any leachants. Although not entirely new to the Toronto waterfront<sup>(3)</sup>, this practice is sufficiently uncommon that some discussion of the construction techniques required is perhaps warranted.

These materials constitute the largest potential source of fill and, if they can be used in conjunction with clean fill, the acreage which may be created during

(3) For example, some incinerated sewage sludge has been used behind dikes at the Main Sewage Treatment Plant.

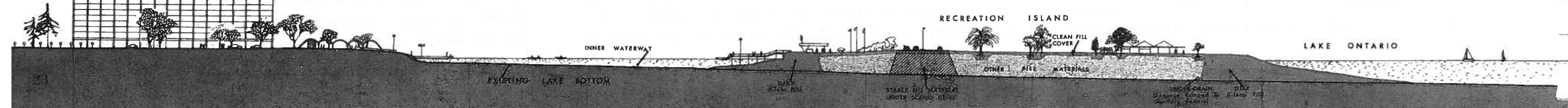
the period covered by this Plan will be expanded enormously. At the same time, any savings in the costs of disposal of such materials which may be realized from shorter haul distances to the lakefront can be applied against the costs of waterfront development.

Using the Etobicoke Sector as an example of where such materials might be used, a cross section has been prepared (Plate No. 11) to illustrate the methods which could be employed. Dikes must be constructed around the perimeter of the area to be filled with clean impervious material in order to minimize the infiltration from the lake, repel wave action during storms, and provide a roadway sufficiently wide to allow heavy construction equipment to operate.

The clean material should be placed behind the working face of the dike and pushed forward and downward near the face of the fill in order to create a slip behind the advancing saturated clay face. This method should tend to keep the moisture content of the fill below the saturation point, aid the compaction of the material, and reduce the rate of percolation through the dike.

APARTMENTS

CROSS SECTION SHOWING LAND FILLING PLATE No. 11





The top width of the material placed should be increased as the dike is projected into deeper water to provide space to operate the earth moving equipment, and provide the source of material for the natural build-up of a stable slope away from the shore by wave action. The outer face of the dike may be expected to stabilize at a slope of about 15:1 or 20:1. This foreshore slope and the rate of littoral drift along the shore will depend to a great degree upon the orientation of the shore line, and the size of the veneer material deposited in the shallow water by the erosion of the lighter materials in the dike or the placement of sand and gravel on the beach.

It is essential that the lake bottom be tested along the line of the dikes to establish the location of sand bars or sand seams prior to construction. Failure to remove sand bars under the dikes could cause heavy infiltration through the sand layer during the dewatering period, and this may undermine the dike and cause its failure. Shore line protection will be required both temporarily and permanently to prevent erosion. Heavy construction debris may be used for temporary protection during the construction period and a more detailed dis-

cussion of permanent protection is contained later in this report.

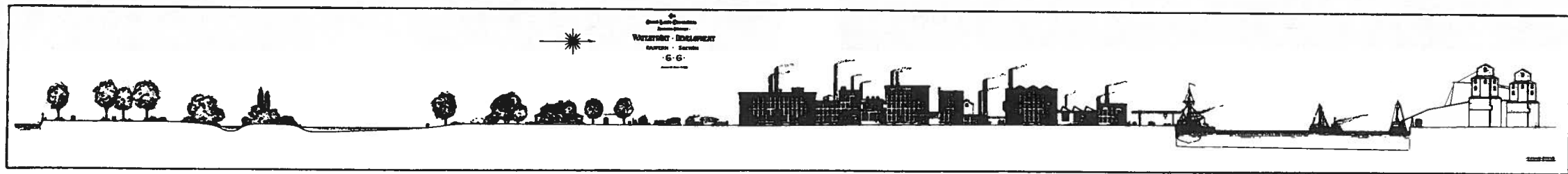
Upon completion of each dike, the enclosed area should be dewatered with large construction pumps discharging directly to the lake. It is anticipated that hydro power will be available for general use during the construction period and electrically driven pumps will be used for dewatering. It is believed that precipitation will far exceed seepage through the dikes during the period the area is dewatered, requiring the presence of pumps at all times during the filling operations.

The land fill operation behind the dike should be planned and controlled to a very high degree as outlined in the "Recommended Standards for Sanitary Land Fill Operations" published by the U.S. Public Health Service. The type of material accepted for placement in the project must be carefully controlled, since all the leachant must be collected and treated in some fashion. A regular testing program should be maintained on the leachant as a control measure and as a guide to treatment methods.

An underdrainage system must be installed in conjunction with the land fill operation to collect the leachant and maintain a water table approximately two feet below the prevailing lake level after fill completion. This negative hydraulic gradient will prevent any leachant percolating to the lake. A subdrain system of non-corrosive perforated pipe can be drained to a permanent pumping station which may also provide sanitary sewage pumping for buildings located in the recreation areas.

Waste materials should have a six inch daily cover, perhaps comprised of three inches of hydro ash covered by three inches of clean fill. By maintaining the daily cover close to the operating face, problems created by seagulls, wind, etc. can be minimized. Recreational areas underlaid by waste materials will have at least a three foot final cover of clean fill with greater depths where required for planting trees.

Hydro ash, used as a foundation for commercial and residential areas, park buildings, and roads should have a three inch daily cover of clean fill to prevent wind erosion of finer particles, and a final cover of two feet



THIS SHOWS A TYPICAL CROSS SECTION OF THE DEVELOPMENT PLANNED FOR THE EASTERN SECTION

FROM LEFT TO RIGHT, THE PLAN SHOWS PARK AND LAGOON TREATMENT, SUMMER COTTAGE RESERVATIONS AND INDUSTRIAL DEVELOPMENT TO THE FOUR HUNDRED FOOT CHANNEL

*from: the Waterfront Plan of 1912*



*Left* Timber groynes have been successfully employed to build a beach in front of the Toronto Hunt Club. Vegetation quickly consolidates on the stabilized slope.



*Right* Private attempts to stop erosion of the Bluffs by dumping from the rim are usually futile.



of clean fill. Sewage sludge may be blended with clean fill final cover to facilitate plant growth.

By careful grading inside the diked areas, much of the surface run-off may be handled separately without being contaminated and may be discharged directly into the lake.

Watermains should be constructed from the municipal systems to the fill site for a potable water and fire protection supply. These systems should be adequate to supply any new residential areas or recreational facilities when developed. Individual irrigation systems for the parks will probably be required, but these will be separate systems drawing directly from the lake or waterways.

### (ii) Shore Protection

Many types of shore protection works will be used in the 50 mile stretch of lake frontage within the Study Area. Although the main types are described here, it is acknowledged that other types are available. In most cases, it is to be expected that detailed engineering studies involving the use of hydraulic models will test a number of techniques, so that the most economical among acceptable alternatives will be used. Appendix 'D' (Technical Supplement on Hydraulics) contains much information which will be useful in this field.

Beaches will be by far the most widely used form of shore protection along the waterfront. Not only are they the most economical, they are the most aesthetic, and have a recreational function as well. Experience has shown that stable beaches can be created and maintained by simulating nature's methods of beach building. The shoreline will erode until a beach slope consistent with grain size has been established. Coarse sands and gravels will be stable at steeper slopes than finer sands. Studies have shown that sand particles making up beach material will remain in the shallow water and on the beach if the grain size is coarser than 100 mesh, while finer sands, silts and clays will move to deeper water.

Where there is a littoral drift along the foreshore, the beach sands will be moved away. The shore itself will then be exposed to direct attack by waves and erosion will continue. In order to achieve stability, the lateral movement of beach sand must be arrested by armoured promontories, timber groynes or other impediments.

Between the anchoring promontories, beaches naturally form areas contained by 15° angles at the centre of curvature. Thus it is possible to have short promontories close together with pronounced curved beaches, or long promontories far apart with flat curvatures to the beaches. Short promontories far apart would result in unstable beaches. The orientation of the beaches between the promontories will change with the direction of storms.

In the Toronto area, it is well known that the littoral drift is from east to west. Strangely, however, there is a wide misconception that the littoral drift is caused by counter currents from the Niagara River. Littoral drift is the net resultant from the movement of beach sand primarily due to wave action. Generally speaking, the bottom sand is moved only where the depth of water is less than 1-½ times the height of the waves. It follows that one severe storm will move much more material than several minor storms.

The longest fetch (i.e. the distance over which waves build up) is from the east in the Toronto area, hence the largest waves come from that direction. The wave action sets up the along shore current that carries the sand particles put in suspension by the wave agitation.

The erosion of shorelines is greatly accelerated when lake levels are high. In creating new beaches and other shore protection works, allowance must be made for fluctuations in Lake Ontario levels. These vary by about 4 feet over a period of a few years, and about 2 feet seasonally. Hourly oscillations from 2'-6" and even up to a foot, are caused by wind build up and differences in atmosphere pressure on the surface of the

lake. These create local currents which assist water circulation in Toronto Bay and the lagoons and waterways.

Around harbour entrances, waterways and marinas, breakwaters and other forms of protection will be required. It has been suggested that an old ship might be sunk to protect the new Outer Harbour entrance from the west. In the Etobicoke Sector, for example, multiple unit, precast concrete cribs, floated into position, earth filled and concrete capped are proposed for offshore breakwaters at the two marinas. The two major breakwaters are approximately 2400 feet long, in water depths varying from 22 to 33 feet, and may be subjected to 10 foot waves. During a storm, waves will top these break walls, but the wave energy should be dissipated by the walls so that only a surge will develop in the marinas and waterways. The entrances to the two waterways have been oriented to face the east so that advantage may be taken of the frequent storms from that direction. The current produced by waves topping the walls should produce a flushing action in the waterways and marinas. The volume of water required to create a cleansing current in the waterways may be produced by lowering a section of the wall in a desirable location to permit a predetermined volume of water to enter the waterway for a specific wave action. From an examination of the meteorological reports, it appears that storms of sufficient magnitude to top the walls may occur as often as once a week.

Scale model hydraulic studies are recommended to observe the effects of energy dissipation, refraction, diffraction and the future effects on shore lines and marinas.

In protected areas such as marinas, and along waterway banks beyond areas of major wave dissipation, steel bin walls may be employed. A flat plate, 5 to 6 feet in height is recommended for the face of such bin walls, to prevent lifting by ice action which is considered probable in such protected waters. These bin walls will serve as retaining walls along the banks.

Floating docks anchored on piles may be constructed adjacent to the bin wall face in the marinas.

Other types of shore protection which may be used are steel piling with tiebacks, and rock rip-rap. The attraction of rip-rap for algae growth may curtail the use of this method in certain areas. Sheet steel walls are frequently used for areas subjected to continuous currents and wave action such as along the Etobicoke and Humber River channels and for such critical sections as bridge approaches.

In areas where the shore line may be subjected to severe erosion, rip-rap may be placed in trenches at the desired shore line permitting the dike material to erode on the lakeward side to produce a slope of approximately 15:1, with the resultant shore line corresponding to the line of rip-rap protection. Sheet steel piling and steel bin walls should be driven and erected in the dry on the dikes and the material in front removed to the face of the structure.

The precast concrete cribs may be constructed by a mass production process, possibly on a rail line connected to a floating dry dock, from which the units could be floated into position and sunk. With a realistic working season of 5 months for the actual erection, it would, for example, require 2 years to fabricate and erect each of the two major breakwaters planned in the Etobicoke Sector. These should be staged so as to achieve maximum benefit from their protection to in-shore dikes, thus economizing on the clean fill required. The wall should have a concrete cap of variable thickness to compensate for differential settlement. Additional soil information would be required along the line of the breakwater to determine bedding requirements and the degree of settlement to be anticipated. It is suggested that handrails be attached to breakwaters as a safety precaution for individuals fishing from the wall.



#### 4. THE SECTOR PLANS

##### (a) Purpose of the Sector Plans

At the small scale required, the General Plan can only show the proposals for the waterfront in outline, and the accompanying text is necessarily abbreviated in its content. It has already been described in the introductory pages how and why the waterfront was divided into sectors for the purposes of detailed study and planning. The seven sectors and the agencies responsible were:

The Central Sector	Toronto Harbour Commissioners in consultation with Metropolitan Parks Department
The Western Beaches	Toronto City Planning Board
Etobicoke	Proctor, Redfern, Bousfield & Bacon
Mississauga	Metropolitan Toronto Planning Board
The Eastern Beaches	Toronto City Planning Board
Scarborough	Proctor, Redfern, Bousfield & Bacon
Pickering	Metropolitan Toronto Planning Board

In the following subsections, and in the above order, the plans for each sector are presented on a larger scale, and all proposals are discussed in greater detail. The factors which shaped each plan are explained and the manner and sequence of development are described.

Although every effort was made to be as complete and specific as possible, it will be evident that the degree to which this could be accomplished was somewhat uneven throughout the sectors. The opportunities to be specific were greatest, of course, where new

recreational areas were the main proposals. In the Central Sector, however, where the ingredients were much more diverse and the factors involved less predictable, rather less precision was possible.

The Waterfront Plan is concerned not only with the use of the lake and the shore, but also with the provision of suitable access and the impact of its proposals on adjacent areas. Accordingly, all of the Sector Plans extend inland to include the main arterial streets affording primary access and to encompass any areas likely to experience direct effects from waterfront development.

##### b. Central Sector

The Plan for the Central Sector covers the area south of the F.G. Gardiner Expressway between the west limit of the Canadian National Exhibition Grounds and Ashbridge's Bay. It includes the Port, the Airport, the Harbour Industrial Area, the Island Park and the C.N.E. It is by far the most complex of the sectors, and its objectives are necessarily the most diverse. It is presently the area of greatest development activity on the waterfront. Only by the simultaneous consideration of all of the features within this Sector could a cohesive plan be prepared which would satisfy the community's requirements in each area.

##### (i) Existing Conditions and Problems

The 1912 Plan for the City's waterfront set aside the Islands as parkland, and designated the north and east shores of Toronto Bay for port purposes. The old Ashbridge's Bay was filled for industrial development, while the shoreline from the Eastern Channel to Coatsworth Cut was reserved for long term port requirements. In 1937, when downtown air transportation facilities became a community requirement, the Island Airport was built.

As has been noted, the 1912 Plan has now been virtually fulfilled, and the development presently taking place in many sections of the central area lacks overall

design and co-ordination based on long term needs and objectives.

Toronto is a commercial city of very diversified light industry, and its harbour reflects that character. There are only a few industries in the Port that are oriented to manufacturing of bulk cargo. The largest single industry in terms of cargo consumption is the R.L. Hearn Generating Station which uses about one million tons of coal per year. Three elevators process grain and one company refines sugar. Domestic bulk cargo is handled by private enterprise, while the international overseas trade in general cargo is handled through marine terminals owned and operated by The Toronto Harbour Commissioners. The area served by the Port of Toronto lies primarily within a one hundred mile radius and because of the short haul, trucking provides the main mode of transportation to and from the harbour area.

Appendix 'G' lists the main cargoes transhipped through the Port, the countries doing trade with Toronto, and shows the rate of increase in the tonnage handled. It is obvious that it will not be possible to accommodate future growth within the present confines of the Inner Harbour, even with the Commissioners' active consolidation policies. There is a long standing agreement with the City that harbour expansion will take place between the Eastern Entrance and Coatsworth Cut, and this policy fits well with the overall development of the City and the Port.

When the Port was planned for redevelopment in 1912, ships were limited in size to 250 feet of length, with 14 feet draft. It is fortunate that early harbour planners had the foresight to design for the larger vessels that arrived with the opening of the Welland Canal in 1934 for inland ships, and with the opening of the St. Lawrence Seaway for overseas ships in 1959. It is likely that the size of ships will again be increased with the enlarging of the Welland Canal, and this may be followed later by an enlargement of the St. Lawrence Seaway.

The new harbour design must be capable of adjustment to meet these changing conditions. Just as the pattern of port design of fifty years ago is no longer appropriate to meet modern cargo handling requirements, it would be presumptuous to set a pattern that would be binding on future port development. Therefore, the philosophy of development of the Outer Harbour is to create an area into which the Port can grow allowing the pattern of docks and wharves to change as the size of ships and the methods of cargo handling change with time.

Both the design of ships and the method of cargo handling are currently undergoing a revolution. Ships of 500,000 tons are now being designed for world trade in the petroleum industry. Bulk carriers are undergoing massive increases in size. General cargo ships and handling methods are faced with a similar degree of change and domestic lake carriers will undoubtedly be affected as well. The effects of these technological advances will result in dramatic changes to shipping patterns and practices throughout the world, and will probably concentrate greater trade into fewer ports.

The Great Lakes ports will inevitably experience the impact of these changes. However, it is not possible to predict with any accuracy what the effects might be, or to establish exactly what facilities should be provided for the long range requirements of a port. As an example of the change in port design requirements, consider one general cargo handling method that is already having an impact--containerization. Some experts predict that 60% of all general cargo will move by containers by the year 1980, while others believe that the main trend will be to unitized cargo. Only time will prove the accuracy of these predictions. In the meantime, the port engineer is faced with decisions of port development greatly affected by the impending changes. For example, the facilities for full container ships can handle four times as much cargo over a single berth as a conventional general cargo berth, but the backup land behind that berth must be four times as great. As the future extent of containerized cargo is presently

unknown, the ratio of ships' berths to land mass in the port is also unknown, and thus the pattern of the future port cannot now be set out in all its details.

From the above commentary, it will be apparent that while future port growth can be predicted, future port design must be left flexible to meet changing requirements.

West of Yonge Street, the Inner Harbour is underused. The existing dock properties are now unsuitable for modern shipping, and the shallow depth to rock discourages deepening of the slips. With the principal exception of the two grain industries, many of the present uses are not particularly commensurate with the waterfront location. With the demise of the Toronto Maple Leafs Baseball Club and the transfer of the International League franchise, the Stadium has lost its major tenant. The prospects for major league baseball appear to be contingent on the provision of a new, all weather stadium, which would have to be located where better access and more spacious parking could be provided. It has long been apparent that new uses should be considered for the area, but the first of these, the Marvo Project at the foot of Bay Street, would, under present conditions, stand in isolation from compatible and complementary uses.

The airport is now used by business and private aircraft and a flying school. The float plane base is used by the Department of Lands and Forests and has always been important to the close business and recreational ties between Toronto and the northland. The convenience of the near downtown location has never been fully realized because of the restricted access which is by ferry across the Western Channel. Although a number of tunnel schemes have been proposed (and work on one of them actually commenced), the estimated costs have always been so high that implementation has been deferred. At 4,000 feet, the present runways are too short for many new types of aircraft, and they cannot be lengthened without serious disruption to shipping in the harbour and the imposition

of undesirable height limitations on buildings in the near downtown.

In view of the rapid changes which characterize air transportation, it is not possible to assess the future potential for the airport. It might become useful for inter-city air bus passenger service, or for inter-airport helicopter service. It may ultimately accommodate STOL (short take-off and landing) or even VTOL (vertical take-off and landing) passenger or express freight aircraft. This much at least seems clear. As the importance of air travel inevitably increases, a downtown airport will be necessary and desirable for the community. The present airport cannot fulfil that requirement in a satisfactory way. There is much to be gained in seizing the opportunity to provide new facilities equal to future demands, and seemingly little to lose. If despite all current indicators, a downtown airport has no place in the ultimate air transportation picture, the land can always be converted to other uses.

The Metropolitan Parks Department is developing the Island Park into a recreation area which is in many ways unique. Interlaced with lagoons and waterways, accessible to the protected bay and the open lake, close to the downtown yet free from vehicular traffic, the Toronto Islands comprise one of the distinctive waterfront parks on the continent. However, the limited transportation facilities and lack of car parking space pose significant problems for the full use and enjoyment of the Park. Previous attempts to provide land transportation have been defeated by the formidable barrier of the Western Channel and the Island Airport on the west, and the long approaches through industrial districts over lift bridges on the east.

The revitalization contemplated for the Canadian National Exhibition will entail quantitative, as well as qualitative, changes. The former will require more space. Some additional land was created south of Lakeshore Boulevard using excavated material from the University Avenue subway, and further extensions into the lake appear to offer the most economical avenues for future growth.



## (ii) Objectives .

Having in mind the problems and limitations described above, the specific objectives established for the Central Sector Plan were the following:

- to provide for the efficient and economical growth of the Port.
- to create a new downtown airport that will serve the business community and the Metropolitan Area in a convenient way, and without prejudice to the building development in the central business district.
- to promote the continued improvement of the Harbour Industrial Area.
- to provide for the redevelopment of the western inner harbour and existing airport lands for uses compatible with the near downtown and waterfront location.
- to improve access to the Island Park.
- to create space for the expansion of the Canadian National Exhibition.
- to increase public access to the harbour and downtown waterfront.
- to achieve these objectives on a financially sound basis, and in such a way that maximum flexibility in detailed design remains within a cohesive development concept.

Plate No. 12A shows the Plan prepared to meet these demanding and diverse objectives.

## (iii) The Outer Harbour

For many years The Toronto Harbour Commissioners have been aware of the eventual need to provide for expansion of the Port into the lake between the Eastern Channel and Coatsworth Cut. The rate of growth of the Port indicated that the Outer Harbour would be required by about 1970. In 1965 the Commissioners were faced with the proposition of building a massive breakwater at a cost of about twenty million dollars. It would not have been possible to recover such a cost from port

charges, and so, by experimenting in methods of shore stabilization, a much more economical method of constructing a breakwater in the lake was found.

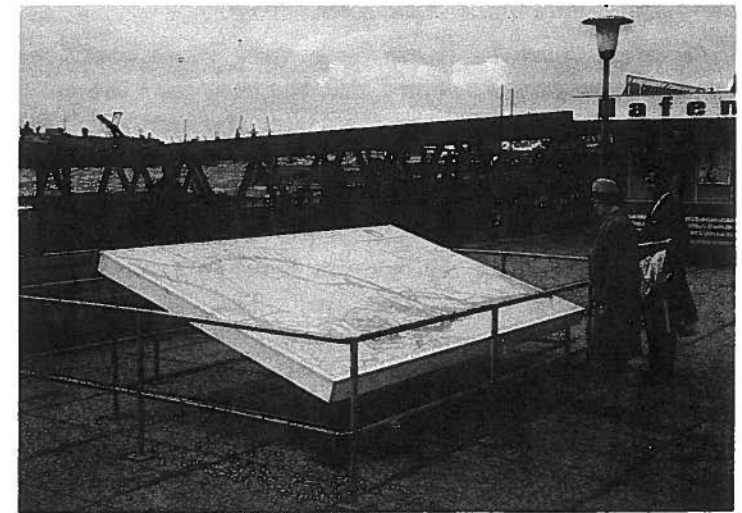
To provide for the growth of the Port in the flexible manner required, the Toronto Harbour Commissioners are currently embarked on the creation of a headland from the foot of Leslie Street which, when completed in 1970, will enclose a new basin that will be about two thirds the size of Toronto Bay. This area will be capable of supporting facilities that could double the capacity of the present Port.

The method employed takes advantage of the unique opportunity of constructing the protective breakwater by the use of construction excavated material from the downtown building boom. About one million cubic yards of material a year are being placed to form the headland. A typical day will have 500 trucks dumping fill to form a peninsular about 200 feet wide that now extends 1½ miles from the original shoreline at the foot of Leslie Street. Ultimately the Headland will extend to a point two thirds of a mile south of the Eastern Channel.

In this way, a breakwater is being constructed at a rate of about ten feet per day for less than one million dollars which is five percent of the cost of the conventional rubble mound breakwater originally contemplated. The Headland provides a useful land area and is flexible to future change. Much of the economy for the breakwater construction has been the method adopted for resistance to erosion by wave action. The technique Simulates nature in that fill material is allowed to be shifted by wave action until beaches are formed. Rubble from building demolition is used to form long stable points of land that act as anchors for the water segregated sand beaches, all as more fully described in Appendix 'C'. This system of shore stabilization has withstood severe winter storms.

The Eastern Channel served a useful purpose while 250 ft. ships were in common use, but since the opening of the St. Lawrence Seaway to larger ships, it has been

little used. The Eastern Channel was never considered as the main entrance to the Harbour because of the annual dredging of about forty thousand cubic yards of silt which was necessary to maintain the depth of the channel for 14 ft. draft vessels. The partial construction of the Outer Harbour Headland has already eliminated the silting by intercepting the littoral drift from the east, and the eastern approach can now be made the main entrance to the Inner Harbour.



Location map - Port of Hamburg

With the completion of the Outer Harbour, the present Eastern Channel will become a connecting channel between the Inner and Outer Harbours. Nearly all commercial shipping will use the new Eastern Entrance by choice when Seaway depth is available as this route is shorter for most destinations. Silting of the proposed new harbour entrance can be eliminated by extending the beach anchoring points to trap the littoral drift.

In order to protect the Outer Harbour from the southwest storms, a breakwater west of the new Eastern Entrance is required. Plate No.12A illustrates how this can be integrated into the development of a new Airport. When the headland and breakwater enclosing the Outer Harbour have been completed, new Port facilities can then expand through the present Eastern Channel into

the Outer Harbour at a rate consistent with the growth in shipping.

It is contemplated that the next development of overseas general cargo facilities will take place adjacent to the present Eastern Channel in the form of a marine terminal complex encompassing the most recently completed Marine Terminal 51. The actual design for the development of the Outer Harbour can be delayed until a more indicative trend in requirements emerges from the current revolution of cargo handling.

If the Richard L. Hearn Generating Plant continues in operation, it is expected that the heat from the cooling water discharged into the Outer Harbour will keep it ice free in winter.

Neither the future port nor the Main Sewage Treatment Plant requirements are sufficiently well known to establish a design for the section between Leslie Street and Coatsworth Cut at this time. The Central Sector Plan therefore leaves the design and disposition of lands in this area in abeyance until a pattern of requirement emerges. In the meantime, the interim proposals at Ashbridge's Bay put forward in the Eastern Beaches Sector Plan can proceed in the secure knowledge that they can be integrated into any later development scheme.

It may take more than twenty years to totally convert the Outer Harbour to Port purposes. It is expected that when fully developed, the Outer Harbour will have a capacity equal to that of the present Port.

Further basins for longer range Port development can be created by filling similar to the present headland construction. The water would be approximately forty feet deep and construction would be somewhat slower. Until such basins are required for Port development, they could be used for recreational boating purposes. The first new basin could be formed by hooking a new headland to the east from the present headland, but this could only be undertaken after the outfall from the Main Sewage Treatment Plant had been extended.

#### (iv) The Airport

The plan proposes that the Island Airport be relocated off Gibraltar Point. In order to maintain adequate clearance above shipping using the new Outer Harbour entrance, the new main runway must commence some 6,000 feet to the west. Beyond Gibraltar Point, water depth increases so sharply that filling becomes uneconomical. Between these two limitations, a 7000' length of runway can be constructed, adequate to accommodate 90 passenger inter-city jet aircraft of the DC-9 type. The alignment shown takes cognizance of the prevailing wind directions, and the air traffic pattern which would result is known to be compatible with the pattern for Toronto International Airport at Malton. A second 4,000 foot runway is planned for the convenience of light aircraft which are more susceptible to crosswinds.

A long spit of land is proposed extending from the east end of the main runway toward the Outer Harbour entrance. This will enclose a large body of water suitable for a new float plane base and will provide protection for the dredge used in further land reclamation. Approach lights to the runway and an instrument landing system can be located on the spit.

Although the terminal facilities cannot be fully predicted at this time, the Plan provides ample space for any requirements. Access will be via a bridge over the relocated Western Channel. With the Eastern Channel serving as the primary entrance to the Inner Harbour, the Western Channel will be used mainly by pleasure craft, and only in emergency or other special circumstances by large vessels. The new bridge is proposed as a lift type, with a 45-50 foot clearance. This will be adequate for all but the few largest sailboats presently using the Bay. It is expected that passage by larger vessels will be so infrequent that the bridge will only be opened after prior arrangement with the Harbour Master, who will dispatch a man to operate the lift. With the prospect of virtually uninterrupted access, convenient connections to the Airport will be assured

without recourse to an expensive tunnel.

#### (v) Inner Harbour

It is expected that the easterly half of Toronto Harbour will retain its present character for a considerable period of time, while the westerly portion of the Harbour will undergo radical changes.

From Yonge Street to Parliament Street, modern port facilities have been created that are aesthetically and functionally compatible with adjacent development in the city. New modern design marine terminals have also been constructed on the east side of the Bay, thus setting the pattern of development in that area.

An intensive industrial area has been developed on the filled lands of the original Ashbridge's Bay. For a number of years the Toronto Harbour Commissioners have pursued a policy of upgrading the standard of industries in this area to create an environment more compatible with the highly commercial character of Toronto's downtown area. This policy dovetails well with the general objective of the Waterfront Plan to include this area as a part of the lakefront drive system. There are industries essential to the community that require large stockpiles of unattractive looking cargo. The policy is to encourage the concentration of such industries along the Ship Channel and create a surrounding buffer zone of light port-oriented industries. In this way, the traffic in the Ship Channel will be primarily large bulk carriers. The large tonnage from a small number of ships will tend to reduce the conflict with vehicular traffic on the Cherry Street bascule bridge.

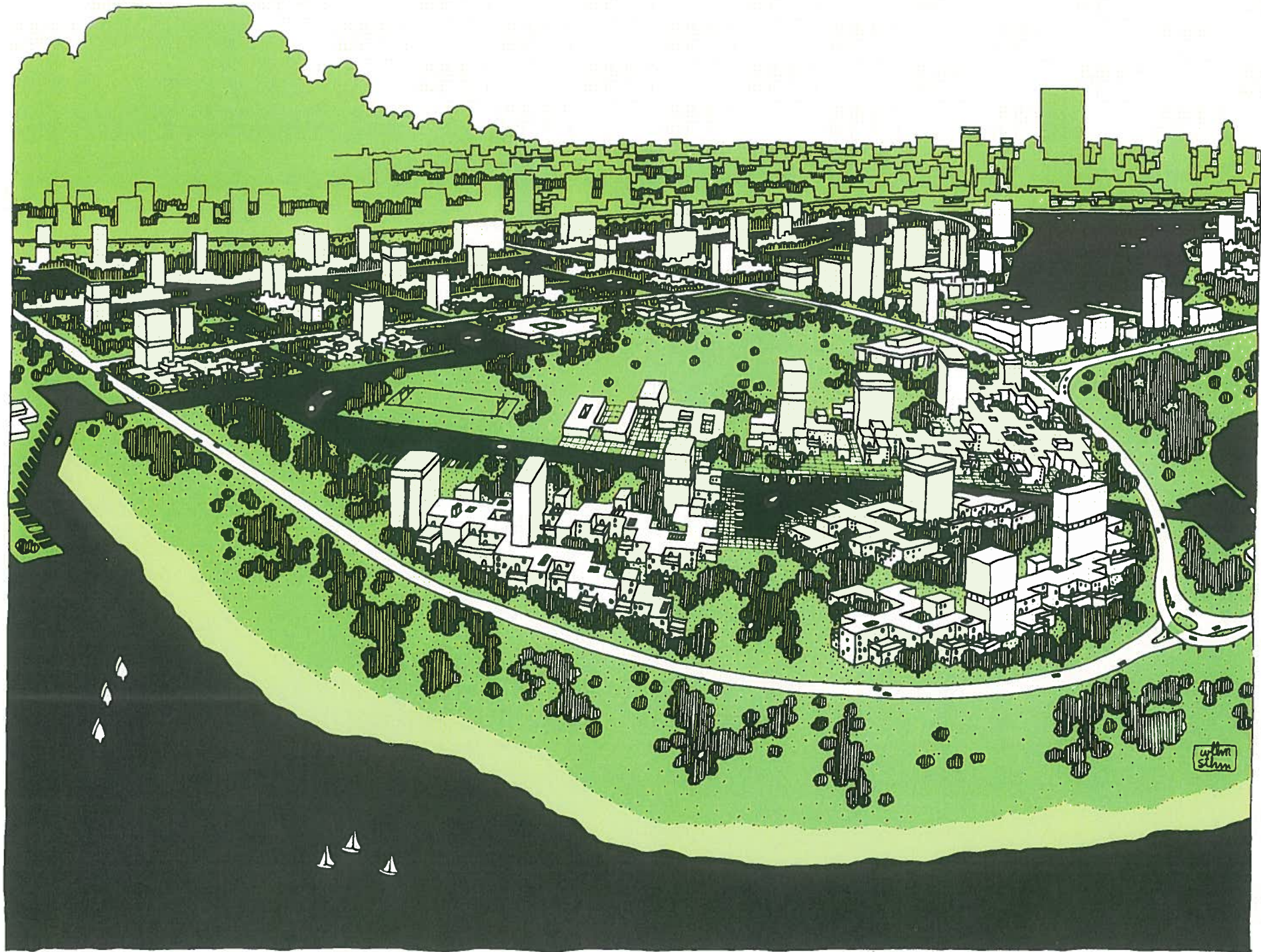
#### (vi) Redevelopment in the Western Inner Harbour

The pattern of redevelopment in the very centre of the City's waterfront has been established with the approval of the Marvo Project, a mixed commercial-residential complex overlooking the Harbour at the foot of Bay Street. The Toronto Harbour Commissioners originally intended to build a marine terminal to handle general overseas cargo as a part of that complex in the location of the present Island Ferry Docks. Because









HARBOUR CITY

PLATE N° 12B



financing problems delayed the Marvo scheme, it was necessary for the Commissioners to build Marine Terminal 51 (at the Eastern Channel) instead. The accompanying photo shows an artist's impression of a building complex which could be built in place of the marine terminal. More public open space is provided than was contemplated on top of the terminal, and space would be available for many public water-oriented functions such as Customs' small boat examination areas and offices for government agencies requiring a harbourfront location.

With the rapid development of the Outer Harbour, the removal of the Island Airport, and the relocation of the Western Channel, it is now apparent that not only the central core, but the whole of the western Inner Harbour can be converted to more intensive uses which are compatible with the near-downtown location and which may be more complementary to the redevelopment proposals which emerge for the C.N.-C.P. sorting yards. Only rarely does a city find an opportunity so close to its central business district to redevelop on the large and dramatic scale as that which is possible in the Western Inner Harbour. The Central Sector Plan seeks to exploit the immense potential to the very full.

It is proposed that a new 'Harbour City' be created on the present Island Airport site after it has been greatly expanded by filling, and by utilizing all of the existing shoreline from the Maple Leaf Stadium site to and including the Marvo Project. The new residential complex would have a potential population in the order of 50,000 people, equivalent to about 7% of the City's present population. A variety of housing types including low and high rise apartments, maisonettes and town houses are envisioned to accommodate a wide range of income levels and household sizes. The community will be large enough to support a full complement of community amenities including elementary and secondary schools, churches, and recreational facilities, together with shopping, entertainment and business services grouped in a central core. The unique

environment may be expected to encourage specialty shops, trades, restaurants etc. of all kinds.

The complete plan for Harbour City in all details will require lengthy and intensive work. An international competition may be called for the design. Plate No. 12B illustrates the overall concept, and only the main elements which should be included are suggested here.

The principal aim should be to take advantage of the waterfront setting by creating a network of small channels throughout the whole complex. The main waterway, which is one of the general objectives of the Waterfront Plan, should be continued along the present shoreline. By so doing, expensive extensions to existing storm drainage outfalls will be avoided. The system of small canals opening into lagoons and basins will greatly increase the cruising opportunities for small pleasure craft and will surely attract sight-seeing boats, and visitors from afar. Harbour City residents will be able to keep their own boats close by, some under buildings erected on stilts over the water. The layout of the channels and land forms should preserve the vista from the Harbour City centre across the water to the downtown skyline.

The Plan indicates how the senior schools could share a central Campus where playing fields, gymnasias, an auditorium, library etc. could be located. Being close to the new city centre, these facilities would be at the place of maximum convenience for all the residents. Primary school grades would be located within smaller residential clusters.

Bridges across the waterways will be low level and fixed, thus simplifying internal circulation and connections to the mainland. The waterway bridges will make possible a completely separated pedestrian system. Covered walkways will enhance all year comfort and convenience, and the waterways may be able to be used as lighted skating trails in winter.

Surrounding the perimeter, a complete ring of open space is proposed to afford unimpeded public access to

the water. Ample space will be available there for all recreational facilities, including a major swimming pool and beach to serve not only the adjacent population but visitors from the whole Metropolitan Area as well. All of the facilities of the Island Park will be closely at hand for the Harbour City residents.

Although the area of Toronto Bay will be diminished by the filling proposed, the acreage of protected water will be increased manyfold by all the proposals in the Central Sector Plan.

The only apparent design limitation will be height restrictions on buildings in relation to the new airport. At this writing, a 150 foot height limitation (about 17 stories) is anticipated. The designs for buildings close to the airport will have to take into account the results of noise level studies from aircraft on take-off.

In its total concept, Harbour City offers an opportunity to create a new and distinctive environment, one that will achieve world wide recognition and acclaim. Every effort must be directed toward making it a show-place for all that is desirable in urban living.

#### (vii) Island Park

The General Plan conceives three major park areas in the central sections, each with a different primary purpose. At the west end, the Canadian National Exhibition grounds are earmarked for exposition and show purposes. The Eastern Beaches area offers potential for a giant complex for spectator sports. In between, the Island Park continues as the central waterfront recreation area for the citizens of Metropolitan Toronto. It is by spreading these different functions along the shore that a balance is achieved, conflicts are circumvented, and intolerable burdens on transportation and other services are avoided.

In the Central Sector Plan, the Island Park remains a sanctuary from the automobile, and provision is made for further growth and development in keeping with its unique and well loved character. By relocating the air-

port south of Gibraltar Point, and relegating the Western Channel to a secondary harbour entrance, land transportation links can be brought close to the Island Park. Large parking areas can be established along what is now the south side of Long Pond, but a new channel east of the Island Filtration Plant will preserve the park as a pedestrian precinct. Footbridges for pedestrians or for an inter-island transportation facility will link the car parks to Centre Island.

The present major deterrent to full use of the Islands will thus be eliminated. The land transportation connection (and the proximity of the Harbour City population) will encourage the use of the park throughout all seasons of the year. It is not anticipated that the ferries will disappear. The ride across the Bay is a part of the Island experience which can and should be preserved.



*Improved access will supplement the ferry service to the Island*

In keeping with the long standing policy of the Metropolitan Council, the Plan proposes the use of the whole of the Islands for recreational purposes. A major swimming pool is proposed east of the Avenue of the Islands adjacent to the protected beach along the south shore. The Plan also indicates how the park and lagoon system can be extended by expanding Olympic, Ward's, Algonquin, and other islands. These additions, together with the new parklands surrounding Harbour City will far more than offset the conversion of parts of the Gibraltar and Hanlan's Point areas to other uses.

#### **(viii) Exhibition Park**

The need to revitalize the Canadian National Exhibition is generally recognized. A number of proposals and schemes, including a permanent pleasure garden along the lines of Copenhagen's Tivoli, have been put forward dealing with all or parts of Exhibition Park. To provide space for the physical changes which will undoubtedly be required, the concept contemplates expansion into the lake to create new land with direct access to beaches along the shore. By cutting waterways throughout the area, the interest of the site for exhibition purposes would be greatly enhanced. Provision could be made to accommodate the destroyer "Haida" and any visiting naval craft.

Filling in front of the Exhibition would necessitate the relocation of the yacht clubs on Stadium Road. A much preferable location is shown in the new Western Entrance basin. The present Western Channel is very hazardous for small craft during strong south west winds.

#### **(ix) Access**

The F.G. Gardiner Expressway and Lakeshore Road provide the main east-west arterial access to the Central Sector. In order to serve the new facilities proposed, additional north-south arteries are required. Plate No. 12A indicates how Strachan, Bathurst, Spadina and York Streets are to be extended southerly to serve Harbour

City, the new airport and Island Park. A separate right-of-way for public transit is also envisaged connecting these three areas to the downtown.

Mention has already been made of the industrial area development policies of the Toronto Harbour Commissioners which will reduce the interruptions to vehicular traffic crossing the Cherry Street bridges. In time, the build up of traffic from the Outer Harbour may require improvements to the Leslie Street interchange on the Gardiner Expressway, and space should be reserved for this purpose. Ultimately, an additional access to the port via an extension to Coxwell Avenue may be necessary.

The roads through and around Harbour City will add many miles and great visual excitement to the scenic drive system. The loop through the industrial area via Cherry and Leslie Streets past the marine terminals and Outer Harbour will afford variety and interest to the drive.

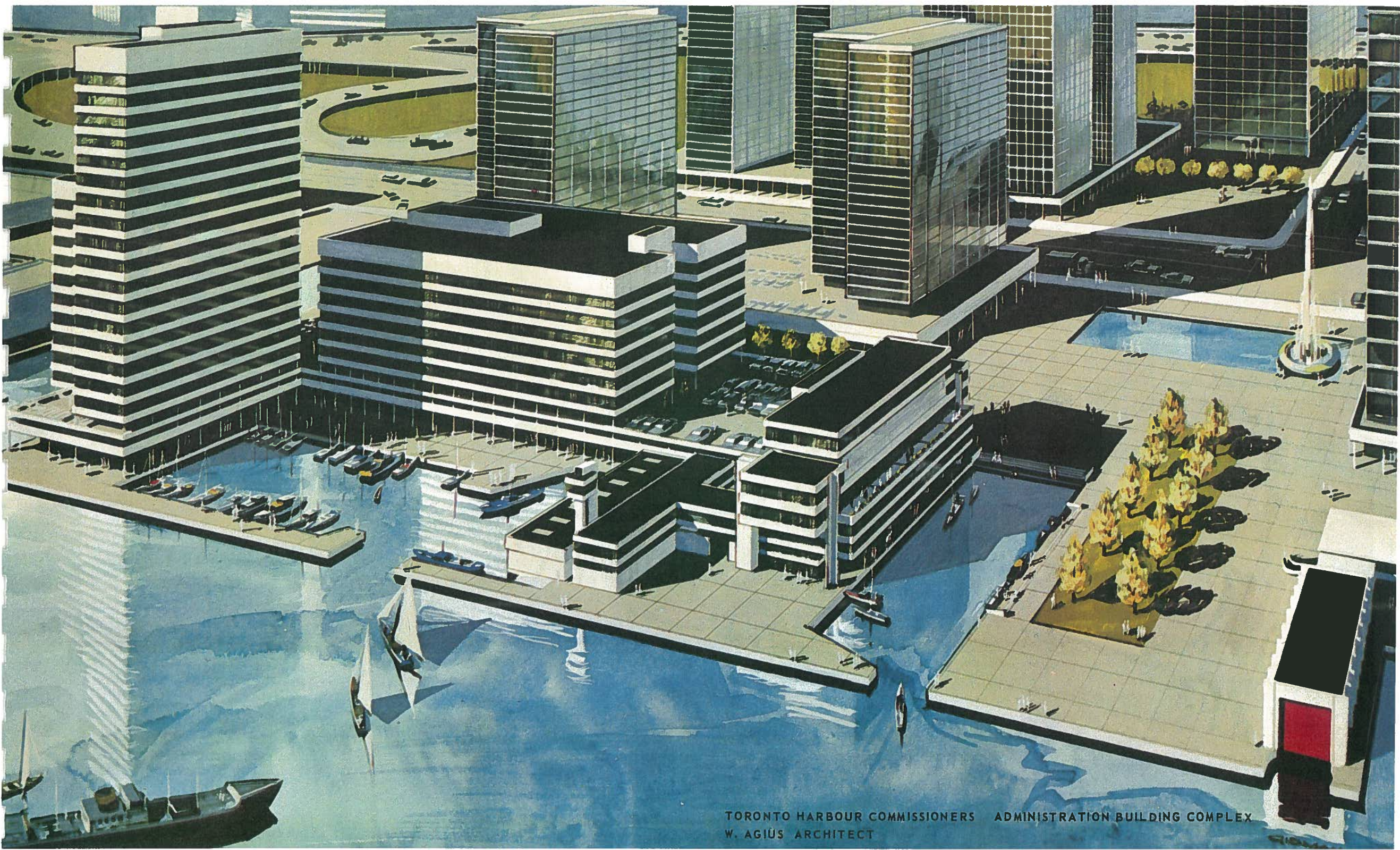
Rail access is already available in the industrial area, and spurs can be extended to serve the Outer Harbour as required. Redevelopment in the western Inner Harbour will necessitate removal of the main lead track to the marine terminals located east of Jarvis Street, and alternative provision will have to be made for rail access from the east.

#### **(x) Methods and Costs**

All of the new lands proposed in the Central Sector are to be created by using clean fill trucked in from construction projects in the city or fly ash hauled from the R.L. Hearn Generating Station, and by a massive dredging program utilizing the deep sand deposits which cover the lake bottom close at hand. The methods to be employed have already been described in Chapter 3c.

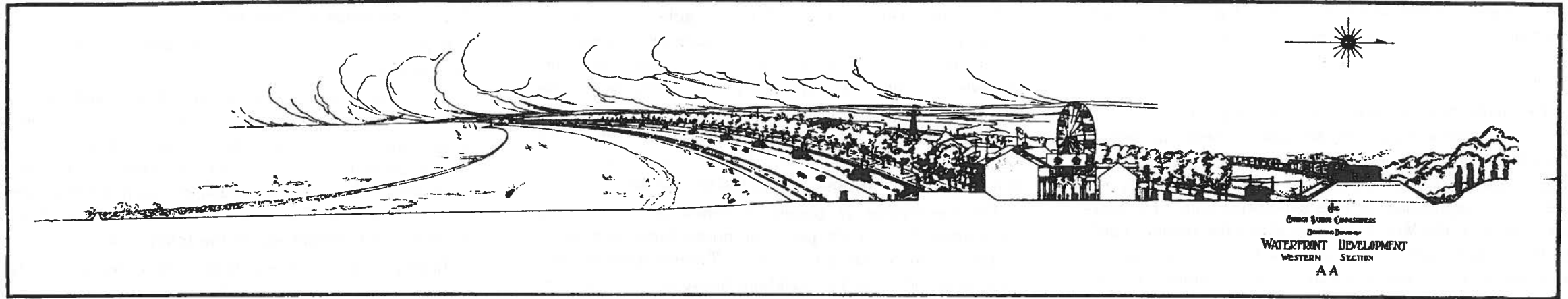
The development of Harbour City is the key to the financial feasibility of the whole concept. The net revenue that can be derived from these lands is expected to exceed all of the land reclamation costs, and to defray the expense of relocating industries along the western Inner Harbour shore.





TORONTO HARBOUR COMMISSIONERS ADMINISTRATION BUILDING COMPLEX  
W. AGIUS ARCHITECT





WESTERN SUMMER RESORT  
 PERSPECTIVE VIEW, LOOKING WEST FROM KEELE STREET AND INDIAN ROAD  
 TO THE HUMBER RIVER

*from: the Waterfront Plan of 1912*

For the metropolitan community, Harbour City will yield a continuing legacy in property and business taxes. Most importantly, it will be a permanent source of pride and a place of beauty.

**c. Western Beaches Sector**

**(i) Existing Conditions and Problems**

The Western Beaches Sector comprises the area south of the Gardiner Expressway between the Humber River and the west limit of the Canadian National Exhibition Grounds.

The Western Beaches provide an impressive lakeshore parkway approach to the City via either the Gardiner Expressway or Lakeshore Boulevard, with the curve of Humber Bay affording a magnificent view of the skyline of downtown Toronto across an expanse of water. The

four miles of park strip are fairly narrow, measuring less than 400 feet for most of their length between the south land of Lakeshore Boulevard and the lake. This limited width restricts the facilities which the beaches can accommodate.

The beaches are valuable parkland serving as a regional park offering unique facilities for the metropolitan population, and providing contact with the lake for the residents of the western part of the City. The beaches also serve a local park function for Parkdale, although access from South Parkdale over the separating roads and rail lines is awkward.

The beaches are attractive for picnicking, strolling, and sunning. The two childrens' playgrounds provide interest for families with children. Sunnyside Pool affords an opportunity to swim near the lake and its decks

provide a lake view, but the water off the Western Beaches is presently unfit for swimming.

The offshore breakwater and the protected waterway make the area attractive for rowing and paddling and for mooring, but the narrow width of the beach and the protected waterway limits the facilities which can be accommodated. At the western end, silt deposited by the Humber River has built up to the point where the waterway is almost blocked. Three boat clubs, the Argonaut Rowing Club, the Toronto Sailing and Canoe Club, and the Boulevard Club, are grouped fairly closely together on the Western Beaches. They are presently cramped for mooring spaces and find the entrances in the breakwater insufficiently protected. The return cribwalls at the breakwater reduce the effective width of the waterway further.



The Rameses Shrine Temple which is located above the Toronto Sailing and Canoe Club has no functional relationship to the lake. The Palais Royale, which is owned by a Polish Club is the only dance hall on the beaches.

The pedestrian overpass at the King - Queen - Roncesvalles intersection provides good access for part of Parkdale, and for people who come by public transit. The proposed Queen Street subway would further increase the importance of this pedestrian link. Pedestrian access to the Metro parkland along the Humber north of the bridges and to the proposed Etobicoke bicycle and walkway system is difficult and confused by the South Kingsway. It is possible for pedestrians to pass under two of the three bridges spanning the Humber at its mouth but the centre bridge does not allow pedestrians passage beneath it.

Motorists have easy access to Lakeshore Boulevard from the streets north of the Gardiner Expressway from Parkside Drive to the Humber and at Jameson Avenue whilst from the expressway itself there is direct access to Lakeshore Boulevard at the Humber for traffic from the west and there is direct access for expressway traffic from both directions at the Jameson intersection.

The quality of the water off the Western Beaches is presently quite poor and is unfit for swimming. However, proposed changes in the City's sewer system promise an improvement over the long term. The Report on City of Toronto Sewer System 1965 by the City Department of Public Works recommends acceleration of the relief program to the interceptor sewers, and this is particularly relevant for the Western Beaches where the present interceptor sewers are so inadequate that untreated sewage, even in dry weather, overflows into the lake. Completion of the mid-town interceptor sewer is scheduled by the Metropolitan Works Department for 1973, and this should substantially relieve the pollution off the Western Beaches.

Algae presently contributes to the untidy appearance of the protected waterway and at times the smell as

it decomposes is very unpleasant.

The ownership of most of the Beaches parkland is being transferred from the Toronto Harbour Commissioners to the City of Toronto. Most of the lands which are leased to private clubs are on a 21 year lease with terms governing renewal. The Boulevard Club has just been granted a new 21 year lease with renewal clauses for two further 21 year periods. A five year lease is presently being worked out for the Palais Royale.

The breakwater is presently owned by the Federal Government but stands partly on crown lands and partly on lands transferred to the City of Toronto Harbour Commissioners. Part of the parkland between the Sunnyside Pool and the Boulevard Club is on Crown Lands.

### (ii) Objectives

The principal objective for the Western Beaches Sector is to provide for the optimum use of the park strip and waterway within the narrow limits imposed by the parallel arterial roads and the breakwater. The parklands in this sector are thoroughly urban and the intensive development of the few remaining underused sections are in keeping with that character and with the need.

New boat launching facilities, more space for the existing clubs, improvements to the breakwater entrances and interception of Humber River silt are requisites for the full use of the waterway. Although beyond the scope of the Waterfront Plan, improvements to the sewer system and measures to control algae propagation are coincident with the objectives of this Plan.

In order that the Western Beaches can better serve South Parkdale as a district park, improved pedestrian access across the barrier road and rail lines is necessary. Safe pedestrian connections to the lower Humber Valley are desirable.

With proper care and taste in detailed design and landscaping, fulfilment of the above objectives need not impair the handsome view of the open lake and the downtown skyline. Rather, the Western Beaches will be en-

hanced as an imposing entrance to the City.

### (iii) Description of Proposals

Plate No. 13A shows the proposals for the Western Beaches Sector.

Throughout the park strip, additional landscaping is required for screening around existing and new parking areas, and also to shield the park areas from the effects of the major roads paralleling the northern limit of the parkland. This latter proposal is particularly important at the Sunnyside Pool recreational area, the Sir Casimir Gzowski Playground and at the tennis courts.

Improvements such as filling gaps in boulevard planting and the possible use of hardy and interesting ground cover on the verges of Lakeshore Boulevard and the Gardiner Expressway are also proposed.

The area between Sunnyside Pool and the Boulevard Club, because of its accessibility by public transit, is particularly well suited for development as an active park. A dance pavilion, restaurants, band shelter and other facilities perhaps related directly to the water should be considered at this location.

A continuous pedestrian walkway system throughout the park area is also proposed.

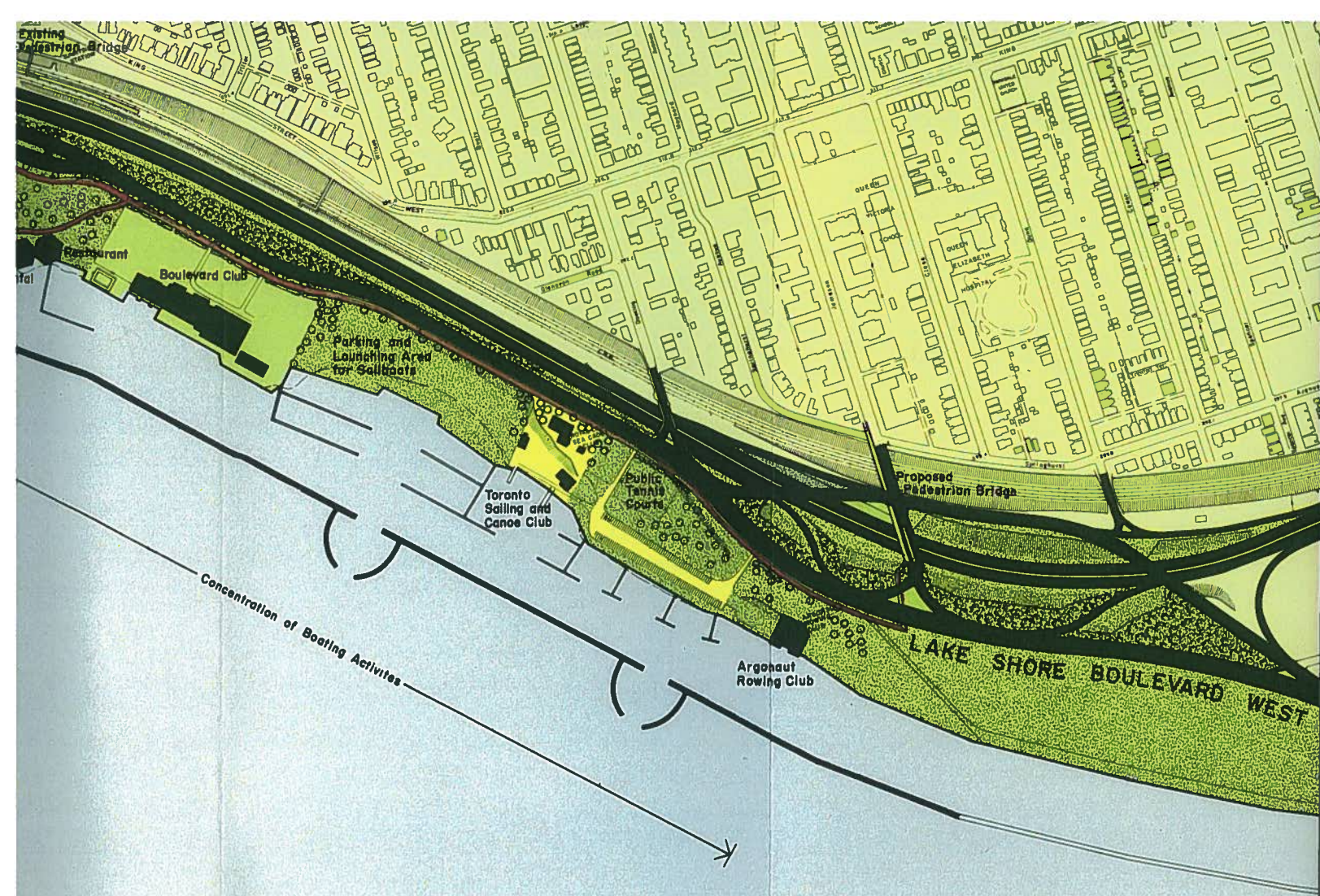
The intensification of boating activities is a major part of the plan. The use of the protected waterway for boating and for moorings by various clubs is already well established but the full potential of this ideal location has not been fully exploited. A number of changes are proposed to achieve maximum use for the boating fraternity.

The protected waterway should be provided with a navigable channel of 150' width, 75' of which should have a depth of 8' and the remainder a minimum depth of 5'. Dredging will be needed to achieve this. The breakwater should be improved by the proper closing of some of the existing gaps and the provision of properly protected entrances at other gaps as indicated.

Some of the demand which already exists for mooring





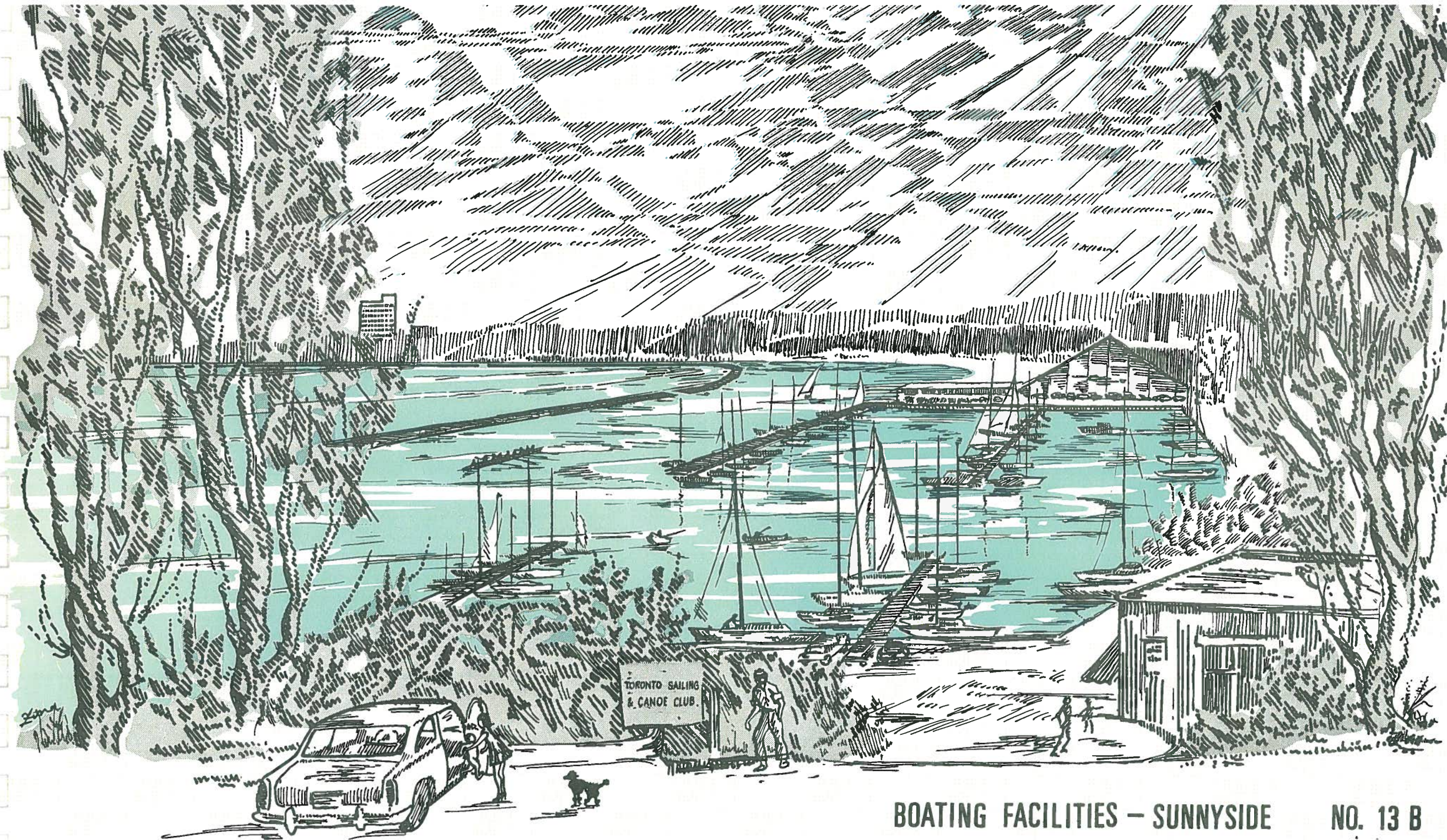


L DESIGN CONCEPT

WESTERN BEACHES SECTOR

PLATE NO. 13A





BOATING FACILITIES — SUNNYSIDE

NO. 13 B

*[Handwritten signature]*



facilities can be met by expanding facilities in the area of the existing private clubs. An indication of this is shown on Plate No. 13A although more detailed design work is needed and discussion with the clubs will be necessary to establish how these additional facilities can be managed to obtain maximum public benefit from them.

A maximum of approximately 350 mooring slips could be provided in the area between the Boulevard Club and the Argonaut Club. The plan includes the development of public boat launching facilities at the western end of the sector specifically for motor boats away from the sailing clubs to reduce the conflict which can occur between power and sailboats. Plate No. 13B illustrates the facilities contemplated.

The development of stable and attractive shore protection by the provision of sand beaches and well designed seawalls is also important to the development of the beaches for continuing public enjoyment. The extension of the east bank of the Humber will halt the silting of the protected waterway from the Humber but to enable continuous access from the waterway to the Humber in all weathers the detailing of this extension will include landing platforms and portages across the bank.

#### **(iv) Access and Parking**

Pedestrian access is proposed to be improved by the continuation of a new pedestrian bridge from Jameson Avenue to connect the Parkdale high density apartment area to the beaches. Connection of the beaches parkland to the Metro parkland along the Humber by the provision of continuous cycle and pedestrian ways is proposed by a new route under the bridges at the mouth of the Humber. Although heavily travelled Lakeshore Boulevard is an attractive link in the scenic drive system, and affords quite satisfactory access to the Western Beaches. The only change to the road system relates to the better use of land. This will involve moving the southern roadway of Lakeshore Boulevard closer to the northern roadway between Sunnyside Pool

and the Boulevard Club. This will expand the area of the beaches parkland at that point, and allow for an increase in parking as required.

#### **(v) Staging**

Improvements to landscaping, parking and the measures suggested for water maintenance should proceed as soon as they can be fitted into the City's program of works. This program should be worked out with special attention to the importance of good design.

The program of implementation of these proposals is likely to occur over a very long period if additional financial assistance cannot be obtained to augment the moneys which might be made available from Metropolitan and Municipal Government sources for this purpose. Financial assistance might be obtained from the Federal Government under its marina policy but this would have to be tested by a formal application for assistance. Such application should proceed as soon as possible, and may be initiated by the City without waiting for a decision on a comprehensive approach to implementation of the Waterfront Plan.

#### **(vi) Ownership**

The illogical ownership patterns in this area should be resolved by the transfer of crown lands to the ownership of the City. City ownership should also be extended to cover new beach formations and the extension of the east bank of the Humber.

### **d. Etobicoke Sector**

#### **(i) General Method and Objectives**

This Sector Plan includes the area south of Lakeshore Road between the Humber River and the west limit of the Borough of Etobicoke, and the valley of the Humber south of Bloor Street. The purpose here is to create land for a wide range of essentially water-oriented recreation facilities to meet the growing needs of western Metropolitan Toronto. At the same time, the redevelopment of those portions of the waterfront where high density apartments and new commercial uses are

appropriate will be provided for and stimulated. Where no redevelopment is expected, the preservation of stable neighbourhoods will be assisted by the provision of a more attractive and usable waterfront and the creation of space for additional local recreation. Through careful design, those neighbourhoods will be protected from traffic and other untoward effects which might stem from the establishment of major metropolitan parks facilities close by.

In general terms, it is proposed to develop the new waterfront in the Sector by massive land filling operations in the lake. The development program described herein is predicated on the use of various fill materials, including selected wastes and hydro fly ash, placed behind impervious dikes extending out to about twenty-five feet of water depth. Although enquiries made to date indicate that such filling operations may be feasible, it is recognized that demonstration projects must be carried out to test the technique against local conditions. Should the tests prove that certain materials cannot be utilized, the scale of the filling operations will have to be cut back if the time period for the completion of development is to remain within foreseeable limits.

The sequence of the filling operations is arranged to permit the provision of recreational facilities (beginning with the most needed) and private redevelopment concurrently. It is also staged to provide receiving areas for the various fill materials on a continuous basis.

#### **(ii) Recreational Facilities Proposed**

Plate No. 14A shows the Physical Design Concept for the Etobicoke Sector. Central to the scheme is a major bathing and picnicking area (80 acres) focussed on an artificial lake (5 acres) designed to have capacity for 10 - 15,000 persons. Water quality and temperature are to be controlled by the New Toronto Filtration Plant which is expected to become available for that purpose when the Westerly Water Filtration Plant at Twenty-Third Street goes into service. The latter will

be a point of interest on the boulevarded Scenic Drive which closely parallels the existing shoreline. In the foreground of the plant, a small ornamental lagoon is proposed for canoeing and small boats.

A community recreation centre site (5 - 7 acres) is provided adjacent to a large tract (35 acres) devoted to aquatic show facilities fronting a large protected basin. Access from Lakeshore Road to this central complex is to be via a completely new street through the Ontario Hospital grounds.

Between the Scenic Drive and the existing shoreline, additional neighbourhood park space will be provided to connect Prince of Wales and Rotary Parks. This will create, in all, some 20 acres which can be equipped to serve the immediate neighbourhood. The redevelopment of private lakeshore properties for apartments is anticipated only to the extent permitted in the former New Toronto Zoning By-law.

Lake filling is proposed between Dwight Avenue and Royal York Road to permit the full development and redevelopment of the adjacent area south of Lakeshore Road, together with the privately owned water lots, for apartments. Some parts of the provincially-owned lake bottom intervening between the existing private water lots are proposed to be used for the same purposes.

A 130 acre island is proposed offshore between Dwight Avenue and Norris Crescent, thus creating about 140 acres of protected water. With a length of about 7,300 feet, the waterway can be used for a regatta course in addition to small boat use, water shows, etc. The Scenic Drive traverses the island via two low level (about 16' clearance) bridges at the foot of Royal York Road and Norris Crescent. The island is ample in area to contain sites for sailing and rowing clubs, boat launching ramps, boat camping grounds, and the major playing field complex required for the south-western metropolitan area.

On shore between Royal York Road and Norris Crescent, the existing low density residential area remains

untouched. However, the design concept has been arranged so that, if and when apartment redevelopment does occur, the waterway can be partially filled to connect the Scenic Drive and walkway systems.

East of Norris Crescent, and extending to the Humber River, the plan anticipates development and redevelopment of the lakefront, including privately held waterlots, for apartments, hotels and commercial recreation facilities. Striking views across Humber Bay are available. Hotel - boatels, with access directly to the water, are suggested at the foot of Norris Crescent, and at the mouths of Mimico Creek and the Humber. Sites for new public elementary schools and parks equipped for neighbourhood use are proposed at strategic locations. A large all-year recreation complex is suggested at the foot of Superior Avenue.

Launch ramps may be provided temporarily on the west side of Mimico Creek on the waterlot presently owned by the Borough of Etobicoke. However, it is intended that ultimately they will be located in the major marina proposed on 40 acres at the foot of Parklawn Road. The marina has a planned capacity of up to 1,000 boats in slips or pigeon hole storage, and a swimming pool is proposed as part of the total recreational complex.

A beauty spot is suggested at the mouth of the Humber, where 23 acres is set aside for a floral park on the Rochester model. The area to be filled is shaped to avoid covering the outfall from the Humber Sewage Treatment Plant, because of unstable ground conditions underlying the pipe. This area can be used for horticultural shows, Parks Department nurseries and greenhouses, and may include such special attractions as a sculpture court for prize winning statuary, or a "shopping-in-the-park" featuring well designed articles made in Metro tastefully displayed. If and when a tower restaurant on the Seattle or Rotterdam model is constructed on the waterfront, this site should be considered.

The Scenic Drive is designed to cross the mouth of Mimico Creek on a new structure to meet Parklawn Road extended. Although it is not expected to be necessary during the period covered by this plan, provision is made for a possible direct connection from the Scenic Drive to Lakeshore Road across the mouth of the Humber should the need arise in the distant future.

The lower Humber is expected to continue to be preserved as a wildlife area. The filled lands north of Stephen Drive are to be used primarily for neighbourhood facilities or for picnicking and passive recreation. It is proposed that these be connected to Brulé Park and to the waterfront park system by an extension of the hiking and cycling trails down the valley and under the present bridges at the mouth of the river.

The river itself will continue to be used for small boats as an interesting side trip from the lakefront waterway. However, it is thought probable that the existing boating establishments will move to the lakefront when suitable space is made available there, because of the height limitations of the bridges across the mouth, and the uncertain water depth in the river itself. The problem of continuous silting is expected to preclude any channel improvements for rowing sports. An alternative location for a western regatta course has already been described in the Mimico section.

Plate No. 14B illustrates what is proposed at the westerly end of the Sector. A small extension to the east side of Marie Curtis Park is planned, with the replacement of the present beach by a swimming pool. From the Park east to Twenty-Third Street, it is intended that the fill be used to create a 72 acre island which can be developed for picnicking and day camping, a children's village, and a large marina. Space for a sailing club, and a harbour police station are reserved on the opposite side of the boat basin.

Although a number of alternatives for the redevelopment of the existing Long Branch shoreline offer themselves, this scheme contemplates the continuance of the





CAMPING  
120 SITES

RESIDENTIAL

NEW TORONTO  
SECONDARY  
SCHOOL

LEN FORD  
PARK EXT

LAUNCHING  
RAMPS (12)

SAILING CLUBS

MARINA  
700 SLIPS

CHILDREN'S  
VILLAGE

PICNICKING

RESIDENTIAL  
RESIDENTIAL LOW DENSITY

ARTIFICIAL  
LAKE

NEIGHBOURHOOD  
PARK

RECREATION  
CENTRE

WATER

SPORTS

BOATING CLUBS

REGATTA

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SPORTS FIELDS

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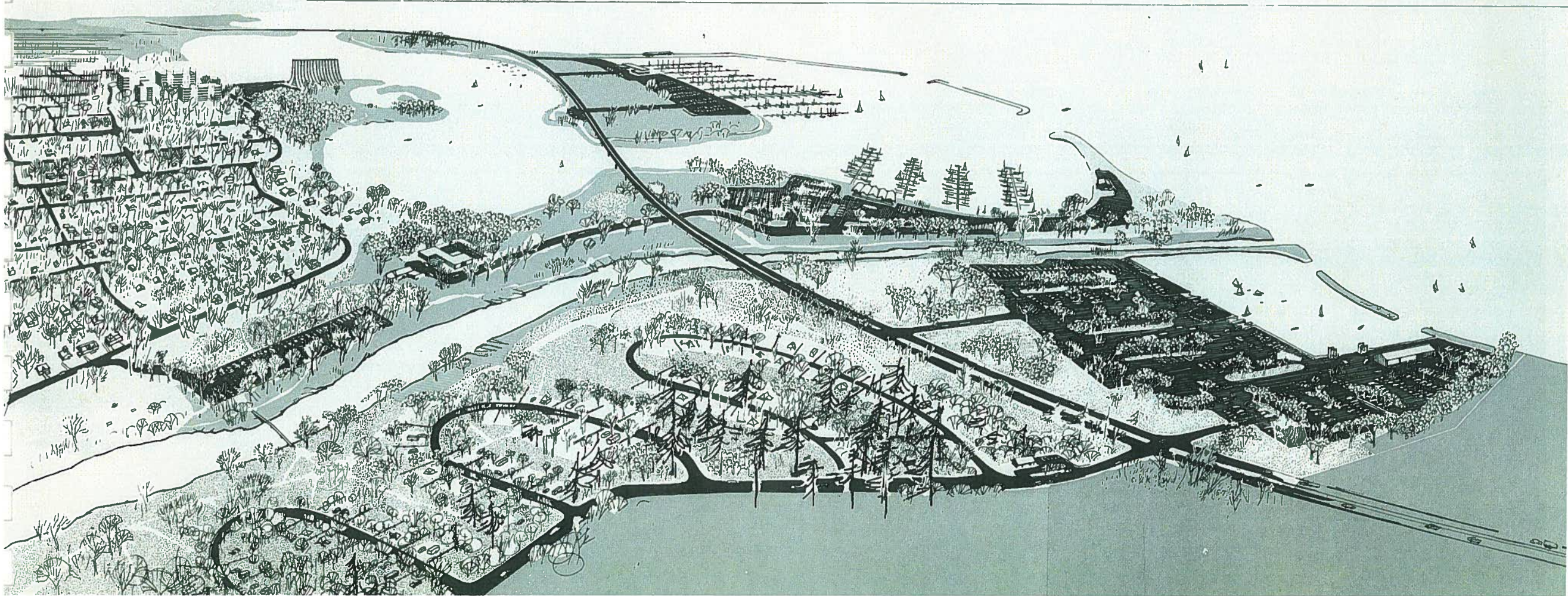




PHYSICAL DESIGN CONCEPT      ETOBICOKE SECTOR      PLATE NO. 14A



# MARIE CURTIS PARK





present uses and the maintenance of the stability of the neighbourhood during the time period covered by this Plan. The only exception is the expected completion of the Long Branch Hotel site development, which will provide some vertical scale in this otherwise flattish section of the scheme. An extension of Len Ford Park is suggested in the form of a fingerlike ornamental park with lagoons and small islands linked by footbridges.

A portion of Marie Curtis Park is proposed as a tent and trailer camping area. A small harbour on the shore is planned to protect a large boat launching ramp (12 lanes) and commercial boat works. The parking area is expected to provide major winter boat storage space for the western Metropolitan Area.

The Scenic Drive which links the various components of this Sector totals some 5.8 miles in length. It is proposed as a centre-boulevarded four lane roadway on a 120 foot right-of-way.

Suggested standards for buildings abutting this driveway are:

Setback	100 ft. from street line or one half the height of the building, whichever is the greater.
Front Yard	To be used for no purposes other than landscaping and entrance-exit drive-ways.

Signs, fencing, walls etc. should be controlled as a part of the site plan agreement where such can be obtained as a condition of re-zoning.

It will be understood that lesser driveways will branch off to give access to facilities on the islands and in the larger recreational areas. In addition, a system of hiking trails and cycle paths will be provided including a continuous "wanderweg" extending the length of the sector and connecting to the Humber Valley trails, all as indicated on Plate No. 14A.

### (iii) Traffic and Access

In order that traffic generated by the recreational

facilities described above will not filter through streets in the adjacent neighbourhoods, adequate capacity must be available on the major streets intended as access points.

It is not known how many persons will be attracted by the recreational facilities described above, but, in order to be on the safe side in the calculations which follow, it has been assumed that as many as 50,000 visitors might be attracted on a peak day. For purposes of calculation, these visitors were arbitrarily assigned throughout the Sector as follows:

Marie Curtis Park	-	7,000
Long Branch Island	-	6,000
Central Recreation Area	-	20,000
Mimico Island	-	5,000
Norris Crescent - Humber	-	12,000

Plate No. 14A indicates six major access points, namely:

- West end of Scenic Drive
- New road through Ontario Hospital grounds
- Dwight Avenue Extension (to Islington & Q.E.W.)
- Royal York Road
- Park Lawn Road (extension)
- Humber exit (east end of Etobicoke Section).

Each of these are proposed as four lane roads. It will be observed that there are additional lesser connections proposed at Norris Crescent, Superior Avenue, and at about the mid-point in the Mimico Creek - Humber section, but these are intended to facilitate circulation in the apartment areas rather than as major access points to the recreational facilities.

In testing the adequacy of the major access points, the following criteria were used:

- for visitors to the park facilities a modal split of 80% by car, 20% by transit.
- 3.5 persons per car.
- D.H.V. (design hour volume) equal to 30% A.D.T. (average daily traffic).

- for Lakeshore Road, A.D.T. estimated to increase to 20,000 vehicles with D.H.V. at 10%.
- on sections near marinas and launch ramps, it was assumed that cars with trailers would comprise 10% of D.H.V. with one trailer considered equal to one car.

It was found that the access streets listed above will be adequate with the addition of traffic signals on Lakeshore Road at Dwight Avenue and at the Humber exit. Signals and channelization to provide a fifth lane will be necessary at the intersection of Lakeshore Roads and the new street through the Ontario Hospital grounds.

With four lanes, the Scenic Drive will be adequate in all its sections, and will require signals at its intersection with the above mentioned new street, and at Dwight Avenue, Royal York Road and Park Lawn Road.

On the basis of the above criteria, and allowing 350 sq. ft./parking space, the following areas will be required for parking:

Marie Curtis	13.7 acres
Long Branch Island	11.3 acres
Central Recreation Area	37.0 acres
Mimico Island	9.1 acres
Norris Crescent - Humber Section	22.2 acres
Total	93.3 acres

There is ample space in each section to provide such parking spaces in an attractive and convenient fashion. It is expected that perhaps 25-30% will be provided in permanent paved lots. The remainder will be overflow parking on adjacent grassed areas.

The design criteria employed above are regarded as rather exacting. The report on "Transportation to the Island" published by the Metropolitan Toronto Planning Board suggests the probability of a much greater proportion of visitors using transit, and a higher average number of persons per car. This would substantially reduce the design hour volumes and the amount of land required for parking. In this study, however, the use of



more stringent requirements is preferred in order to anticipate with confidence that the facilities proposed will not induce traffic into neighbourhoods where stability is sought.

**(iv) Redevelopment and Population Increase**

Plate No. 14A indicates considerable new apartment development and redevelopment south of Lakeshore Road between the Ontario Hospital property and the Humber River. Some 50 acres can be created for such purposes by filling into the lake. It is estimated that a further 120 acres of existing low density residential, marginal commercial, and vacant lands in this area may be redeveloped for more intensive uses coincidentally with the creation of the new waterfront.

It is not possible to predict the extent to which this potential 180 acres will be developed or redeveloped, or just how much redevelopment will be for apartments rather than commercial uses. As usual, a series of pretty broad assumptions must be relied upon to obtain any sort of guide as to the possible population increase.

For the former New Toronto and Mimico sections, this Plan assumes that apartment densities will be in the order of 60 suites/acre (approximately 1.5 x coverage), in line with current development policies for those areas, and in keeping with the policies of the Metropolitan Toronto Planning Board respecting apartment development in this general vicinity. The Metropolitan Toronto Planning Board apartment survey indicates that such suite densities may be expected to yield about 2.8 persons per suite. For the Mimico Creek - Humber River section, this Plan assumes apartment densities of 120 suites/acre (3 x coverage) with bonus clauses permitting up to 135 suites/acre. Occupancy is expected to be a maximum of 2 persons per suite.

The following table sets out the population increase anticipated based on assumptions of the extent to which the potential apartment lands will redevelop, in various sections.

Section	Acreage Available	Assumed % Redevelopment	No. Suites	No. Persons
New Toronto	24	50%	720	2,000
Mimico	35	100%	22,100	5,900
Mimico Creek - Humber	81	66%	7,500	15,000
<b>Totals</b>	<b>140</b>		<b>10,320</b>	<b>22,900</b>

Thus the result is expected to be about 10,000 new suites and a population increase in the order of 23,000 persons in this area. This Plan has been made sufficiently flexible that much higher densities could be permitted in the former New Toronto and Mimico areas without prejudicing this scheme in any way.

**(v) Schools**

Plate No. 14A shows the existing public and separate elementary, and public secondary schools which may be affected by the expected population increase. The Metropolitan Toronto Planning Board apartment survey indicates that apartments of the 60 suite per acre type will produce between 15 and 20 pupils in the Kindergarten to Grade 8 age group per 100 suites. Those in 120 suite/acre density range will yield about three pupils per 100 suites. The following table sets out the expected increase in elementary school age pupils assuming 18 pupils/100 suites in the former Mimico and New Toronto Area, and 3/100 suites in the Mimico Creek - Humber River section. The Plan further assumes a 75% - 25% denominational split. The table also indicates the number of public and separate elementary school classrooms which would be required.

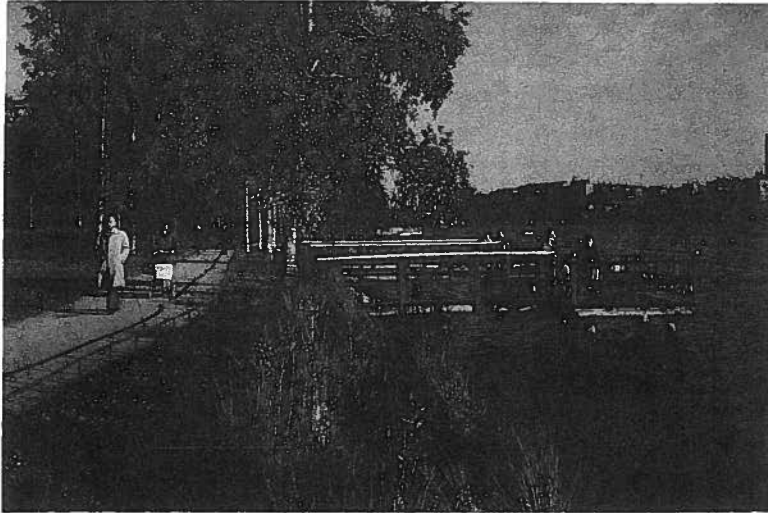
Section	No. new Suites	K-8 pupils	Public (75%)	@ 35/cl Class-rooms	Sep- @ 35/cl (25%)	@ 35/cl Class-rooms
New Toronto	720	130	95	3	35	1
Mimico	2,100	380	285	9	95	3
Mimico Creek - Humber	7,500	225	170	5	55	2
<b>Totals</b>	<b>10,320</b>	<b>735</b>	<b>550</b>	<b>17</b>	<b>185</b>	<b>6</b>

It seems probable that at least one new public elementary school will be necessary in the former Mimico section, near Superior Avenue. It is also deemed advisable to set aside a site between Mimico Creek and the Humber section for the time being, in the event that the above estimates of the extent of redevelopment for apartments and pupil densities prove to be conservative. It is thought that separate school accommodation can be made available by expansions to the nearest existing separate schools, St. Leo's and St. Theresa's. If necessary, however, provision can be made for an additional separate elementary school, adjacent to the neighbourhood park near Norris Crescent.

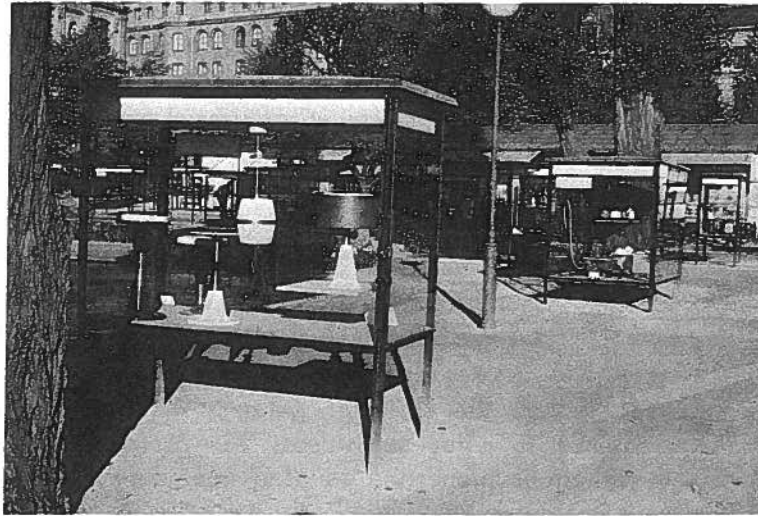
The apartment survey suggests an average of about 5 secondary school students per 100 suites for buildings of this density in the inner fringe municipalities. On this basis accommodation will be required for about 400 secondary school pupils. It will be remembered that the apartment development, and hence the school population increase, will be gradual over the next twenty years. Thus the adequacy of accommodation can only be determined in the light of long term age distribution forecasts developed in conjunction with the Lakeshore Board of Education.

**(vi) Construction and Staging**

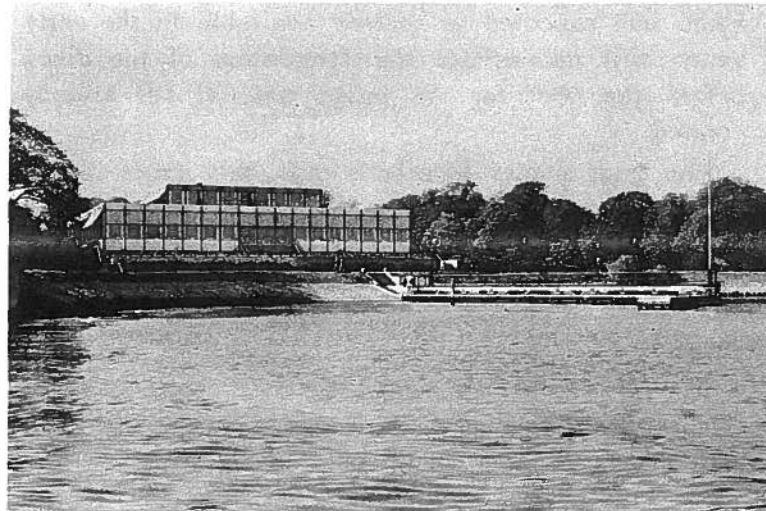
Approximately 30 million cubic yards of material will be required to create the new land indicated on Plate No. 14A. In order to do so within 20 years, it will be necessary to utilize all types of fill materials that can be brought to the area and used, including



*Lakefront Walkway — Stockholm*



*Advertising displays in the park — Stockholm*



*Harbour restaurant — Copenhagen*



*Lakefront Apartments — Stockholm*



clean fill, hydro ash, dredged material, selected waste materials and digested sewage sludge. The quantities of materials of each type expected to be available for this Sector are set out in Appendix 'C', except for sewage sludge. Only small quantities of this material would be used to augment the clean fill required for final cover, as a soil conditioner.

Plate No. 14C shows how the various materials may be utilized. Generally speaking, the clean fill would be required for dikes, daily cover and final cover. Hydro ash would be used where major buildings are to be erected, and adjacent to the artificial lake and to supplement part of the clean fill used for daily cover. Waste materials would underlay areas to be used for recreation, and would be covered to a depth of 3-4 feet by clean fill except for areas to be planted in trees, where a greater depth would be required.

Plate No. 14C also sets out a suggested sequence of development. The staging program was arranged having in mind priorities for the recreational facilities, the problems of suitable access points to the lakefront, the rights of private owners and the rates at which various types of materials will become available. It is regarded as essential that the filling operations be so scheduled that all types of material may be received on a continuous basis. The following is a brief description of the stages of development:

#### Stage 1

This stage offers the possibility of developing a pilot project if this is deemed necessary, to demonstrate the techniques to be used on the fill project with a minimum of inconvenience to residential property. This pilot project could be located at the foot of Park Lawn Road or in the bay approximately 1,400 feet east of Park Lawn Road. The fact that this area is not located adjacent to a private residential development is considered desirable in the initial stage. The clean fill material that is stockpiled at the foot of Park Lawn Road should help to start the project.

The development of Stage 1 will permit the commencement of the first major marina and will allow an early start on the floral park which will require many years to develop. The sale or lease of reclaimed commercial land will help to offset the cost of this development.

#### Stage 2

The development of Stage 2 is proposed in front of the westerly Water Filtration Plant and Ontario Hospital properties. A large stockpile of clean fill is already available and access from Lakeshore Road may be obtained through the Hospital grounds with minimum inconvenience to adjacent owners. The distance from private lakefront properties is also considered to be important in this stage.

#### Stage 3

This section is scheduled early in order that bathing facilities for which a great need exists can be provided at the artificial lake as soon as possible.

#### Stage 4

This stage may be commenced from either the easterly limit of Stage 3 or Royal York Road. The quantity of hydro ash expected to become available in the early years will necessitate the completion of the dikes before the need for the waste material fill area is created.

With good access from both ends, this stage can be rapidly completed to permit full development of the major recreational complex and the central link in the Scenic Drive.

#### Stage 5

The fifth stage will permit the redevelopment of the Mimico Waterfront east of Norris Crescent for local park space, new apartments and a school site.

#### Stage 6 and 7

These stages will provide for the extension of Marie Curtis Park, and will create the first section of island parkland, protected waterway and a further major segment of the Scenic Drive. If sufficient clean fill is available, these two stages may be undertaken at the same time, with the added advantage of two major access routes.

#### Stage 8

The completion of this stage will enable the development of the sailing and aquatic facilities in the protected waterway west of Royal York Road.

It is felt necessary to develop only this section of the island west of Royal York Road before the remainder of the island in order to create a land fill site in time to receive waste materials at a continuous rate and to preserve the riparian rights of the home owners between Royal York Road and Miles Road.

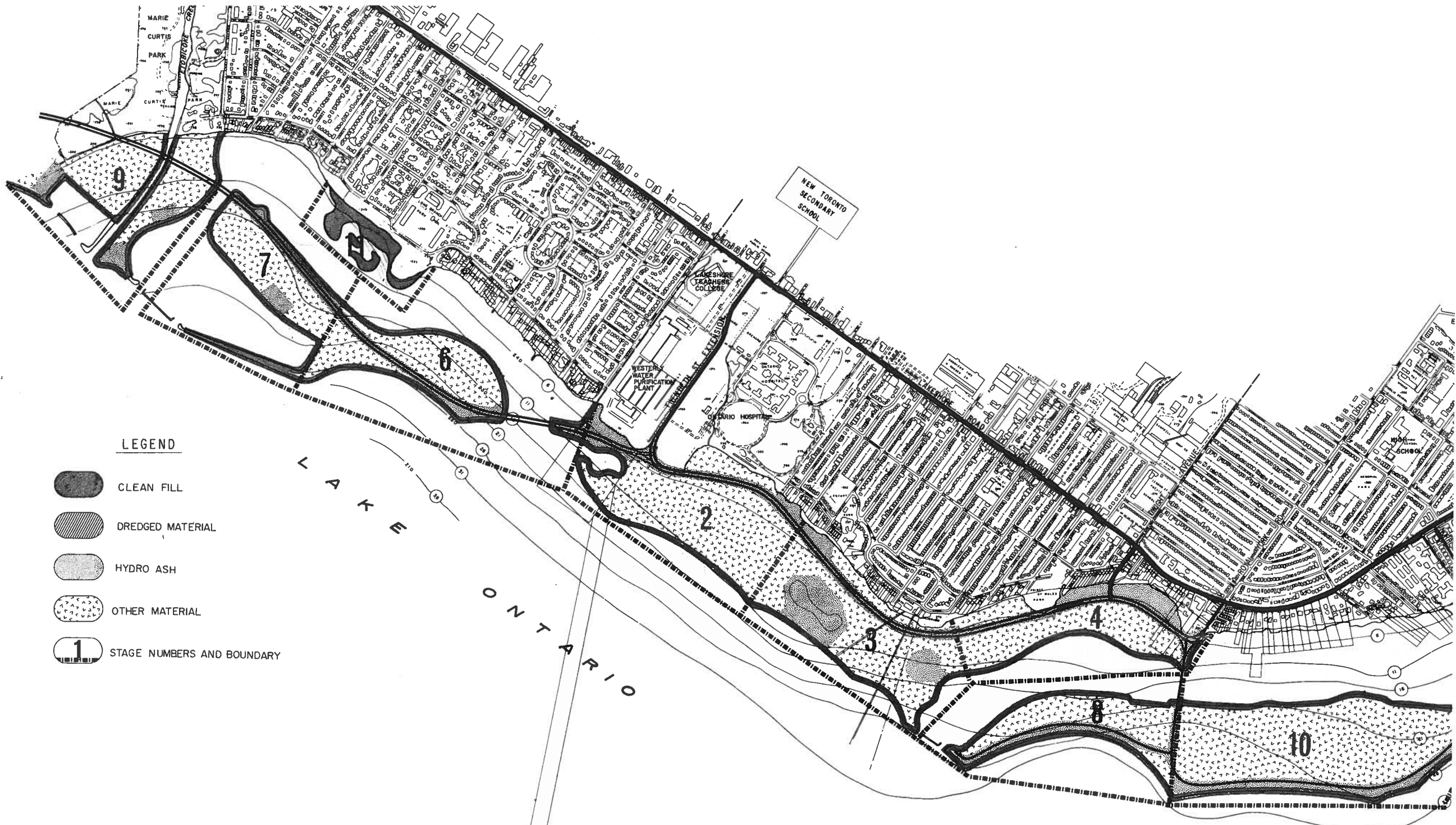
#### Stage 9

This stage consists of a fill site on both sides of the Etobicoke Creek together with the channelization of the creek southerly into the lake. The completion of this stage will enable the development of the second marina and launch ramp basin together with the connection of the Scenic Drive westerly into the Mississauga Sector.






In order to make clean fill available for the dikes in Stage 10 it is anticipated that material may be dredged and excavated from the mouth of the Etobicoke Creek to provide fill for bin walls, daily cover and final cover.

#### Stage 10

Although it would be preferable from the standpoint of fill materials to develop the Royal York Road access route much earlier, this section is scheduled late in the program in deference to the resistance to filling operations expected from owners in the residential area

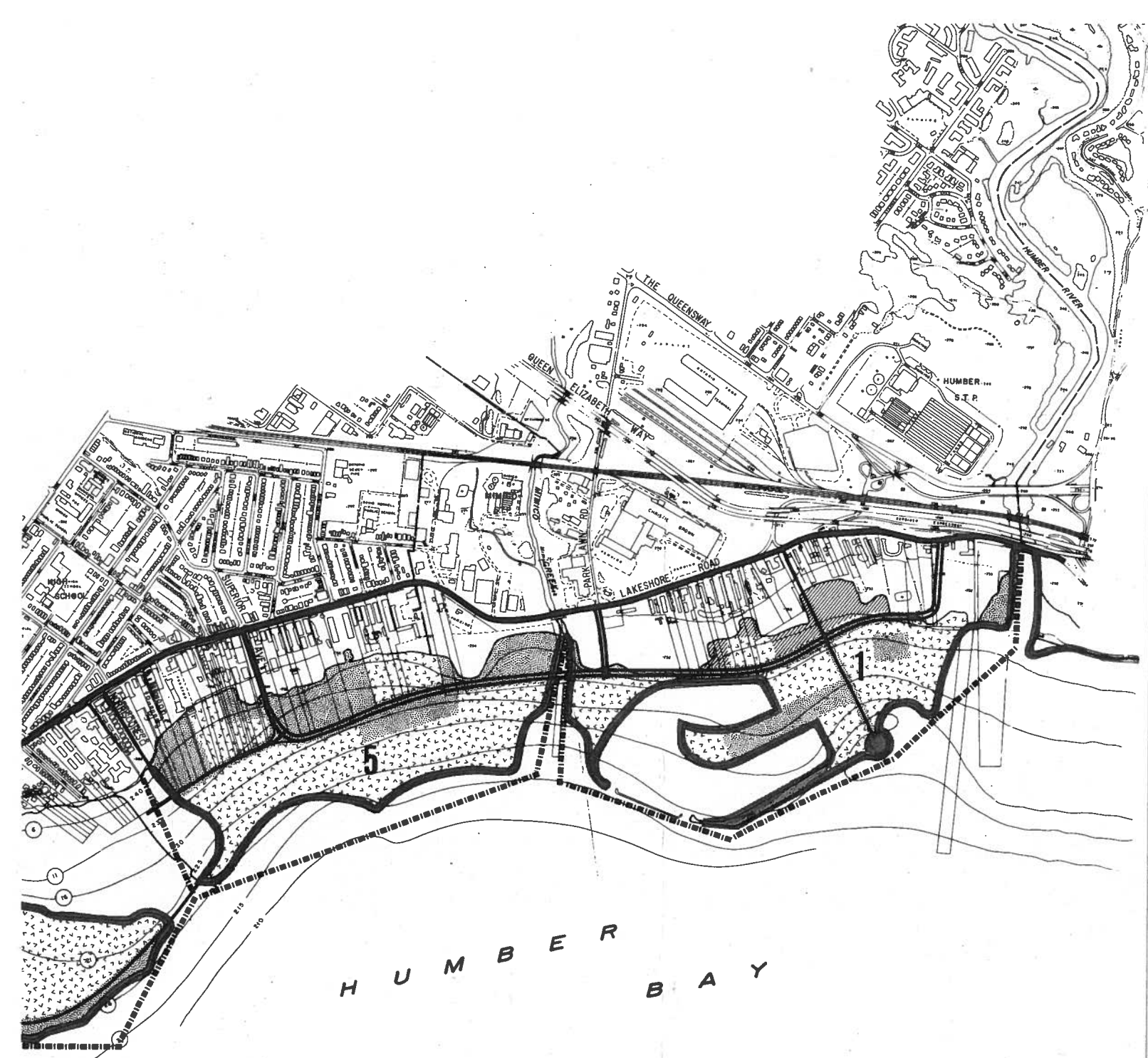


**LEGEND**

-  CLEAN FILL
-  DREDGED MATERIAL
-  HYDRO ASH
-  OTHER MATERIAL
-  STAGE NUMBERS AND BOUNDARY

**CONSTRUCTION AND**





HUMBER BAY

AND STAGING CONCEPT      ETOBICOKE SECTOR      PLATE NO. 14C

west of Edyth Drive. When completed, Stage 9 will provide the final link in the Scenic Drive between the Humber River and Etobicoke Creek.

#### Stage 11

Len Ford Park may be extended as quantities of clean fill become available after the major diking operations have been completed.

The quantities of various types of fill material to be used are summarized as follows:

Clean Fill (including dredged material and sewage sludge)	15.0 million cu. yds.
Hydro Ash	4.0 million cu. yds.
Waste Materials	11.3 million cu. yds.
Total	30.3 million cu. yds.

Note: "Daily Cover" is calculated at 6 inches, made up of 3 inches of clean fill over 3 inches of hydro ash.

"Final Cover" is calculated at 2-3 feet over hydro ash fill, 3-4 feet over sanitary fill.

It will be understood that the figures are estimates only, based on the best information presently obtainable. It is to be expected, however, that the actual development program will be flexible in terms of timing and types of materials used, to meet prevailing circumstances. The total time required for completion of filling operations in Stages 1 - 10 is estimated at 19 years, making it probable that full development can be completed in 20 - 25 years.

Although the figures set out in Appendix 'C' form the basis of this staging program, it was decided that it would be unrealistic to assume that all of the clean fill expected to become available can be directed to the waterfront. It was, therefore, decided to plan on receipt of only 75% of the clean fill material. This in turn will limit the quantity of waste material which can be received to 60% of the volume likely to be generated by the western part of the Metropolitan Area for the first

9 years and from years 15 to 19 with only 30% being received between years 9 to 15. All of the hydro ash from the Lakeview Generating Station is expected to be required for the first 11 years with a reduction to only 20% for the remainder of the program. Dredged material will be required for Stages 1 and 9 which are adjacent to the Humber River and the Etobicoke Creek.

If the implementing agency is able to secure a greater proportion of the available clean fill the total program can, of course, be accelerated. Conversely, if the results of the pilot projects on the use of hydro ash and/or waste materials are negative, the total program will be decelerated or cut back in scale. The rate at which clean fill is produced fluctuates with the construction seasons and the economy to a much greater extent than that of waste materials and for this reason care should be exercised to ensure that sufficient diking material is available for the following stage before any increase in the rate of delivery of waste materials is permitted.

Finally, Plate No. 14C shows existing water intakes, and existing and proposed extensions to sewer outfalls. It will be necessary to provide additional arch support to a section of the 72" dia. storm outfall at 23rd Street or a deck above this pipe to prevent the pipe from being crushed by the superimposed fill load at this location. It will also be necessary to determine the strength of the two old water intake pipes for the New Toronto Water Purification Plant before filling over these structures if these intakes are not retired.

#### (vii) Properties to be Acquired

In order to implement the scheme depicted on Plate No. 14A, about 41 acres of private properties and waterlots must be acquired. All of them lie east of the Dwight Avenue extension, where they will be required for the Scenic Drive and lesser access roads, and for neighbourhood parks and the school sites.

Some portions of the Scenic Drive alignment may be

obtained without cost as conditions of approval of rezoning applications. However, this happy circumstance will only occur where the rezoning application precedes the filling and road construction operations (e.g. the Palace Pier site and the West Point Motel property). Some owners may prefer to wait, in which cases, direct purchases may be necessary by the implementing agency. To be fair, it may be more desirable to hold a meeting of all property owners who stand to benefit before construction commences in any section in order to obtain their voluntary dedication of the land required.

The school and park sites will require purchase except to the extent that park dedications are obtained in conjunction with rezonings. Where direct purchases appear to be inevitable, they should be made fairly early in the scheme before filling operations and the completion of the Scenic Drive inflate the values of those parcels. Some 48 acres of public land may be sold or leased for commercial and apartment uses. The parcels involved all lie east of the Ontario Hospital grounds, and chiefly consist of portions of the lake bottom or illegally filled lands still provincially owned. The revenue from such sales or leases may be used to defray in part the cost of private land purchases and some construction costs if appropriate arrangements can be made with the Province.

In order to fill along the shore, riparian rights must be obtained from a number of properties, either by purchase or on a voluntary basis from benefitting owners in much the same manner as the road dedication. In some cases, the construction schedule may necessitate securing permission to fill private waterlots in advance of development by the owners themselves.

Finally, Plate No. 14C depicts the suggested limit of the area of water management which the implementing agency should obtain from the Province. It extends the full length of the Sector and well into the lake beyond the proposed filling operations.



## e. Mississauga Sector

### (i) Existing Conditions and Objectives

This Sector occupies 9¼ miles of shoreline in the Towns of Mississauga and Port Credit, and extends in depth to Highway No. 2.

The present combined population of the Towns of Mississauga, Port Credit, and Streetsville is about 95,000 persons, and by 1980 their combined population is expected to reach approximately 250,000. Therefore, while this Sector Plan is concerned with detailed land uses within the study area, the proposals also have regard for the fact that development of the waterfront should satisfy the anticipated needs of a greater segment of the Metropolitan region, particularly those of the existing and future population of the Mississauga - Port Credit area.

Within this sector the land requirements for industrial operations and utilities appear to be satisfied for the foreseeable future, and are reflected in the existing pattern of land uses and ownership. However, only a few sections of the waterfront are currently accessible to the public for recreation purposes either because the shoreline is in private ownership, or because there are few direct access points from Highway 2. This Plan is therefore particularly directed to the provision of public open space on the waterfront for a variety of recreational facilities and to the provision of new access roads which will avoid traffic conflicts between competing uses.

Port Credit and the eastern section of Mississauga are substantially developed, and in these areas the objective is to encourage the consolidation of established uses and to create new public open space by land fill schemes. Although the locations of these new recreation areas will be dictated primarily by considerations of suitable access, they will also be influenced by the desire to preserve established residential neighbourhoods, and the need for more parkland in those residential areas where local policies encourage re-development at higher densities.

The principles of consolidating existing uses and preserving established residential neighbourhoods are also applicable to the western part of the Sector. However, for the creation of new public open space, advantage should be taken of the availability of vacant land having access to Highway 2 and natural features appropriate for park and recreational development.

The objectives for boating facilities must be based on the estimated demand as set out in Appendix 'B'. In the selection of sites for marina and boat launching operations attention must be given to the desirability of obtaining a balanced distribution of such facilities throughout the sector, the impact of their operations on adjacent uses, and the physical limitations of the generally featureless shoreline. Nature has not endowed this sector with suitable sheltered water other than in the now confined mouth of the Credit River. The locations chosen must therefore be those which offer the greatest degree of protection possible.

Two general recreational objectives enumerated at the outset cannot be included in this Sector Plan for the time period covered. The semi-continuous protected waterway cannot be provided unless a massive offshore land fill scheme is undertaken, and this is not practical in terms of the amount of suitable fill material estimated to be available in this sector in the foreseeable future. Without massive filling to provide a new off shore alignment, a continuous scenic drive is not practical. The area is substantially built up and the nature of the development would not permit the introduction of a scenic drive without adverse effects on residential amenities or on the industrial and public utilities operations.

In later years, if suitable material is found to be available in adequate quantities, protected water might be provided by creating an island park off the shores of Port Credit. Access to the island might then be afforded by the extension of Highway No. 10, and this would provide a new loop in the scenic drive system.

In its general method, this Plan attempts to take

advantage of the few opportunities which exist to increase the extent of waterfront accessible to the public. The methods adopted include the limited acquisition of private property, the development for park purposes of land owned by the Ontario Water Resources Commission, and the reclamation of land on a limited scale by utilizing excavated material from the Mississauga-Port Credit area. In addition, the purchase of riparian rights is required in the case of land reclamation projects which would isolate private property presently having direct access to the lake.

Estimates of the amounts of clean fill available within the sector over the next twenty years are set out in Appendix 'C'. The extent of the land reclamation schemes have been kept within the bounds considered practical in terms of the availability of suitable material.

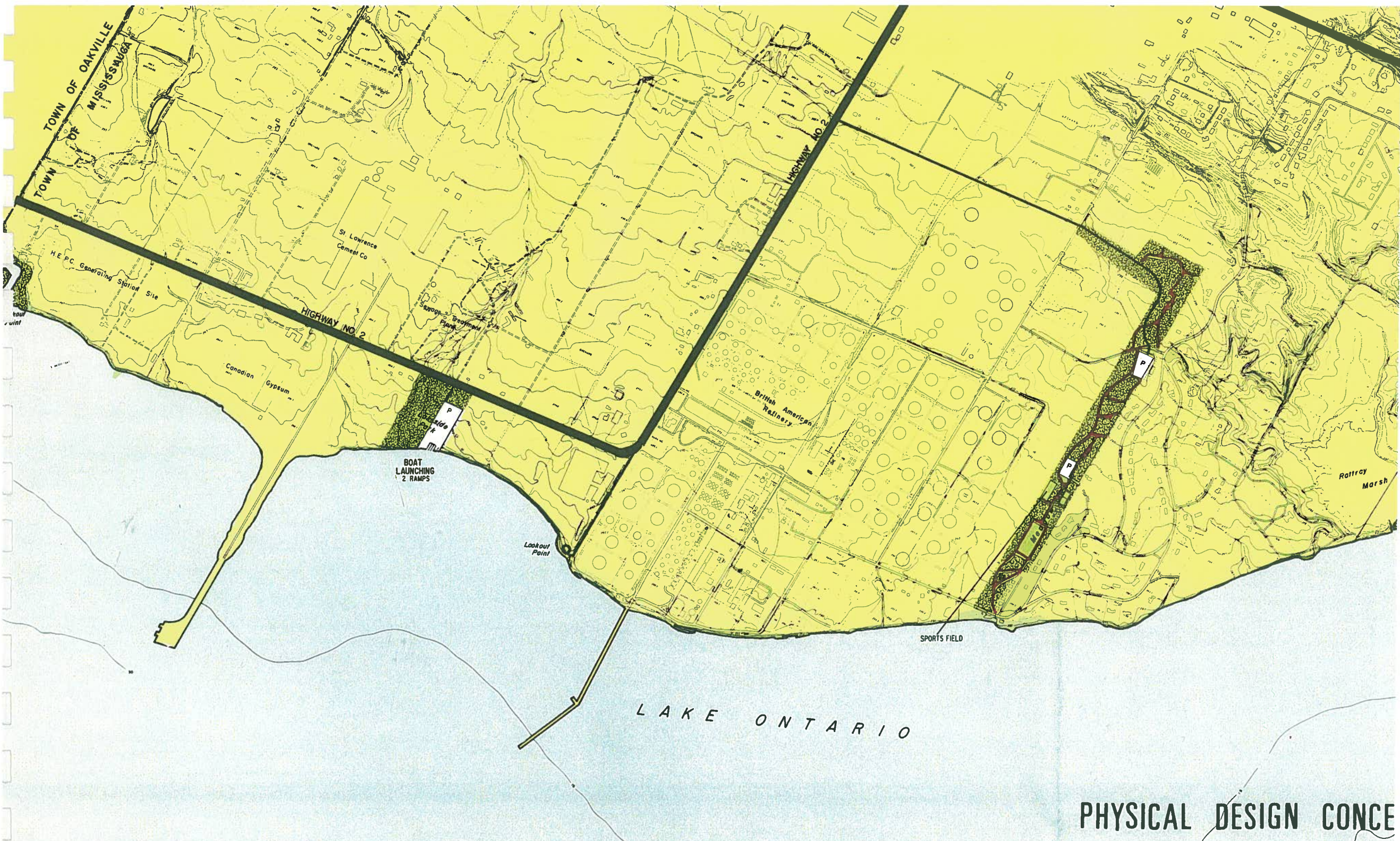
### (ii) Description of Proposals

The features proposed for the Mississauga Sector, are shown on the accompanying series of plates, and are described, beginning at the west end, in the following paragraphs.

The general approach adopted for the west half of the sector recognizes that the Clarkson industrial area is legitimately occupied by, or committed to, industrial and utility uses for which there is little choice of alternative sites on the waterfront. Park development and provision of public access to the lake in the industrial area must of necessity be limited to a few locations on small sites which will not interfere with the operations of the industrial and utility uses. To the east of Clarkson the plan suggests that advantage be taken of the opportunity to acquire vacant land in order to develop parks with lakeshore frontage and direct access to Highway 2.

Plate No. 15 A(i) covers the section between Joshua Creek and Lorne Park. Joshua Creek enters the lake at the western extremity of the Sector, at the foot of an unopened road allowance between Mississauga and Oakville. This road allowance should be preserved in public ownership for possible future development





TOWN OF OAKVILLE  
TOWN OF MISSISSAUGA

HIGHWAY NO. 2

St. Lawrence  
Cement Co.

British Refinery

BOAT LAUNCHING  
2 RAMPS

Lockout Point

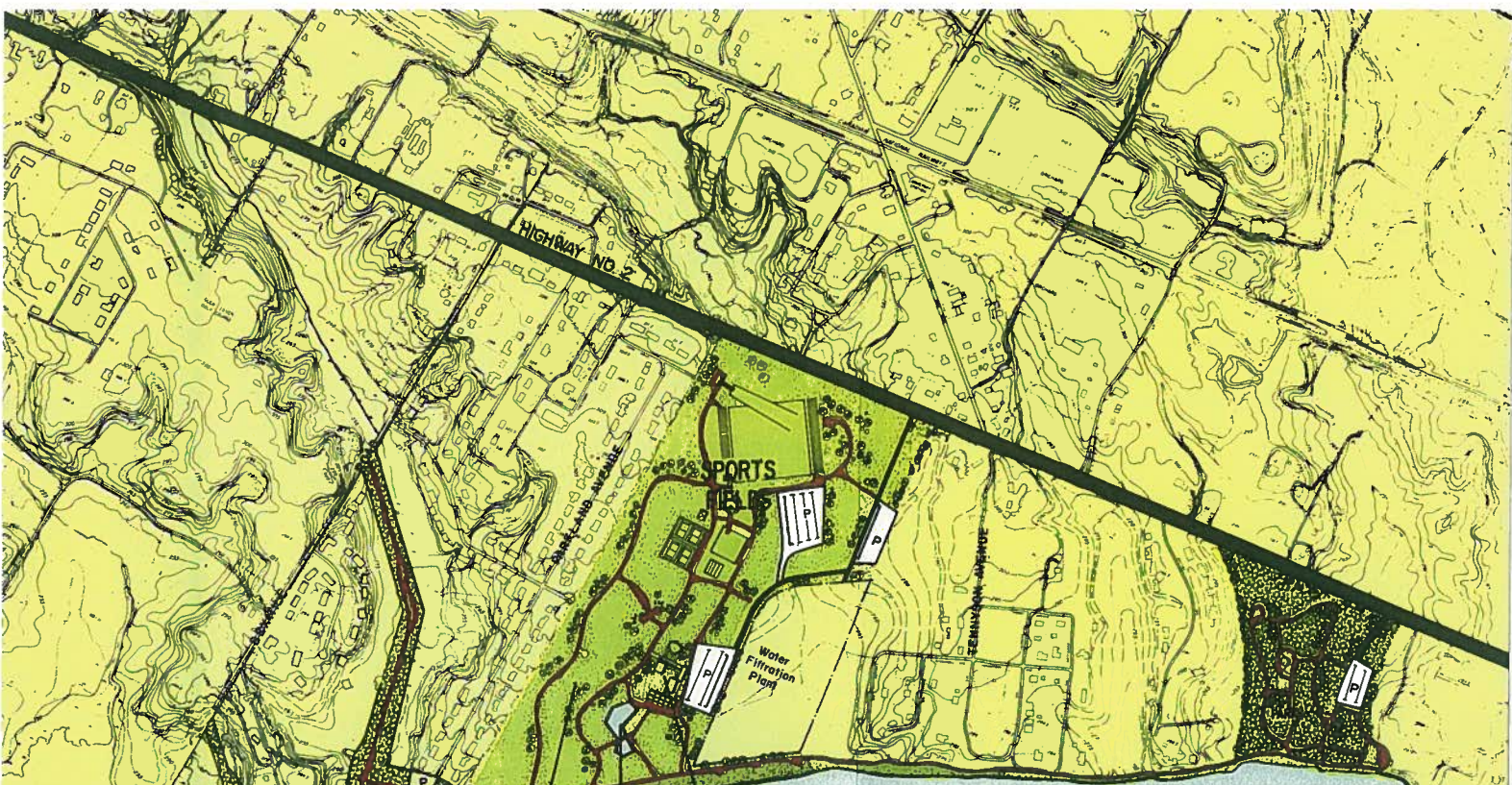
SPORTS FIELD

Ratray  
Marsh

LAKE ONTARIO

PHYSICAL DESIGN CONCE





PICNICKING  
SWIMMING POOL  
RECREATION CENTRE

Ratray  
Marsh

HIGHWAY NO. 2

PORTS

Water Filtration Plant

**CONCEPT MISSISSAUGA SECTOR CLARKSON AREA PLATE NO. 15A (i)**



as part of a waterfront drive and as access to a park comprising the combined flood plain lands of the Creek in the two municipalities which could be realized in the long term. In the interim period it could be opened as access to a small lookout park approximately 1 acre in extent on the elevated land which overlooks the lake in this location.

Lakeside Park near the Fifth Line (Southdown Rd.) has an area of 8 acres only half of which is owned by the Town, the remaining 4 acres being owned by Domtar Industries and used as public parkland under agreement with that company.

The site is very suitable for boat launching ramps since direct access can be obtained from Highway 2, and two industrial piers which are located nearby will provide a measure of protected water. Outside of the existing boating facilities at Port Credit, this is the only readily available additional site for such purposes between Etobicoke Creek and Oakville Harbour. Three boat launching ramps are proposed here as an immediate step, and a marina might be considered for future development, depending on the size and timing of other marina proposals in the area and the availability of suitable fill material. The supporting parkland may be used for tent and trailer camping.

Where the Fifth Line Road Allowance meets the lake, a small lookout site is proposed to take advantage of the views of shipping and associated activities on the industrial piers nearby. It is proposed that a site of about one acre be developed by a small land fill and land purchase.

Meadow Wood Park, which is 35 acres in extent, was designed to serve the dual purpose of local recreation area and buffer strip between the residential development and the British-American Oil Refinery and the Plan suggests no change in its function. The park has a small lakeshore frontage, but with the acquisition of a single residential property lying between this park and Watersedge Parkette to the east, 800 feet of continuous public lakefront could be made available. Access

to this Park area is proposed directly from Highway 2 without passing through the residential area.

A major park complex is proposed running west from the vacant land east of the Lorne Park Estates to the Rattray Marsh. While it can be considered as a unified park area stretching for 1.3 miles, sections of the complex will be linked only by a pedestrian way along the beach, and various parts will be developed to serve only local recreational needs.

It is proposed that the vacant section of the smaller Orsini property lying to the east of Lorne Park Estates be developed primarily for local park purposes with direct access from Highway 2. Parts of this vacant land, which is approximately 22 acres in extent, should be developed for residential purposes as extensions of the residential areas lying to the east and west, but from 10 to 15 acres should be reserved as public open space. The area in its natural state is very attractive and would require minimal expenditure to facilitate its use for park purposes. It would in the long term be linked by a lakefront footpath to the major park which is proposed on the larger Orsini property lying to the west of Lorne Park Estates.

This major park would comprise approximately 70 acres located adjacent to and east of Shoreline Park. Some 80 acres of the property have recently been acquired by the Ontario Water Resources Commission to ensure the availability of land for a water filtration plant in the future. However, there are indications that for a number of years a substantial part of the Commission's land can be available for public park use.

At present the only beach in the area open to the public is that contained in Shoreline Park which is intended to serve the local community. Utilization of the OWRC property will place its desirable beach area at the disposal of a wider section of the Town and permit direct access to the beach from Highway 2 without infiltration through the established residential area.

Development of this property as a major waterfront recreation area with its own parking facilities will permit Shoreline Park to revert to its appropriate role of serving the adjacent residential community.

Details of the recreational facilities to be provided will be arranged to the mutual satisfaction of the Town and the Commission but the park should be capable of catering to the passive and active recreational needs of a wide section of the municipality.

The shoreline of this proposed park combined with that of Shoreline Park and other municipally owned land extending to the outlet of the Rattray Marsh, will provide close to  $\frac{3}{4}$  mile of continuous shoreline available to the public and create approximately 80 acres of parkland. A pedestrian access is proposed along the watercourse which runs north-west from Shoreline Park, but this is a feature which will be primarily for the benefit of local residents.

The Rattray Beach west of the marsh outlet and the marsh itself are not included in this public park complex. The marsh is accessible only through residential areas and the currently proposed residential development of the tableland abutting the Rattray Marsh will diminish this area's value as a nature reserve. If the anticipated private development does not proceed, consideration can be given to the feasibility of utilizing the marsh for public open space. Notwithstanding the disposition of the Rattray Marsh, it is proposed that public riparian rights be secured for the entire beach frontage of the Rattray property to allow for possible public waterfront development in the distant future.

For the eastern part of the Sector, the approach adopted is to provide for minor improvements to the existing basic land use pattern using lake fill to a limited extent to create new land for public recreation areas. In addition the Plan provides for the improvement of access to these areas from Highway 2 which is the main arterial road paralleling the lake. These public recreation areas are designed to serve primarily the residents in the immediately adjacent neighbourhoods although



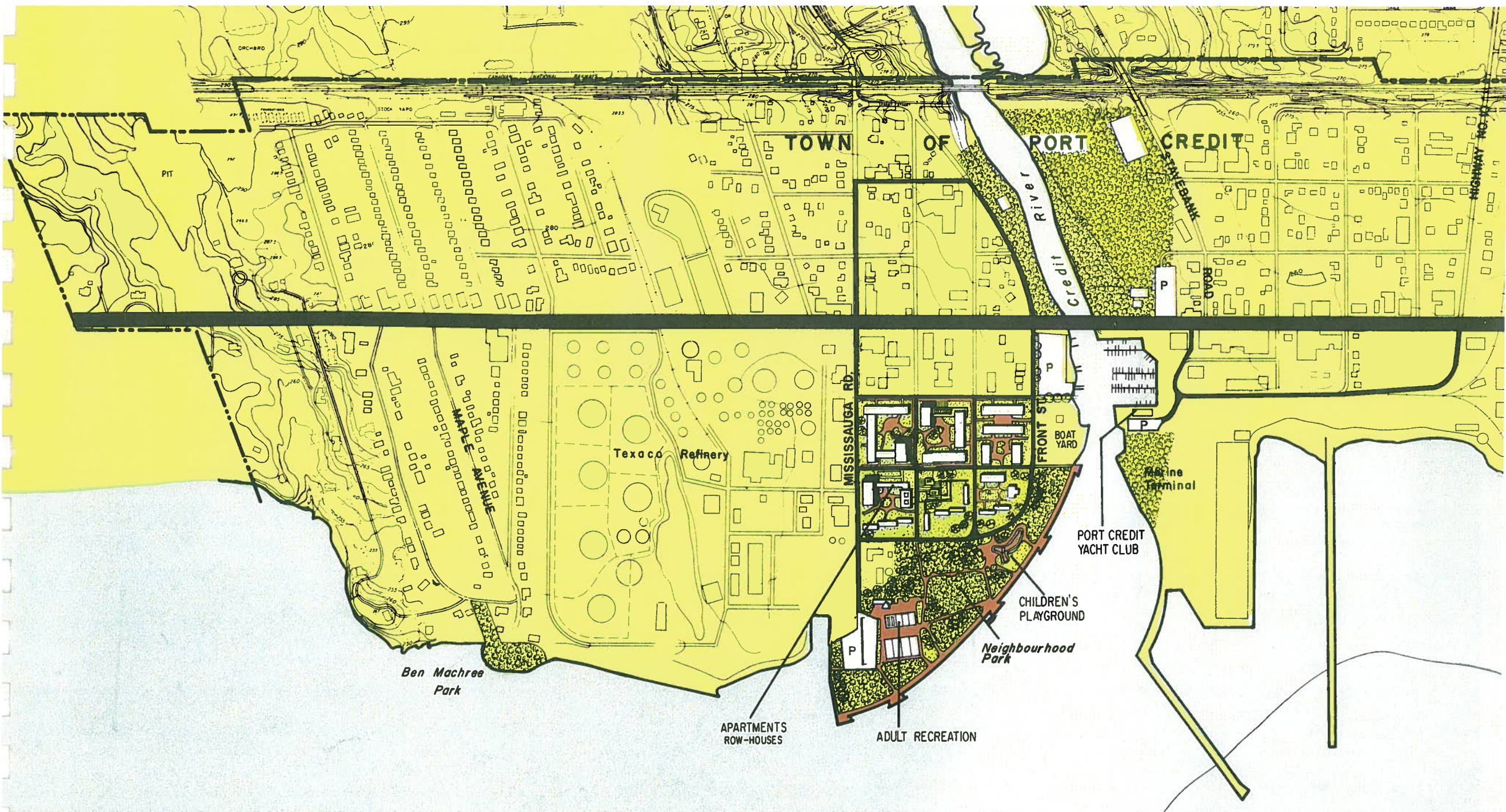


*Left*    *Development of the frontage of the Orsini property west of Port Credit will relieve the small Shoreline Park adjacent*

*Right*    *The Rattray Marsh at Clarkson may be developed for private recreation.*



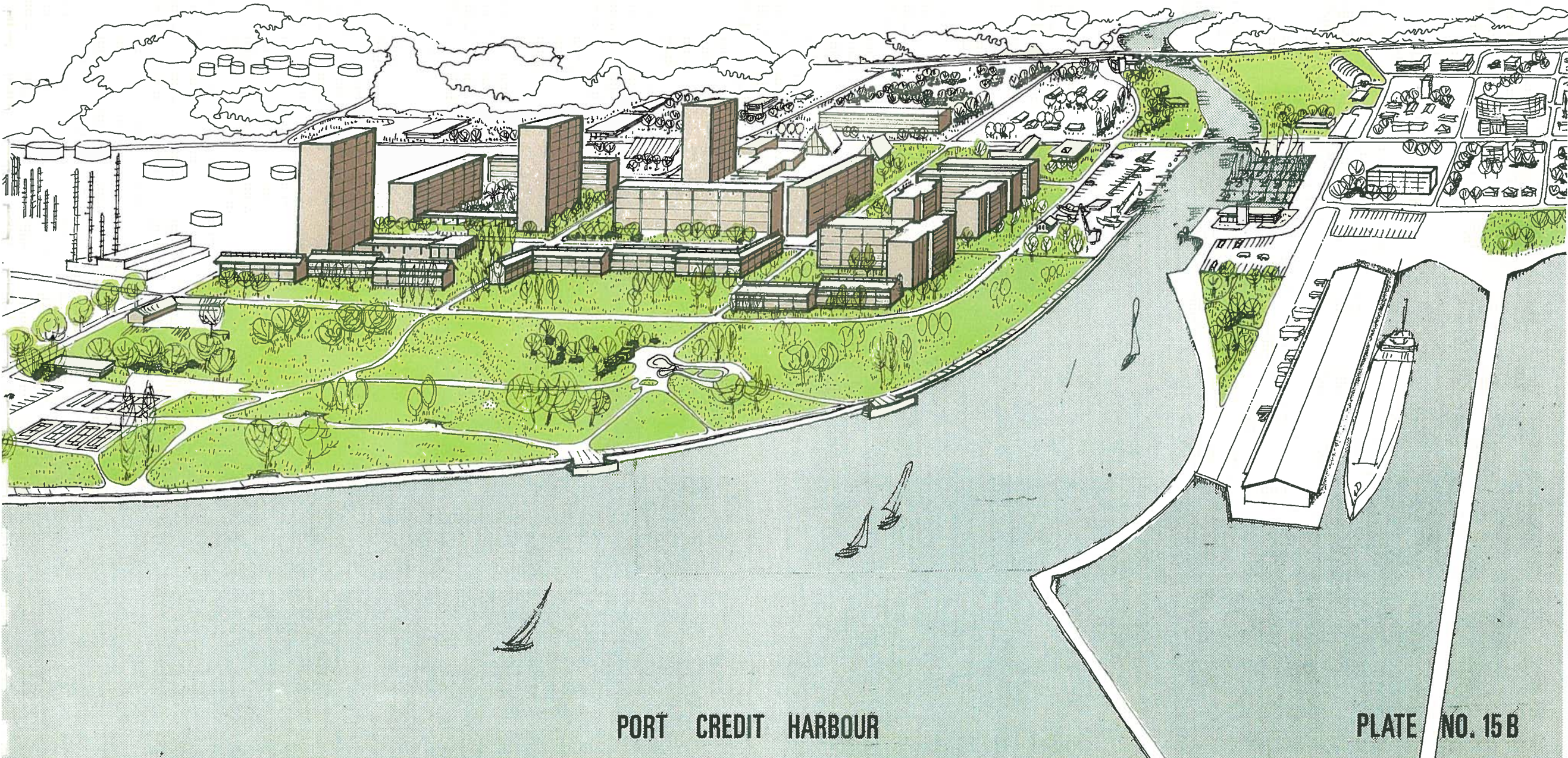




**PHYSICAL DESIGN CONCEPT**

**MISSISSAUGA SECTOR PORT CREDIT AREA PLATE NO. 15A (ii)**

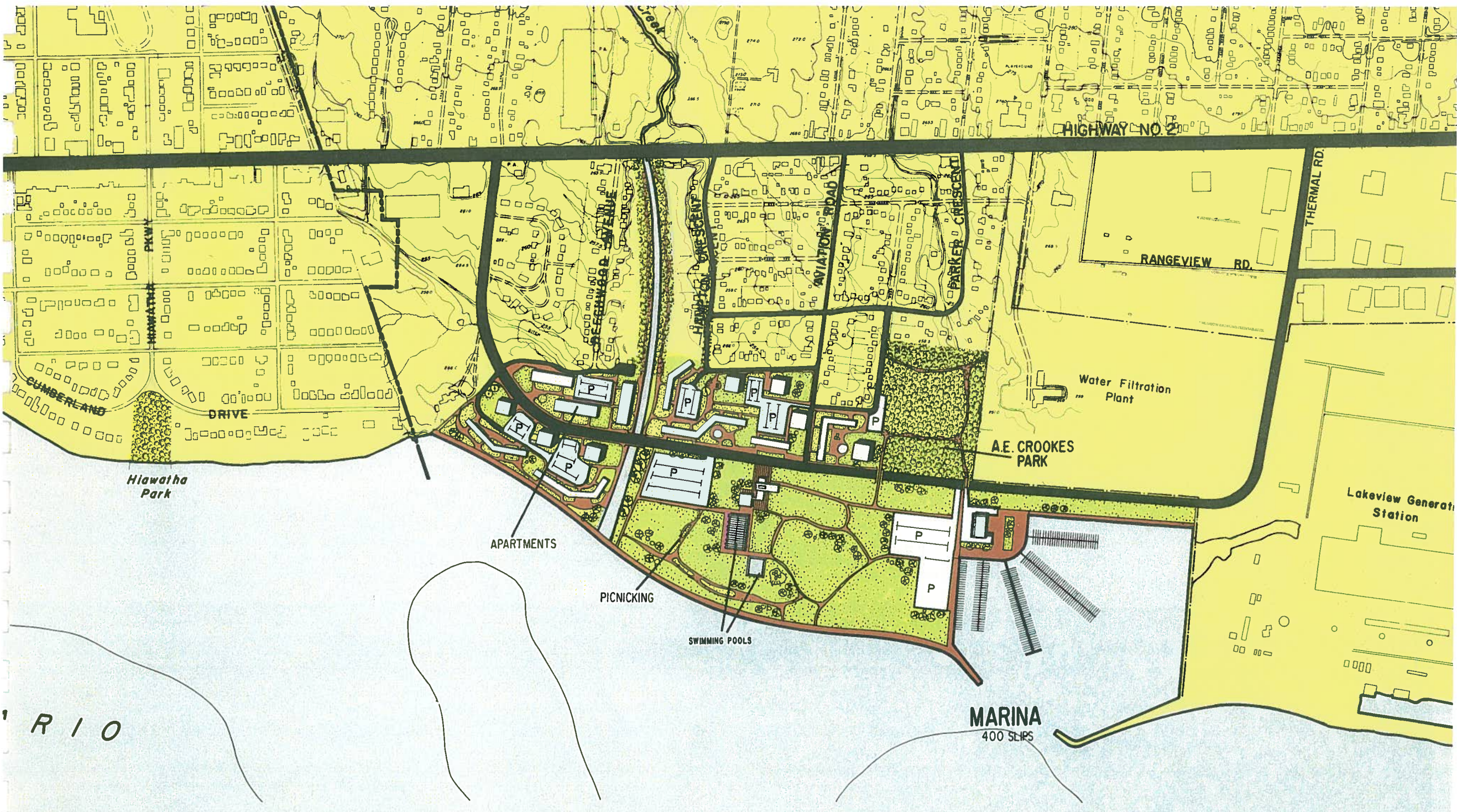




PORT CREDIT HARBOUR

PLATE NO. 15 B





**PHYSICAL DESIGN CONCEPT**

**MISSISSAUGA SECTOR LAKEVIEW AREA PLATE NO. 15A (iii)**



the marina and swimming facilities proposed are expected to appeal to the population of a wider area in the Town and region.

Plate No. 15 A(ii) shows the detailed proposals for the section centred on the mouth of the Credit River.

The banks of the Credit River south of the C.N.R. tracks are substantially developed with recreational uses. North of Highway 2 they are in public ownership for the most part. The Canadian Legion, Port Credit Arena and various rowing clubs are located along the river's edge and the Town of Port Credit has developed its 16 acre Centennial Park.

South of the Highway on the east bank is the Yacht Club of Port Credit which, due to its confined location, will probably be limited to its present mooring capacity. On the west bank, two boat launching ramps are operated by the Town, and to the south of these is a privately operated boat repair yard capable of providing winter dry sail facilities for approximately 80 boats.

The existing development at the river mouth creates an area of intensive activity and provides focal points for boating on the western waterfront. The Plan recognizes this development as appropriate and desirable and suggests the means of expanding the local park land and exposing the aquatic activity to public view.

The major proposal at the mouth of the river is an extension of public land by a fill scheme southerly from the boat storage area on the west bank of the river to create a park area of approximately 12 acres. In addition to providing a strategic harbour viewing area, it will help to meet a shortage of local parkland and recreational facilities in the adjoining residential area. The fill scheme will also permit an extension of Lake Street to Front Street making public access to the park possible along its entire frontage.

The creation of this park will require the acquisition of a few privately owned properties and possibly the riparian rights of three others which will be deprived of direct access to the lake. The filling operations will

extend from the boat yard to the Town's public utilities yard at the foot of Mississauga Road, and can be timed to coincide with the termination of the Port Credit Water Filtration Plant in the early 1970's when the expanded Lakeview Plant will be in full operation and serving Port Credit.

The residential development south of Highway 2 between Mississauga Road and the west bank of the river is predominantly single family in nature. However, the area is zoned by the Town to permit apartments. Some have already been erected, and more are expected, as shown on Plate No.15B, which illustrates the development anticipated.

Plate No. 15A(iii) indicates the features planned east of the Lakeview residential area. It is proposed that a limited land fill project be undertaken as an extension of A.E. Crookes Park. Approximately 60 acres of fill is proposed, of which 45 acres would be developed for recreational purposes, with the remainder to be used for residential development.

This major park will serve both the wider area of the Town for water-oriented recreation, and the immediately adjoining residential areas for local park purposes. It will contain a marina, a large swimming pool designed for summer (open air) and winter (enclosed) swimming, picnic areas and supporting facilities including car parking lots suitably integrated into the landscape. The proposed marina will accommodate 400 boats and is located to take advantage of the warm water discharge from the Lakeview Generating Station which will prevent the formation of ice in the basin and thereby permit winter storage of boats in the water.

These proposals will require the acquisition of some privately owned water lots and the riparian rights of other properties abutting the lake.

Access to the park for pedestrians from the local residential area will be available through the existing A.E. Crookes Park (which should continue to function as a local park) and through the valley of the Cooksville Creek which should be channelized and re-

aligned. Vehicular access to the area is proposed as a loop road from Thermal Road through the Filtration Plant and the proposed apartment area via Adamson's Lane to Highway 2. Wherever possible, the apartment development should have access to this loop road to avoid heavy traffic use of the existing single family streets.

The parking areas can easily accommodate 600 cars with provision for expansion if required for a peak visiting day. Under these conditions the park should be capable of accommodating 3,000 visitors assuming 10% arrive by means other than car. This order of attendance is anticipated only in the long term when special activities associated with the proposed marina create a popular interest.

As the fill program will take about 25 years to complete it is desirable that the fill commence at the eastern end adjoining the Filtration Plant and proceed westerly. This will enable traffic associated with the filling process to be routed through the industrial area, without injuring the amenities of the residential area. In addition it will permit a staging programme to be devised whereby the marina, with revenue producing prospects, might commence operations prior to completion of the total park scheme.

A substantial area of industrial and utility uses extends west from Marie Curtis Park to the Lakeview Water Filtration Plant. While it has been assumed that the Canadian Arsenal's operation will remain, the southerly portion of its site will be required for future expansion of the Lakeview Sewage Treatment Plant. None of the lands in this industrial/utility area is available for future public recreation use and the one lakefront property presently used for recreation facilities to the east of the Water Filtration Plant will eventually be required for expansion of that utility. However, major access routes are suggested to serve the proposed recreational areas lying to the east and west. One will cut through the Canadian Arsenal's property to serve Marie Curtis Park and eventually to link with

the proposed scenic drive east of Etobicoke Creek, and the other will follow the southerly extension of Thermal Road across the Water Filtration Plant site to serve the park which is proposed in the Lakeview residential area.

The nature of the development at the Lakeview Generating Station precludes the possibility of linking these access roads as a lakeshore drive, but it is proposed that Rangeview Road be extended to the east through presently vacant land as a link between the access roads, thus avoiding the use of Highway 2 by persons travelling between the recreation areas.

The following table summarizes the acreages in the existing and proposed waterfront parks in this Sector.

Park	Existing Acreage	Proposed Acreage
Waterworks Park	15.0	nil (required for plant expansion)
A.E. Crookes Park	8.5	53.5
Hiawatha Park	2.4	2.4
Credit River Park	nil	12.0
Ben Machree Park	1.5	1.5
Orsini East	nil	15.0
Shoreline Park & Orsini West	2.5	80.0
Watersedge Park	.25	.5
Meadow Wood Park	35.0	35.0
Lookout Point (W. of B.A. Oil Refinery)	nil	1.0
Lakeside Park	8.0	8.0
Joshua Creek Lookout Point	nil	1.0
TOTAL	73.15	209.9

### (iii) Staging Program

Achievement of the objectives of this Sector Plan will depend to a large extent on the ability of the Town of Mississauga to purchase, or assure the availa-

bility of, key parcels of vacant land for the uses proposed. If the use of these lands is not assured and plans for their private development proceed, a reduction in the scale of public open space development within this sector may be necessary. Assuming that conditions are favourable for the proposals of this Plan to be implemented, a broad phasing program is suggested below. In addition to reflecting the considerations outlined above, it attempts to ensure provision of the land reclamation proposals in an order which will permit their development to be enjoyed in the shortest time possible.

Land acquisitions, in order of priorities, are:

- Purchase of the Orsini Estate property located east of Lorne Park Estates. This land has direct access to Highway 2 and can be prepared for park use immediately after purchase. Action should be taken now to prevent the development of these lands for other uses.
- Purchase of the 4 acres of land from Domtar Industries to extend Lakeside Park.
- Purchase or assurance of the public right-of-way through the Canadian Arsenals property as this affects the continuity of the driveway proposed in the Lakeshore Sector. (If this right-of-way is not assured the road might run through Marie Curtis Park, but this is considered undesirable and should be avoided if possible).
- Assure extension of Thermal Road and Rangeview Road through the Ontario Hydro and Ontario Water Resources Commission properties by agreement with these agencies. (In addition to the need for providing continuity of access between Marie Curtis Park and the westerly parks, there is need for access through the water filtration plant to the proposed fill sites south of the plant).
- Acquisition of the "nature trail" for Shoreline Park.
- Purchase of other small areas of land and water lots where these are required for the continuity of park shoreline as shown on the property acquisition map.

Some 15 acres of reclaimed public land lying west of Cooksville Creek may be sold or leased for apartment use. The revenue from such sale or lease will help to defray the costs involved in developing the remainder of the waterfront proposals in this area.

The recommended order of priorities for land reclamation is:

- Land fill scheme at the mouth of the Credit River which will create approximately 12 acres of parkland over a period of three years.
- Land fill scheme at the mouth of the Cooksville Creek which will create approximately 45 acres of parkland and 15 acres of residential land over a period of 25 years.

The estimates of time required are based on the use of clean fill only. Should further investigation reveal that other materials may be used, the time periods required for completion may be substantially reduced.

### f. Eastern Beaches Sector

#### (i) Existing Conditions and Problems

This Sector Plan covers the area south of Queen Street between Ashbridge's Bay and the east city limit at Nursewood Road.

On this stretch of lake frontage, the City is endowed with a fine beach. The portion between Ashbridge's Bay and Woodbine Avenue is an attractive, lively public beach; the portion between Woodbine Avenue and the east boundary of Kew Gardens has a narrower beach strip with a broad grassed and treed park area which accommodates tennis courts, lawn bowling, and a skating rink. The beach east of Kew Gardens consists of a narrower grass and sand strip, which, although intimately connected to the adjacent Beaches neighborhood, is a public beach area. East of the Balmy Beach Club to the city limit the park is narrow, with some of the residences having steps directly to the beach. A wide boardwalk runs from Woodbine Beach to the Balmy Beach Club.



Swimming, sunbathing, picnicking, and strolling are accommodated on the Beaches as well as tennis clubs, lawn bowling clubs and various boating clubs. The attractively designed Summerville Pools provide excellent swimming facilities.

The Greenwood Racetrack is a point of attraction in this part of the City.

Part of the charm of the Eastern Beaches is the contrast of the lively open, often crowded Woodbine Beach, with the more varied activities and park area between Woodbine Avenue and Lee Avenue and with the quiet more intimate beach area to the east of Lee Avenue.

The water quality off the Eastern Beaches is relatively good and compares with the water quality off the Island beaches. The Beaches have been open for swimming every year since 1959 when all the City's beaches were placarded to warn against polluted water.

The water in Ashbridge's Bay is particularly unpleasant after a storm when interceptor sewers are overburdened and discharge untreated sewage into the bay. The polluted water of Ashbridge's Bay does not seem to affect the water off Woodbine Beach substantially, probably because the bulk of wave energy comes from the east and carries the polluted waters away from Woodbine Beach.

However the land fill proposed for the extension of the Harbour and for the Main Sewage Plant extension and the resultant increased pollution problem of Ashbridge's Bay will require that some changes be made in the shoreline in order to protect the swimming area, and it is proposed to utilize these changes to accommodate increased recreational facilities.

The boat clubs are presently cramped, and Ashbridge's Bay, because of the unprotected entrance and polluted waters, is not a suitable boat mooring basin.

Public transit access to the beaches is from Queen Street, five minutes walk to the north of the Beaches, and by the Woodbine bus which route is extended south of Queen Street to the Summerville Pools in the summer

months, and which connects with the Bloor-Danforth subway. Pedestrian traffic from the surrounding neighborhoods is important. Access by car to the Woodbine Beach is from Lakeshore Boulevard or Woodbine Avenue but access to the parkland east of Woodbine Avenue is poor and involves the use of neighbourhood streets.

There is presently capacity for 600 cars in the Woodbine Beach parking lot. The lot fills to capacity during summer weekends and on Sundays the overflow is accommodated on the Greenwood Racetrack parking lot. Some parking by Beaches visitors east of Woodbine occurs on the residential streets but because of a shortage of parking for residents only a small number of beach visitors can be so accommodated.

#### (ii) Objectives

The General Plan (Plate No. 10) indicates the potential for development in this Sector with the application of massive filling to create new land areas on shore west of Woodbine Avenue, and a large island extending easterly to the R.C. Harris Water Filtration Plant in Scarborough. However, notwithstanding the relatively low cost of creating land by dredging, the scale of the project would obviously involve a large financial outlay. It appears questionable whether such a project would be undertaken during the period covered by this plan unless motivated by a decision to proceed with a major complex for competitive sports and international games. Pending such a decision, the Plan for this Sector as presented here is limited to a more modest set of objectives aimed at enhancing the present conditions and facilities, while leaving the door open for the commencement of the more ambitious undertaking at any time.

The Main Sewage Treatment Plant to the west of Ashbridge's Bay will be expanded by means of land fill to the south of the existing plant. This will form an extension to the west bank of Coatsworth Cut and will increase the danger of the polluted waters of Ashbridge's Bay affecting the swimming area off Woodbine Beach

unless the east bank is also extended.

Ashbridge's Bay presently provides a barrier between the Sewage Treatment Plant and the recreational uses of the Eastern Beaches. If Ashbridge's Bay is ever filled, generous planting and earth berms should be used to adequately separate the Sewage Treatment plant from the beach area.

The existing Ashbridge's Bay is used for boat mooring although its entrance is dangerously unprotected from eastern storms. The entrance requires continual dredging because sand bars form across its mouth and move up the channel of Coatsworth Cut. Boats moored in the bay are exposed directly to southern storms. The existing clubs are cramped for space and the Bay is not able to accommodate any more boats on moorings. Parking facilities for the boat clubs are presently adequate but must rely on the use of public lands. This is not an entirely satisfactory situation and parking related to boating facilities should be provided within plans for the area. Sailboats add much to the interest and enjoyment of the Eastern Beaches, and an expansion of launching and mooring facilities is one aim of this Plan.

The natural beaches are the outstanding feature of this Sector and it is the intention of this Plan to preserve and enhance them. It is possible that some of the changes proposed for the Scarborough Bluffs sector, the extension of the banks of Ashbridge's Bay or the proposed land fill may cut off the supply of some of the material which has been nourishing the Eastern beaches or change the pattern of littoral drift.

The Eastern Beaches are a green pleasant oasis in the City. However, some landscaping improvements are required particularly around parking areas and to screen some of the surrounding land uses.

The existing and any future parking lots should be carefully landscaped in order to not disrupt the character of the park. The views to Greenwood Racetrack from Woodbine Avenue, Coxwell Avenue, and Lakeshore Boulevard would be improved by screening planting.

The existing beach traffic and residential traffic use the same streets and this situation is presently not too critical because there is very little parking provision to attract non-residential traffic. However, there ought to be public parking available for the beach between Woodbine and the eastern City limits and with any increase in the amount of non-residential traffic it becomes desirable to discourage beach traffic from freely using residential streets. All parking lots should be carefully landscaped.

The redevelopment of the area between Woodbine Avenue and Kew Gardens as recommended in the Proposed Plan for Toronto will present the opportunity of separating the residential traffic from the beach traffic. However, other than this no new roads are proposed for they could be damaging to the existing residential areas. The beach traffic should be assigned to certain streets which are clearly marked as leading to parking lots, and whose intersections with Queen Street are clearly sign posted and/or light controlled. Beach traffic should be discouraged from using other residential streets.

### **(iii) Description of Proposals**

Plate No 16A shows the major proposals for the Eastern Beaches Sector. The existing Woodbine Beach is to be preserved and the beaches east of Kew Gardens should be maintained as a quieter more secluded beach area. Accordingly landscaping improvements are suggested to the areas surrounding these beaches. Careful landscaping of existing and proposed parking lots will be necessary if these are not to damage the parkland. Similar improvements to the character of the beach areas would come from boulevard tree planting on Woodbine Avenue, Lakeshore Boulevard and Coxwell Avenue with particular attention given to screening the large parking facilities on Greenwood Racetrack.

Two relatively minor land fill extensions to the beach area are proposed:

One, opposite Kew Gardens, consists of fill behind

an existing breakwater. This will add a considerable area to the public beach at this point and enable the provision of further recreational facilities such as lawn bowling, tennis and shuffleboard.

The other extension is proposed at the foot of Nursewood Road. This area would form the extension of the fill area proposed at the western end of the Scarborough Bluffs Sector Plan and would add to the continuity of the beaches at this point. The promontory could be used as an attractive parking and sitting out area, with associated concession buildings. It would command splendid views of the City to the west and Scarborough Bluffs to the east.

An extension to the east bank of Ashbridge's Bay to prevent the extension planned for the west bank from diverting the polluted water of Ashbridge's Bay to Woodbine Beach is proposed. Within this extension would be developed marina facilities providing sheltered moorings for approximately 500 boats with attendant facilities, roads, parking, slips, boat launching ramps and clubs. Improved access to the marina area would be obtained from the southerly extension of Coxwell Avenue. All of the material required for filling is expected to be clean fill trucked in from construction projects in the east end of the city.

Plate No. 16B is a perspective illustrating the new marina proposed.

Whilst the Scarborough Bluffs add to the beauty of the recreational area the predominantly industrial area to the west detracts from these public facilities. It is proposed that every possible step should be taken to encourage massive planting and landscaping in this area to soften the view of it from the Eastern Beaches. The effect of such landscaping would also of course be enjoyed from other areas of the City.

### **(iv) Access and Parking**

The following improvements are proposed to increase accessibility to the beaches.

- A new entry to Kew Beach Avenue from Lakeshore Boulevard.
- Additional parking off Kew Beach Avenue, Lee Avenue, Beech Avenue and at an extension of Nursewood Road at the eastern extremity of the beach area.
- In order to improve access to these parking areas and to discourage beach traffic from using other residential roads in the area south of Queen Street it is proposed that Kew Beach Avenue, Kenilworth Avenue, Lee Avenue, Beech Avenue and Nursewood Road be adapted by sign posting, providing controlled intersections at Queen and other minor improvements as appropriate.

### **(v) Staging**

Improvements to landscaping, parking and access should proceed as soon as they can be fitted into the City's program of works. After detailed design advice has been received from engineering consultants the land fill operation could commence.

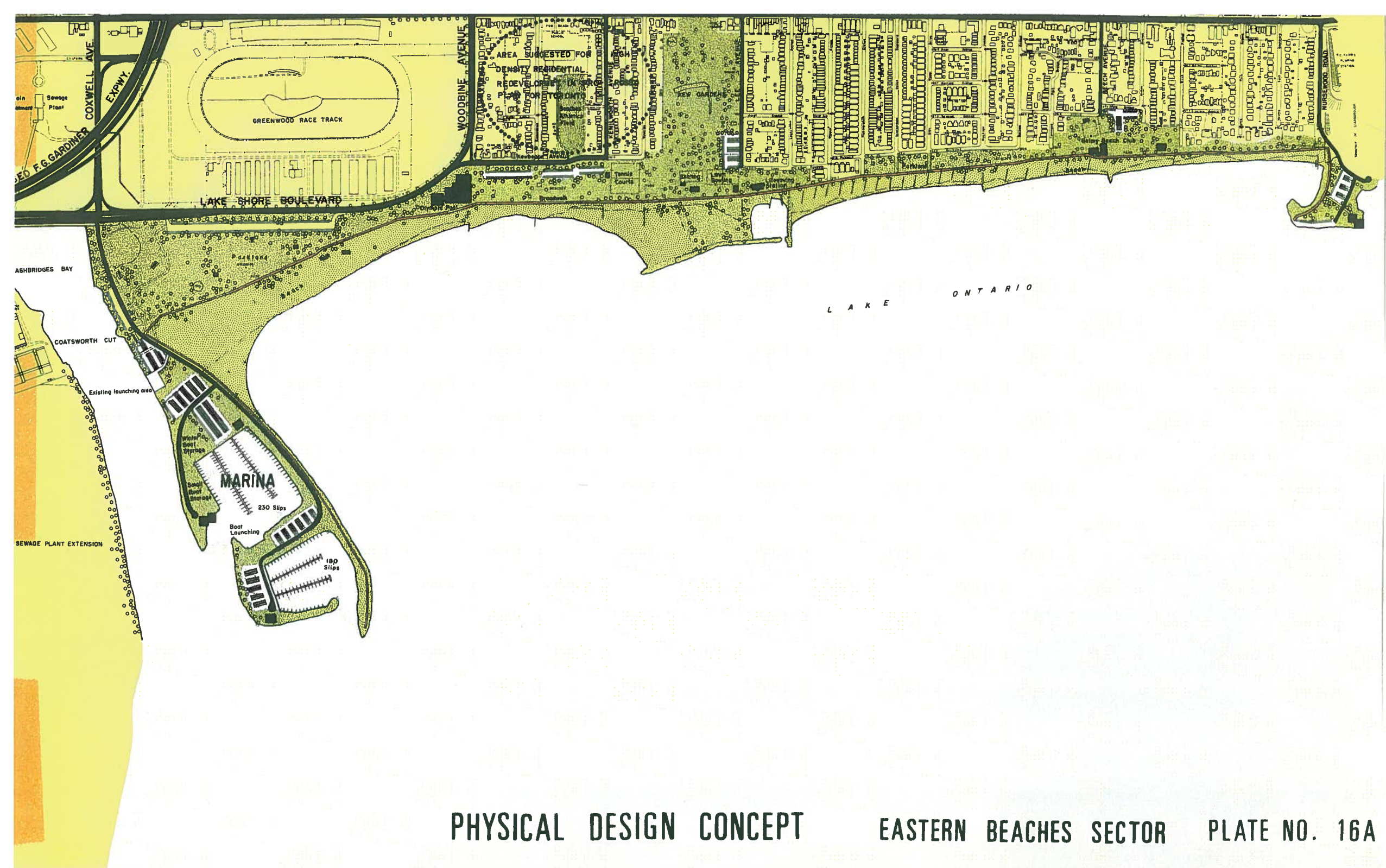
An application for financial assistance in the marina construction to the federal government should be made as soon as possible. The filling operation on the east shore of Ashbridge's Bay should start before the question of an implementing body is resolved, rather than delay the initial extension of this shoreline which would help to improve the situation for boats presently using Ashbridge's Bay for refuge.

### **(vi) Ownership and Leases**

All the parkland of the Eastern Beaches is in public ownership. The parkland owned by the Toronto Harbour Commissioners and controlled by the City for park purposes was not included in the recent transfer of the parkland of the Western Beaches to the City from the Toronto Harbour Commissioners.

The land immediately to the east of Ashbridge's Bay is owned by the Toronto Harbour Commissioners and controlled by Metro Works for Sewage Treatment purposes although no sewage treatment plant development



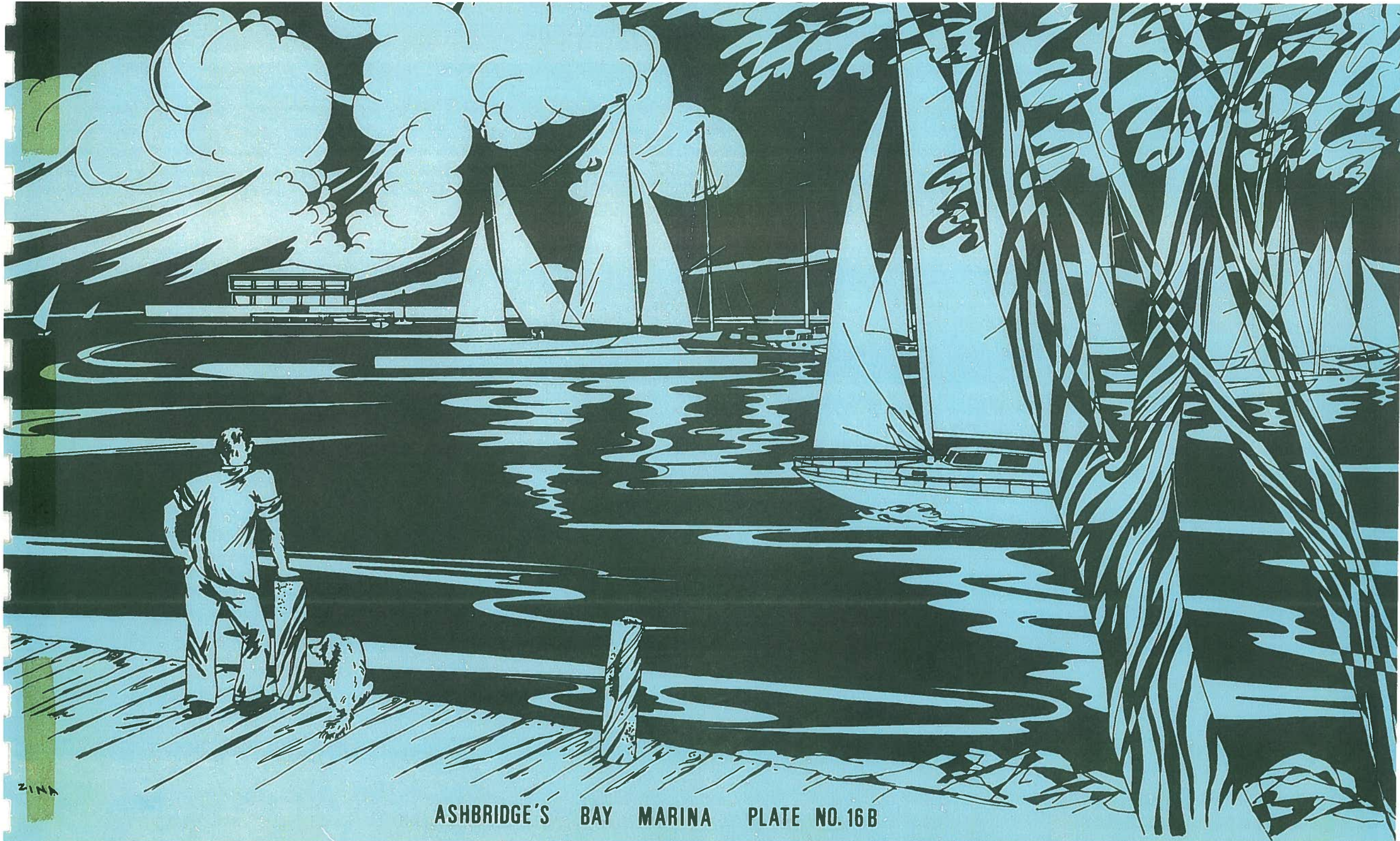


PHYSICAL DESIGN CONCEPT

EASTERN BEACHES SECTOR

PLATE NO. 16A





ZINA

ASHBRIDGE'S BAY MARINA PLATE NO. 16B



is anticipated on the east side of the bay. Part of this land is leased to private clubs and the remainder is parkland.

The questions of transfers of ownership between public bodies, and of the application for an area of water management offshore do not appear critical and might well be delayed until the whole matter of implementation for the entire waterfront is resolved.

#### g. Scarborough Sector

##### (i) Objectives and General Method

This Sector Plan includes the whole of the lake frontage of the Borough of Scarborough, that is, from Nursewood Road to Port Union Road. In depth, the Plan extends north to Kingston Road and Lawrence Avenue. The Appraisal for the Waterfront Plan adopted as a basic hypothesis for the development of the Scarborough Sector, the creation of new parklands by massive filling in the lake along the base of the Bluffs. Subsequently, it became apparent that massive filling would be dependent on the use of waste materials, not only to supply the bulk of the fill material, but also to provide the economic support for the very considerable costs which would be involved.

Inasmuch as the feasibility of the use of waste materials has not yet been established, it was deemed prudent to prepare an alternative scheme based on the use of clean fill only. The sources of clean fill are:

- material trucked to lakefront locations from public and private construction projects in Scarborough.
- material excavated from the Bluffs.
- material dredged from the lake bottom.

It is axiomatic that that material will be trucked to the lake only from sites within economic haul distances. As it is not the intention to destroy their unique natural beauty, wholesale excavations from the Bluffs cannot be contemplated, and earth moving costs will be sufficient to discourage a too prodigal use of the bulldozer in any event. Similarly, the costs of dredging

for purely park purposes can be depended upon to curtail ambitions on the lake bottom as a source of material. These restraints will combine to permit only a modest filling program.

It is therefore a Limited Fill Alternative which is presented in this Sector Plan. It is possible that a Massive Fill Alternative will be prepared after the completion of tests on the use of waste materials have demonstrated the potentialities for each type of material.

The principal objective in the Scarborough Sector is to create lakefront park areas which will be metropolitan in size, function and attraction. The limited amount of filling in the lake should be directed mainly to the provision of space for water-oriented recreational facilities (especially for boating) which are required to serve the eastern end of the Metropolitan Area.

The fill areas will also afford a water level view of the rugged grandeur of the Bluffs, a prospect which cannot be appreciated fully from the rim. Although the location of the fill areas will be governed largely by the availability of access routes to the water's edge, special effort must be made to secure views of the Bluffs at their most spectacular points, notably at the Needles, where the erosion of a peculiar subsoil produces sheer cliffs and towering spires, and at the Cathedral Bluffs, where the coincidence of the Lake Iroquois and Lake Ontario shorelines results in heights of more than 300 feet.

A further important objective is to preserve and enhance the new or relatively new, attractive and stable neighbourhoods of single family homes which adjoin the top of the Bluffs along most of their length. This is to be done by creating a more attractive and usable waterfront, the creation of space for additional local recreation facilities, and, through careful design and access planning, the protection of those neighbourhoods from induced traffic.

The need for urban renewal along the Bluffs is slight, and accordingly, the stimulation of redevelopment is not an objective in this plan, as is the case for ex-

ample, in parts of the Etobicoke Sector. On the other hand, there are places where the close proximity of arterial roads to the lake makes possible and may, over the long term, encourage higher density residential buildings, including a dramatic use of the face of the Bluffs for apartment buildings, with recreational facilities at the base. One of the objectives is to retain the potentiality for such development.

Two important recreational objectives enunciated in Chapter 2 are, of necessity, partially abandoned in this Limited Fill Approach. Without filling, the protected waterway cannot be provided in any form that might be described as continuous, or even semi-continuous. Instead, the objective will be to provide short stretches of protected water and small boat harbours to afford some shelter along the Ashbridge's Bay - Frenchman's Bay stretch, a section of lakefront which is now dangerously devoid of refuge points for small craft.

Similarly, a Scenic Drive on a continuous alignment is not recommended in this Sector Plan. Without massive filling, an alignment along the foot of the Bluffs is impossible, and although a route along the rim could be pushed through such a route would obviously attract heavy peak hour traffic, and thus conflict with the objective of stable neighbourhoods. In place of a continuous alignment then, the objective must be a series of loop driveways within the metropolitan parks themselves, having direct access to arterial streets.

The Borough of Scarborough has completed the storm drainage interceptor works which will arrest the erosion of the Bluffs and gullies by surface water run-off. An important objective of this Sector Plan is the elimination of erosion by wave action along the toe of the slope. This will be achieved in part by the lake filling proposed, and by the beach build-up which will occur to the east of the new land forms projecting into the lake. Elsewhere, timber groynes will be necessary, except where breakwaters may be constructed in con-

junction with apartment development, as will be described.

The resultant stability will permit the growth of vegetation which, in turn, will eliminate erosion from wind action, nivation, and water seepage from the face of the Bluffs.

Finally, the intention has been to create a Limited Fill Plan which may ultimately be fitted into a more ambitious land fill scheme should such be embarked upon in later years.

This Plan proposes the expansion and development for various park purposes the large tracts presently owned by the Metropolitan Corporation at three locations along the rim of the Scarborough Bluffs. These three areas are Brimley Road, Bellamy - Markham Road, and Beechgrove Drive, and hereinafter will be referred to as the Needles Park, Meadowcliff Park, and East Point Park, respectively. Expansion is to be by land purchase at the top of the Bluffs, and by some filling in the lake.

In addition, a smaller expansion is proposed at Nursewood Road adjacent to the R.C. Harris Plant, and the Highland Creek Valley Park is to be extended by land purchase.

As has been indicated, the filling proposals are predicated on the use of clean fill including material trucked in, borrowed from the Bluffs, and excavated from the lake bottom. The rate at which clean fill will be trucked in has been calculated on the projected clean fill availability estimates set out in Appendix 'C'. The proposal to use material from the lake bottom is based on preliminary studies of its nature and quantity carried out by E.M. Peto Associates and Hunttec Ltd. in November 1966.

The only exception may be a small pilot scheme to test techniques and demonstrate the feasibility of the use of waste materials conducted near the foot of Brimley Road.

## (ii) Park Proposals

Each area along the Scarborough Bluffs has its own unique features and conditions. It is therefore necessary to develop each area individually to satisfy the conditions and requirements dictated by the site. This has been done, keeping in mind the overall concept and goals for the Scarborough Bluffs Sector.

Beginning on the west, a small land fill operation adding from 3 to 5 acres to the beach area is projected in front of the R.C. Harris Water Filtration Plant at the foot of Nursewood Road. This is to create a look-out point providing a view east along the rising Bluffs and west along the Eastern Beaches. The parking area here would make the eastern boardwalk more accessible for would-be strollers. Nursewood Road will form the eastern access point for any major off-shore land filling undertaken in front of the Eastern Beaches.

The Needles Park proposals are shown on Plate No. 17A(i). The existing Scarborough Bluffs Park at the foot of Midland Avenue is to be expanded by acquisition of the portion of the St. Augustine Seminary property situated below the Lake Iroquois shoreline. This area is proposed for picnicking, field sports, tennis courts, childrens' play area, wading pool etc. and may be used as the site for a recreational centre. The Cliffside neighbourhood is short of usable local park space, and a new neighbourhood park is recommended adjacent to Chine Drive Public School.

To relieve Scarborough Crescent and other local streets from traffic generated by this expanded park, a new access is proposed via the extension of Brimley Road down the ravine.

A small boat basin to accommodate a marina and sailing club is proposed east of Brimley Road. In time, the fill can be extended westerly in the form of a long slender island, enclosing a stretch of water in front of the spectacular Needles. Material dredged from the waterway can be used to widen the island.

The waterway is planned to accommodate a regatta course of Olympic specification and will be useful for boat launching, and a wide variety of water sports and competitions. The island will provide sites for rowing clubs, small boat rentals, picnicking and will carry a length of the first scenic drive loop. The latter is planned to connect to Kingston Road at Fishleigh Drive via the ravine west of the Scarborough Water Filtration Plant.

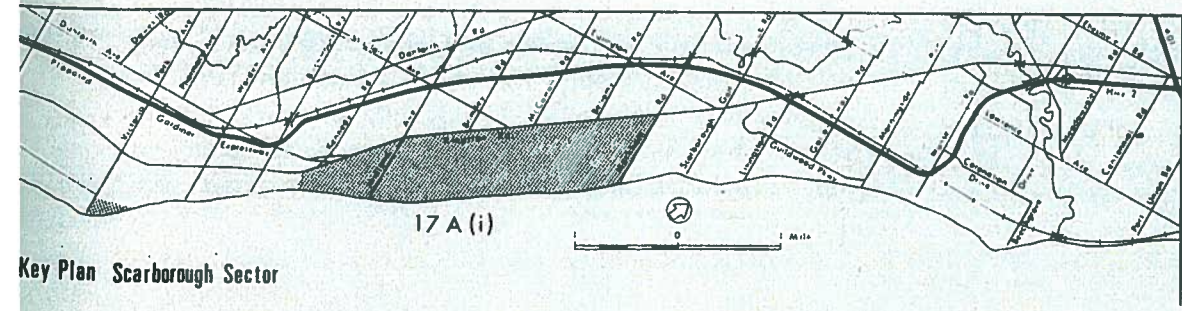
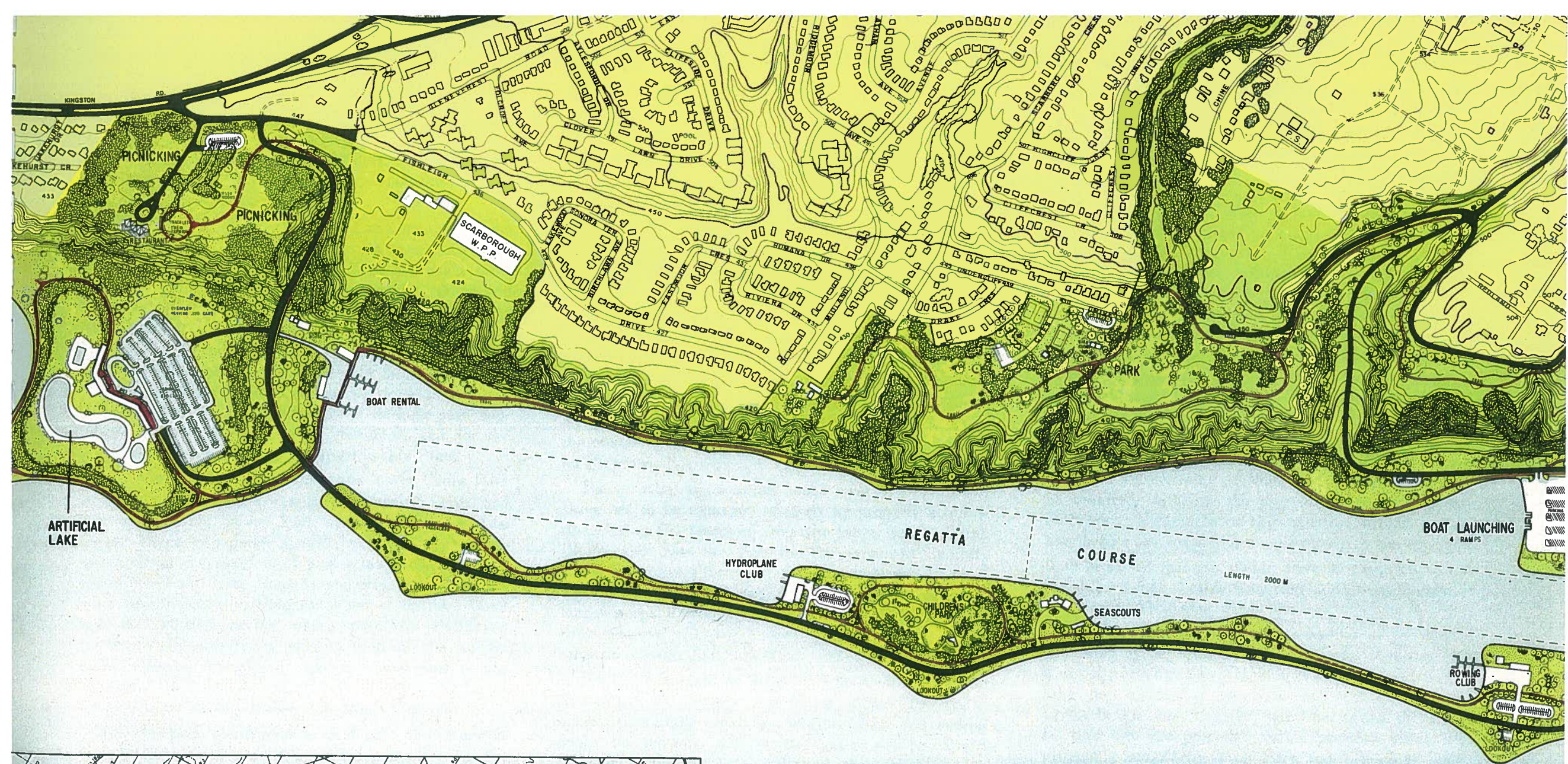
When the water plant is removed from general service, its equipment can be used to treat an artificial lake constructed below on material borrowed from the Bluffs. This section is west of the Needles, where the cliffs have no special character not visible elsewhere which requires preservation

As a part of this last stage of development, the residential strip between the filtration plant and Rosetta McLain Park must be acquired. This will permit the integration of the passive recreation space there with other facilities such as a restaurant and a Swiss aerial ride which may be installed along the top of the Bluffs. Acquisition of the West estate beside McLain Park would be a useful addition.

East of Brimley Road, additional land acquisition is proposed along the top of the Bluffs extending beyond the Federal Department of Transport Meteorological Station, around the large natural amphitheatre, to include the metropolitan parkland at the top of the majestic Cathedral Bluffs. It is at this one location that the Lake Iroquois and Lake Ontario shorelines coincide, resulting in the highest point on the shoreline, and remarkable views in both directions.

In view of the proximity of neighbouring homes, passive recreation and picnicking are recommended in the parkland along the rim overlooking the marina. A double purpose might well be served if some local park equipment is installed. The adjacent neighbourhood is one which is somewhat deficient in local open space.





**PHYSICAL DESIGN CONCEPT**  
**SCARBOROUGH SECTOR CATHEDRAL BLUFFS PARK**

Key Plan Scarborough Sector







The tremendous natural amphitheatre in this section still poses something of a question. There is no suitable access from Kingston Road for any major attraction. With grading and a tow, it offers possibilities for winter sports, but exposure to wind would undoubtedly discourage its use, and its generally southern exposure would make snow retention difficult. Artificial snow machines would certainly generate complaints from adjacent home owners.

A terraced botanical garden might be considered, having in mind the almost tropical growth conditions created by the incidence of the Bluffs to the sun's rays. However, its height and steepness would no doubt add substantially to development and maintenance costs for a characteristically expensive park. These two factors would also tend to discourage the stroller even with an inclinor for the trip back up. It may well be that the most that can be done is grading, planting, and the development of a walking path supported by a golf-course type inclinor, and for the time being, that is what is proposed in this Plan.

The Metropolitan Corporation now owns Cudia Park at the top of the Bluffs west of Meadowcliff Drive, and has expropriated Sylvan Park at the foot of Markham Road. These two parks should be joined by the acquisition of the residential properties on Meadowcliff Drive below the Lake Iroquois shoreline, and provided with direct access to Kingston Road at Bellamy Road via the wooded ravine which parallels Bellhaven Crescent. Eventually, a second loop of the scenic drive can be completed, and a connection to the Cathedral Bluffs Park effected by the acquisition of properties on the south side of Lakehill Crescent.

The new park would have a total area of 132 acres. It is recommended that it be developed as a natural park, a use which should be compatible with the closely adjacent residential areas. The widest possible variety of trees and shrubs should be planted, and refuges provided for small mammals and upland game birds. The hiking trails should include foot paths down the

two major ravines leading to the water's edge. Timber groynes are recommended along the shore to facilitate beach build up, and make hiking possible along the beach. An inclinor will be desirable in the westerly ravine. The houses purchased on Meadowcliff Drive should be examined for potential use for a nature school serving the eastern Metropolitan Area and for day camp purposes.

The strip of wooded land along the top of the Bluffs east of Rogate Place and south of South Marine Drive in Guildwood Village has only a narrow width, and very limited access. Its potential is for neighbourhood passive recreation.

When the multiple family land at the foot of Livingstone Road is developed, provision should be made for pedestrian access across the site between the park and Livingstone Road.

At East Point Park, it is intended to create a second major waterfront complex for active recreation to serve the eastern part of the Metropolitan Area, all as shown on Plate No. 17A (iii).

The existing Metro-owned lands west of Beechgrove Drive are to be extended easterly by property acquisition. Using fill borrowed from the table land atop the Bluffs and from the site for the proposed Easterly Water Filtration Plant near the foot of Manse Road, a small harbour is proposed to accommodate a marina, launch ramps, a sailing club and a site for boat campers. Some material will be dredged from the bottom of the basin to enlarge the filled area.

The 211 acre park on shore will be contoured during excavation to provide east facing slopes for winter sports, picnicking areas, an artificial lake and wading pools. For the most part, the excavation will be carried out behind the Bluffs to preserve their character. A recreation centre is proposed on the high promontory of East Point, which commands a view along the shore in both directions. Space will be reserved for playing fields at the western end, where they will be of maximum use to the adjacent residential community. A build-

up of beach is anticipated along the eastern exposure from material deposited by the westward littoral drift.

The third loop of the scenic drive will afford access. Beginning in the west at Morningside Drive (where an interchange with the proposed F.G. Gardiner Expressway is expected) the route will parallel the rim of the Bluffs, cross in front of the Rohm and Haas property and the Filtration Plant site, and carry on through the park to Beechgrove Drive. A branch road to the boat basin can be constructed as a part of the site development for the filtration plant. Plate No. 17B is a perspective illustrating the development envisaged. Although the Rohm and Haas lands are shown as continuing in industrial use, it is noted that the existing industry does not have any particular need for a waterfront location. If acquired, the 52 acre site would most properly be used for the large scale playing field complex required for south eastern Scarborough. The cost of acquisition would have to be weighed against the value of the playing fields, and the potential savings in the construction costs for the Gardiner Expressway arising from the fact that its crossing of Manse Road would no longer be required. Although the site is not yet extensively built upon, a decision on this question will be necessary before any expansion is undertaken by the company. It is proposed that the scenic drive be extended up the Highland Creek Valley past the north-west corner of the Sewage Treatment Plant site.

In this way a substantial proportion of the traffic generated by the facilities in East Point Park can find a direct connection to Kingston Road in lieu of traversing the residential neighbourhood via Beechgrove Drive. In this way, too, the waterfront scenic drive will be tied into the proposed valley parkway which will ultimately extend to Orton Park and Ellesmere Road.

This Plan also anticipates the development of hiking and riding trails in the lower Highland Creek Valley which has long been planned as a natural park and wildlife refuge by the Metropolitan Toronto and Region Conservation Authority.

The park proposals described above will result in some 575 acres of lakefront park. A further 64 acres of neighbourhood park space will be provided. Boating facilities will occupy 66 acres, and 157 acres of protected water will be made available. The scenic drive loops will total 5.3 miles in length.

### (iii) Private Recreational Developments

Two private recreational uses occupy important sections of the Scarborough lakefront. They are the Toronto Hunt Club and the Guild Inn. The former is a private 9-hole golf club, and the latter is a hotel of a rather unique character which proposes a par three golf course on lands immediately east of the main building.

Both of these may in future seek to expand by providing boating facilities in front of their properties. Although neither have put forward any definite plans as yet, and indeed, the difficulties may be such that they never will, this Plan does not discount the possibility, nor does it recommend that such proposals be discouraged.

Rather, it is suggested that such facilities would enhance the attractiveness of this section of the waterfront for boaters, and would add to the interest and activity. It should be noted however, that a major condition which should be attached to the approval of any such proposals is some form of quitclaim for any damages because of limitation to high masted vessels which might be imposed by the construction of a scenic drive on off-shore islands if and when a massive fill approach is decided upon at some future date.

### (iv) Private Apartment Redevelopment

Mention has already been made of the long term potential for apartments built down the face of the Bluffs. The one area where the present road and land use pattern makes this possible is between Livingstone Road and the Guild Inn, where apartments on the adjacent table land are now under construction.

Plate No. 17A (ii) shows schematically one of several ways in which such buildings might be arranged in plan, and Plate No. 17D illustrates the possibilities in perspective and section. Although 16-18 storeys in height, they would need not project more than one or two storeys above existing grade at the top, thus preserving the view for the apartments already built inland. At the bottom, provision could be made for swimming pools, tennis courts, and sundecks and a promenade over the top of slips for pleasure boats. Protected water would be essential of course, and any such proposals would require the acquisition of part of the present lake bottom now publicly owned. It is suggested that such land might be sold or leased for a long term at a rate sufficient to defray the costs of a breakwater or other off-shore protection constructed by a public agency.

Ultimately apartments might be permitted to extend easterly in front of the Guild Inn itself, the adjacent lands owned for the proposed Guild Inn Golf Course, and even to replace the houses on the south side of Guildwood Parkway as far as Morningside Avenue. In this way, another mile of protected waterway could be obtained without public expense.

### (v) Access

In order that traffic generated by the recreational facilities will not filter into adjacent neighbourhoods, adequate capacity must be available on the major streets intended as access points.

It is not known how many persons will be attracted by the recreational facilities along the Scarborough Bluffs, but in order to be on the safe side, it has been assumed that as many as 35,000 visitors may be attracted on a peak day. For purposes of calculation, these visitors were arbitrarily assigned throughout the sector as follows:

Park	No. of Visitors
Needles	15,000
Meadowcliff	4,000
East Point	16,000

The preceding plates indicate six major access points, namely:

Fishleigh Drive  
Brimley Road  
Bellamy Road  
Morningside Drive  
Beechgrove Drive

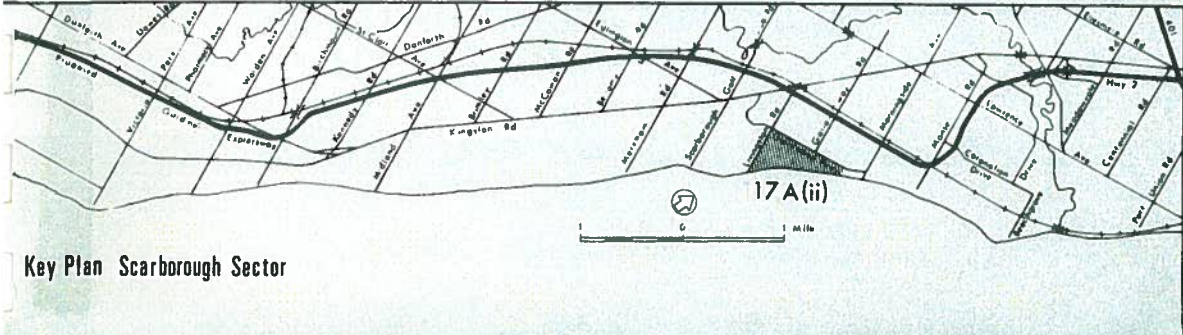
Scarborough Crescent can serve as emergency access for the Needles Park, and Sylvan Avenue for Meadowcliff Park.

In testing the adequacy of the major access points the criteria described in the subsection on access in the Etobicoke Sector were used. It is recommended that the access roads to the major east-west arteries from these parks be developed in the following manner:

- Fishleigh Drive should have two lanes open to Kingston Road;
- The Brimley Road extension should be developed with a boulevarded two lane road in keeping with its park entrance function;
- The Bellamy Road extension should be developed like Brimley Road with special care taken to create minimum disturbance to the ravine;
- Morningside Drive has been developed as a four lane artery. Guildwood Parkway need not be developed as a four lane artery east of Galloway Road because of the park proposals but is expected to be so widened in any event;
- Beechgrove Drive - Highland Creek Parkway should be developed as a boulevarded two lane road in keeping with its park entrance function.

The level crossings with the C.N.R. at Morningside Drive and Beechgrove Drive will pose a problem for the safe flow of traffic and should be eliminated by the construction of grade separations.





Key Plan Scarborough Sector

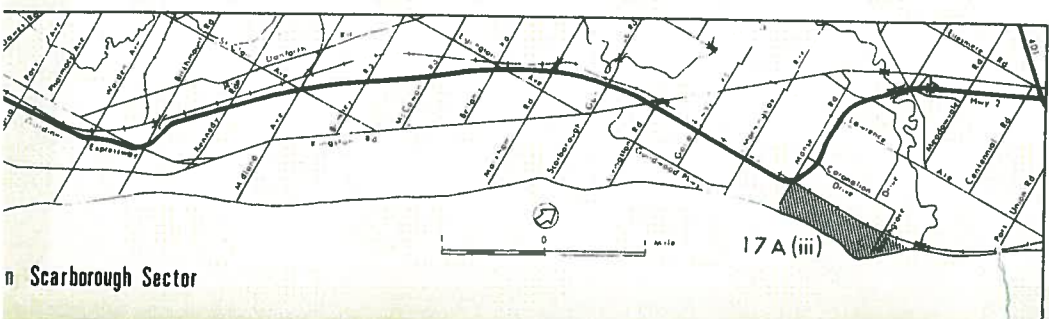
# PHYSICAL DESIGN CONCEPT

SCARBOROUGH SECTOR

GUILDWOOD

PLATE NO. 17A (ii)





# PHYSICAL DESIGN CONCEPT

SCARBOROUGH SECTOR EAST POINT PARK PLATE NO.17 A (iii)



On the basis of the assumptions made, and allowing 350 square feet per parking space, the following areas will be required for peak parking:

Park	Acreage
Needles	28 acres
Meadowcliff	7 acres
East Point	30 acres
Total	65 acres

There is ample space in each section to provide parking in an attractive and convenient fashion, partially on paved permanent lots, and partially on grassed overflow areas.

The stringent requirements used in this study were employed to ensure that the facilities proposed will be adequate, and that peak traffic will not be induced into neighbourhoods where stability is sought.

#### (vi) Staging

The following table indicates the estimated amounts of clean fill that will be required for each site and the expected amount of borrow that each site will probably yield.

Park	Material	Quantity, cu. yds.
The Needles	Clean Fill	5,300,000
	Borrow	380,000
	Dredged	320,000
	Sub-total	6,000,000
East Point	Borrow	2,510,000
	Dredged	220,000
	Sub-total	2,730,000
	Total	8,730,000 cu. yds.

As indicated in Appendix 'C' there will be sufficient clean fill available to complete these projects in 20-25 years.

Plates Nos. 17C(i) and (ii) show the recommended sequence of development. The staging program was arranged keeping in mind priorities for the recreational

facilities, the problems of suitable access points to the lakefront, the rights of private owners, and the rates at which clean fill will become available. The following is a brief description of the stages of development:

#### Stage 1

The Needles Park is the major proposal which is dependent upon imported material. As only a relatively low rate of delivery can be anticipated, it will be important to commence the filling operations as early as possible. Present indications are that it will take 6 years to complete the small boat basin, and a further 15 years to complete the island. Vehicular access from the Brimley Road entrance to the table land should be effected at the earliest opportunity.

The small lookout at Nursewood Road can be undertaken any time that fill becomes conveniently available, and this may occur with apartment redevelopment along the Bloor Street subway in East Toronto, East York, and Scarborough.

Tree planting could be commenced in those parts of Meadowcliff Park already owned by the Metropolitan Corporation.

#### Stage 2

East Point Park offers perhaps the most ready opportunity to provide the water-oriented recreation facilities so badly required in the east end of the Metropolitan Area. Its commencement should coincide with the site grading required for the Easterly Water Filtration Plant, expected to begin in the early 1970's.

#### Stage 3

With the completion of the small boat harbour east of Brimley Road, the marina in front of the Cathedral Bluffs can be commenced.

Access to Meadowcliff Park should be constructed, and the purchase of private lands on Meadowcliff Drive initiated in the third stage.

#### Stage 4

About the time the Needles island is completed it is expected that the Scarborough Filtration Plant will be cut out of service, and will become available for use in conjunction with the artificial lake proposed below. The promontory at the Rosetta McLain Park should then be commenced, the scenic drive loop completed, and the artificial lake developed to provide a major swimming facility between the Summerville Pools at Woodbine Avenue, and the lake proposed at East Point.

#### Stage 5

As the last step, the Needles Park can be extended easterly to link up with Cathedral Bluffs Park, and, subsequently, the connection through Meadowcliff Park can be made to complete the scenic drive loop. The remaining major expenditure will be the improvement of the amphitheatre.

Although not expected during the period covered by this Plan, apartment proposals for the face of the Bluffs should be considered at any time serious proposals are received.

#### (vii) Property Acquisition

The private lands and waterlots which must be acquired to implement the scheme depicted total about 264 acres. No public lands are proposed for sale or lease for private purposes, but some may be if the Hunt Club or the Guild Inn decide to expand as previously described, or if the potential apartment development illustrated is realized.

The limits of the area of water management which the implementing agency should obtain from the Province should cover the entire Scarborough lake frontage, and should extend into the lake well beyond any filling operations proposed.



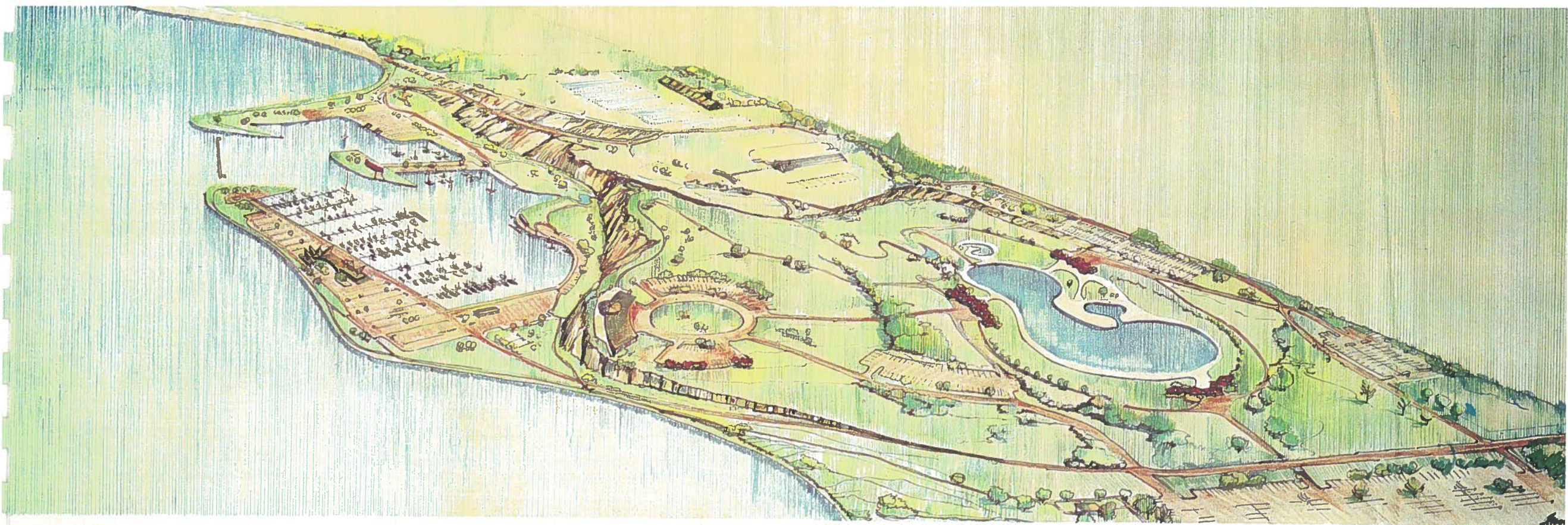


*Left*  
*The large tract owned by Metropolitan Toronto at the foot of Beechgrove Drive (right) will be the site of East Point Park.*



*Right*  
*The only place where a railroad comes to the lake is at the mouth of Highland Creek.*

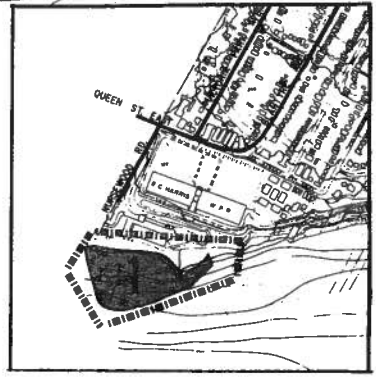
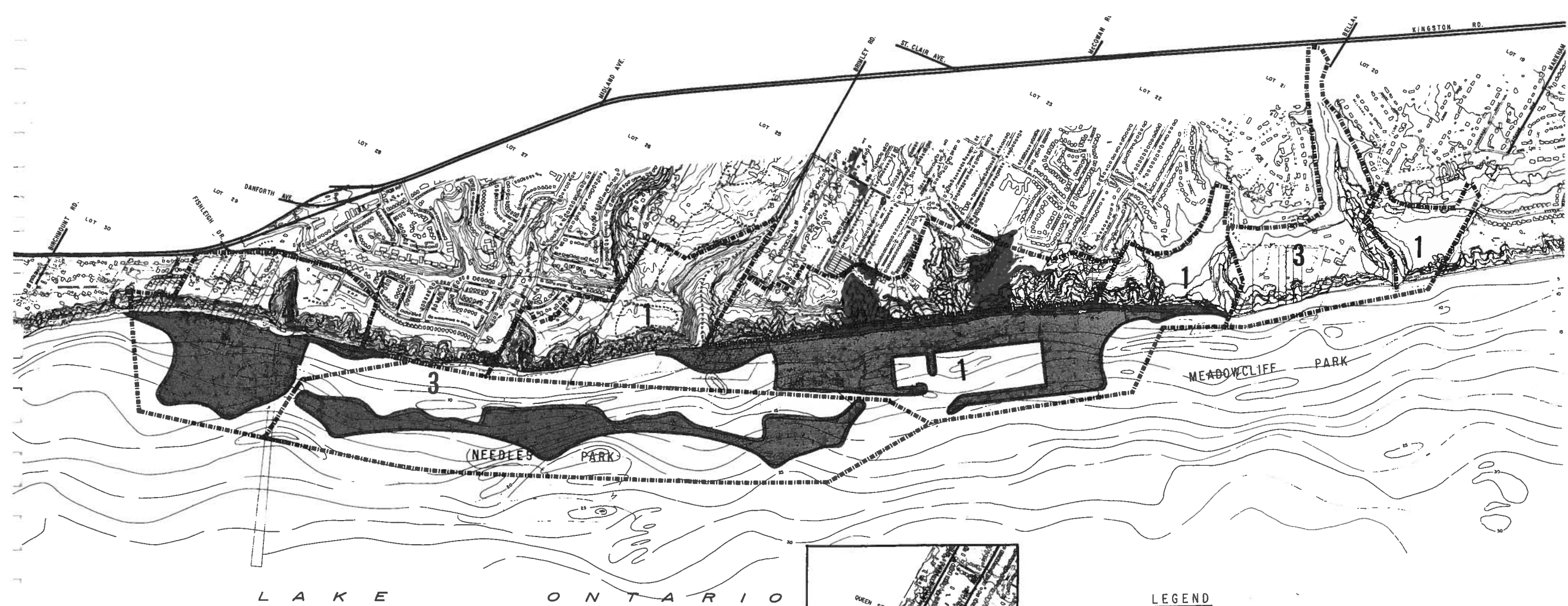






**EAST POINT PARK**

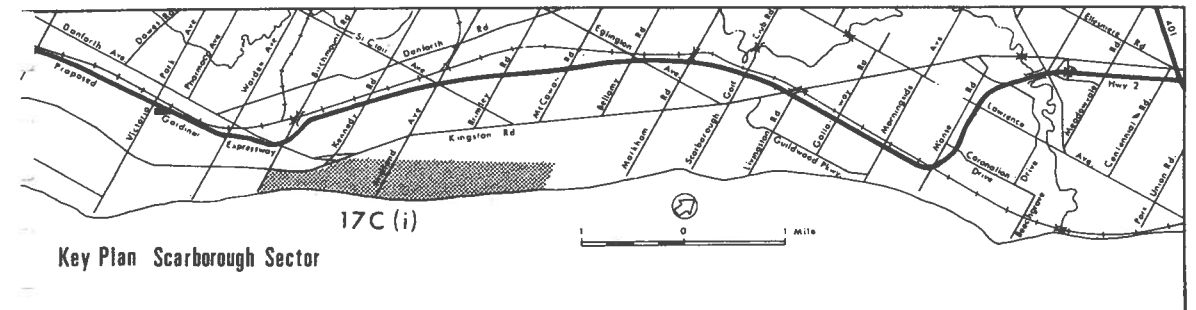
**PLATE NO. 17 B**





**LEGEND**

-  CLEAN FILL
-  STAGE NUMBER AND BOUNDARY



**CONSTRUCTION AND STAGING CONCEPT  
SCARBOROUGH SECTOR (WEST)**

**PLATE NO. 17C (i)**





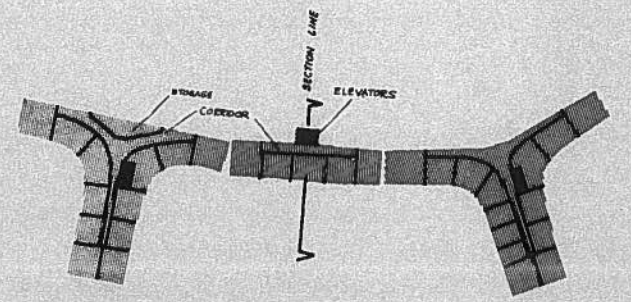
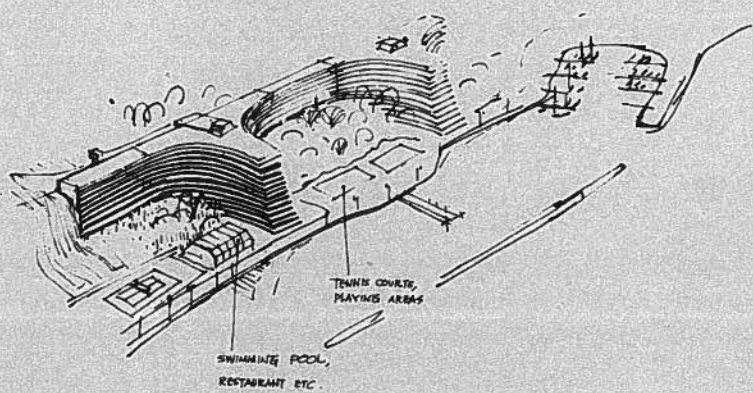
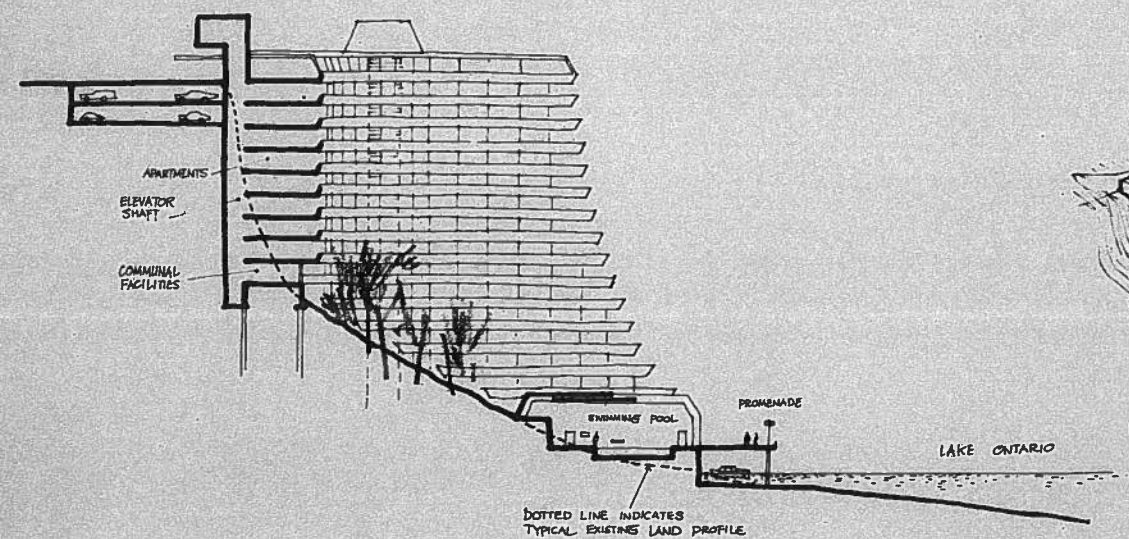
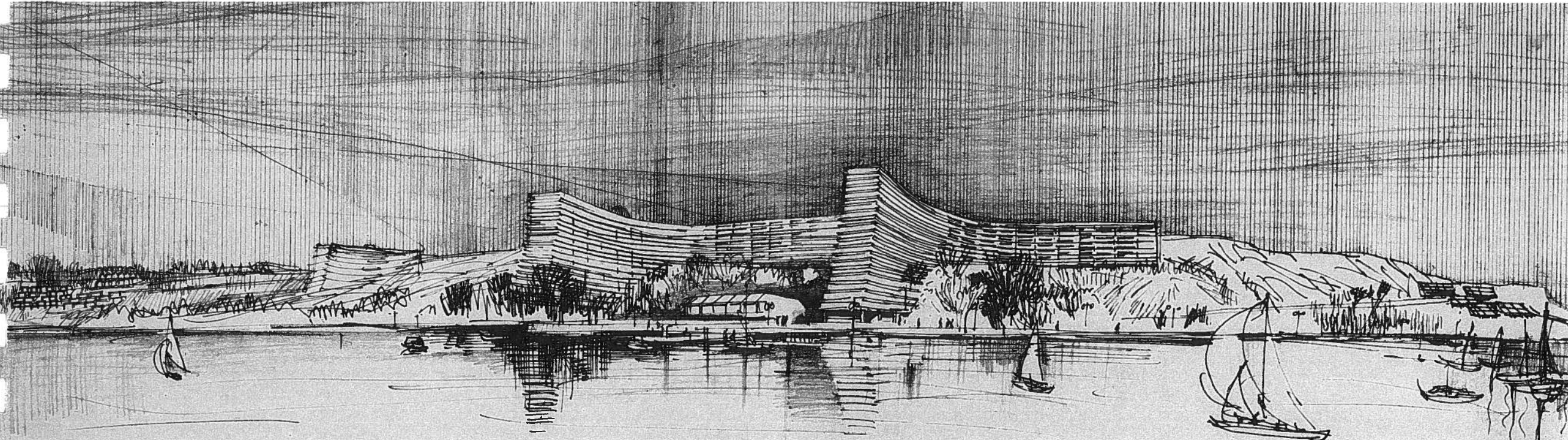


PLATE NO. 17D

SCARBOROUGH BLUFFS  
SUGGESTED APARTMENT DEVELOPMENT

B 65561

27 JAN 67 C.K.W.



## **h. Pickering Sector**

### **(i) Existing Conditions and Objectives**

The Pickering Sector is the most easterly of the seven sectors for which detailed development plans have been prepared. It has 10 miles of lake frontage covering all of the waterfront lands in Ajax and Pickering Township, and extends in depth to Highway 401 and Bayly Street.

The present combined population of Pickering Township, Pickering Village and the Town of Ajax is approximately 39,000 persons. By 1980 the total is expected to reach about 60,000 with an eventual potential of 150,000 persons within the area south of Finch Avenue/Highway 2. It is this potential growth along the lakefront together with the growth of the entire region which underlines the need to ensure that the development of the waterfront satisfies the many and competing interests both of a local and regional nature.

The eastern waterfront represents the only substantial undeveloped lake frontage in the Metropolitan Toronto Planning Area. Unlike the other sectors, its lake frontage (except for a few isolated areas) may still be developed for parks and major recreational uses without disrupting established development patterns or resorting to large and time consuming land fill operations. The existing combination of sandy beaches and adjoining undeveloped valley lands provides this area with a natural recreation potential unequalled along the entire metropolitan waterfront. It is the development of that potential on a regional scale which constitutes the principal objective of this Sector Plan. A further objective is the development of Frenchman's Bay and the lakefront lying to the east and west of its entrance. While these areas are intended primarily for regional recreational uses, the provision of local parks is an important feature of the Plan.

The area between Frenchman's Bay and Duffin's Creek constitutes the last large tract of undeveloped industrial land on the waterfront between Ajax and

Hamilton. Its development with industries requiring waterfront locations will be important to the economic growth of the region and is an integral feature of the Waterfront Plan. Similarly, the lands adjoining the lakeshore in Ajax have a high potential for residential development designed to take advantage of the visual amenity afforded by its proximity to the water. This Plan attempts to accommodate these developments wherever they are consistent with the broad objectives of the Waterfront Plan.

In this Sector, it is not intended to develop offshore islands to produce a new sheltered waterway. Instead it is proposed that new boat launching and marina facilities will be concentrated in the already existing protected waters of Frenchman's Bay, while small mooring facilities will be provided where feasible at the mouths of streams for use by "harbour hoppers" and boating picnickers.

The provision of a completely continuous lakefront scenic drive giving access to all the major points of interest in this sector has not been found to be possible. The existing community structure and natural physical barriers would preclude such a facility west of Frenchman's Bay. Instead, the proposed extension of Lawrence Avenue will provide a vehicular spine away from the water's edge but connecting the major recreational facilities. To the east of Frenchman's Bay there are opportunities to create some relatively long unbroken stretches of shoreline drive.

This Sector divides naturally into two parts on either side of the new Nuclear Power Station; each different from the other in character, and requiring different methods of approach.

The 4½ mile stretch west of the power station contains Frenchman's Bay with approximately 170 acres of protected water, and the valleys of the Rouge River and Petticoat Creek. These topographical features, in combination with neighbouring lakefront residential development, the large Ontario Hydro installation and the railroad tracks west of the Rouge River, make public

access to the lake in this area difficult. This situation has been vastly improved by a recent Conservation Authority purchase of lands down stream on the Rouge River and Petticoat Creek, but access to the lakeshore through these valleys by other than the local residential streets will depend on improvements to the area's road system.

To the east of the Nuclear Power Station, there are approximately 5½ miles of relatively undeveloped waterfront. A steep shore cliff of 30 to 40 feet in height parallels the water's edge except where the shallow valleys of Duffin's and Carruthers Creeks meet the lake. Existing buildings are primarily residential and, because most were cottages originally, are located adjacent to the most desirable beaches. Public entry to these areas is thus prevented.

In essence, the chief problem in the western half is the poor access to those sections of the waterfront having the best natural potential for recreational use. To the east, the major difficulty will be to ensure that private development of an appropriate nature takes place and that the shoreline is preserved for public use.

### **(ii) Description of Proposals**

Plate No. 18 A(i) shows the proposals for the western half of the Sector.

The valley of the Rouge River south of Highway 401 consists of three distinct areas. The northern part is generally flat with well wooded sideslopes; originally it contained a cottage development which was subsequently cleared for flood control purposes. The central area is a large marsh. The southern area widens near the river mouth where it is crossed by the railway on a substantial embankment with only a narrow opening being bridged. Excellent beaches exist on the south side of this embankment for a distance of 1,000 feet to the west of the river mouth and 400 feet to the east.

With relatively little improvement, the northern section of the valley can be made available as a large public

ravine park. The two highway bridges that cross the valley at this point should provide interesting and bold features while the substantial valley slopes could be developed for winter sports activities. The central section is to remain as natural marshland. Hiking trails will afford opportunities for educational field trips.

With the attraction of the beach frontage on Lake Ontario and the small boat rental station and landing along the wider reaches of the river, the southern portion of the valley will develop as the western focal point of activity in the proposed regional park complex extending from the Rouge to Frenchman's Bay. Morgan's Beach and Ferguson's Beach (east and west of the river mouth respectively) will be provided with suitable ancillary facilities. A small land fill scheme immediately north of the Lawrence Avenue Extension to be undertaken at the time that road is constructed will provide the service and parking area, and a footbridge built as part of Lawrence Avenue bridge will afford pedestrian access between the beaches.

To the west of the river, an isolated strip of beach frontage beside the railway tracks should be acquired and retained as far as possible as a local beach and hiking trail. Pedestrian access should be provided across the railway tracks in the vicinity of Port Union Road and under the tracks in the vicinity of the Rouge Hills Golf Course.

Direct vehicular access to the northern section of the Rouge Valley is to be obtained by a proposed road extending south from Highway 2 under the Highway 401 bridge to a point midway in the valley. Vehicular access to the southern section of the valley and to the adjoining lakefront open space will be from the Lawrence Avenue Extension. Parking areas are located at the ends of these two valley roads, but no connection will be provided in order to prevent continuous vehicular passage through the valley. No other vehicular access roads are proposed, but pedestrian access can be obtained by a walkway linking Island Road with the footpaths in the park proper.

Petticoat Creek which enters the lake about a mile east of the Rouge River, is not as large as other watercourses in this Sector, but it possesses a number of features that make it one of the major elements of the waterfront recreation plan. Unlike the other valleys, the Petticoat Creek Valley contains only small areas of marshland. In summer the Creek is blocked by the sand bar at the lakefront, but the flow is such that it creates only small upstream pools. The northern section of the valley contains the remnants of an old dam.

The lakefront consists of an attractive sandy beach about 600 feet long separated from the Rouge Valley beach frontage further west by cliffs about 60 feet high. The adjoining valley is attractively wooded and the surrounding undulating land contains small stands and rows of trees.

The combination of this attractive valley and adjoining tableland together with the relatively extensive and accessible beach frontage on the lake make the Petticoat Creek area an ideal natural park. The varied topography is particularly suited to summer and winter outdoor activities, and the restoration of the dam and pond will enable the establishment of additional attractions such as fishing and model boat sailing. On the lake frontage, a small boat landing will be convenient for "harbour hoppers" and boating picnickers.

On the cliff tops and other high spots within the site, lookout points will be erected to take advantage of the striking views. Some of the existing houses within the park will be retained for such purposes as a park headquarters building, containing an information centre and nature exhibits, or as club houses that may be ancillary to several of the recreation functions. To the west, the lake frontage of a small residential pocket will be acquired to maintain a continuous strip of public open space and create a pedestrian link between the Rouge River and Petticoat Creek.

The topography and vegetation of this 200 acre tract make it highly suitable for open park use accommodating a variety of passive unorganized activities such as

swimming, camping, picnicking, walking etc. Its ready access to major highways, the availability of space for parking, and the relative ease with which it can be linked along the shoreline to the Rouge River and Frenchman's Bay make the Petticoat Creek Park the key development to the regional park system for this area.

Vehicular access to this park from the urbanized area to the west will be obtained from Lawrence Avenue as extended, and from the proposed Highway 401 - Moore Side Road interchange. Internally it is proposed to create a loop road system linking parking areas around the perimeter of the table-land. This internal road system will extend east to Frenchman's Bay, and to the west it will connect with a cliff-top walkway leading to Morgan's Beach.

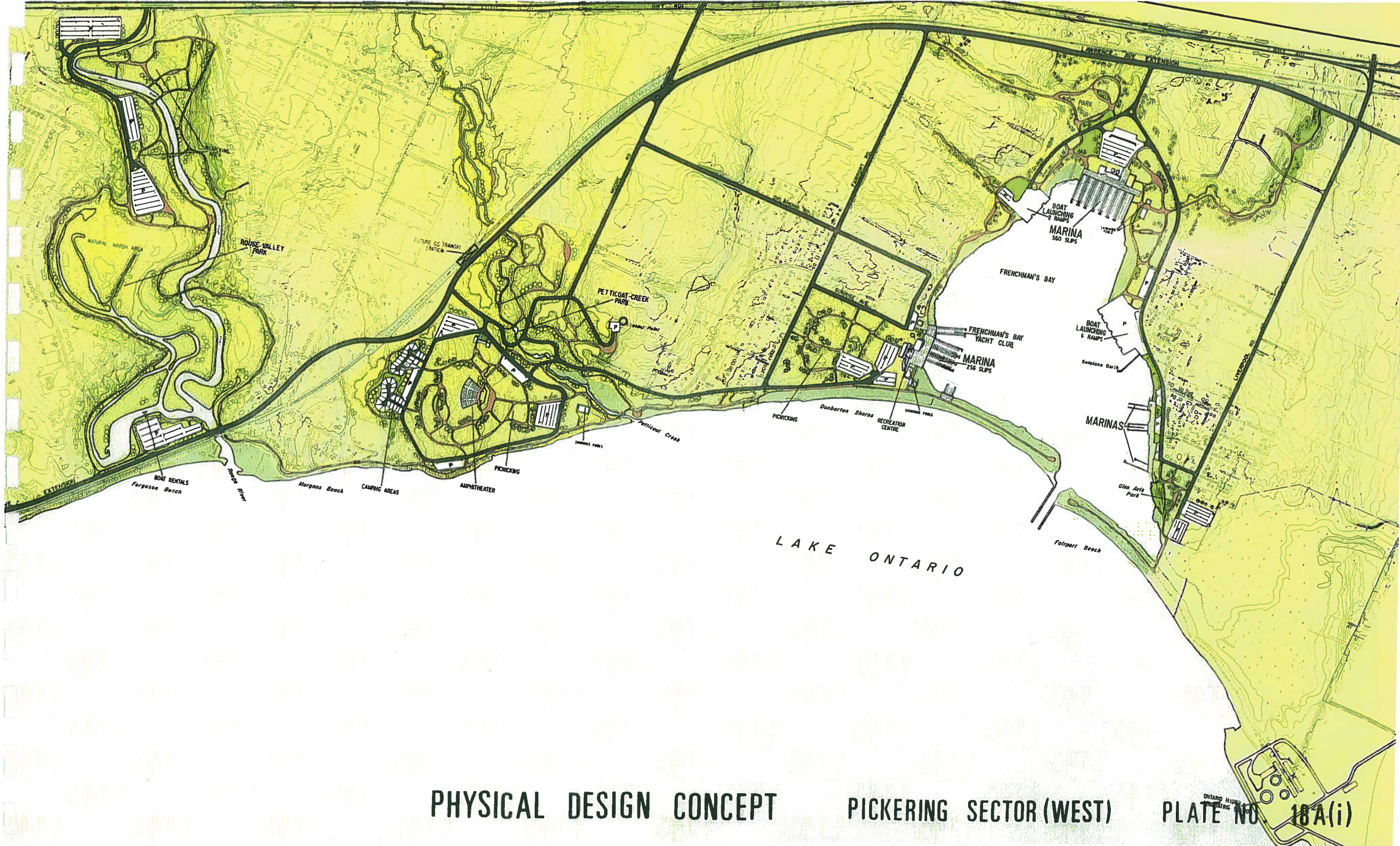
It is important that future residential development in the vicinity of Moore Side Road north of the Petticoat Creek Valley should reflect by way of architectural layout and landscaping treatment its importance both as an access road to Petticoat Creek Park, and as part of the waterfront scenic drive system.

As use of the Park increases, it is possible that a "Sunday Stop" for the GO train service may be initiated to supplement the means of access.

The 170 acres enclosed by Frenchman's Bay is the largest area of protected water east of Toronto Harbour. The ease of access to both the lake and bay frontage has resulted in the use of much of the shoreline for cottage and private marina development. The sheltered waters have proven extremely attractive for pleasure craft. The small boat mooring and launching facilities, and the berths for private float and amphibious aircraft constitute the largest concentration of such activities on this part of Lake Ontario.

Around the Bay there are still some tracts of undeveloped land, but very little is publicly owned. Some 50 acres of vacant land remains south of Sunrise Avenue on the west side and the marshy area at the head of the Bay is still the habitat of some wildlife. Glen Avis Park is a small commercial operation in the south east



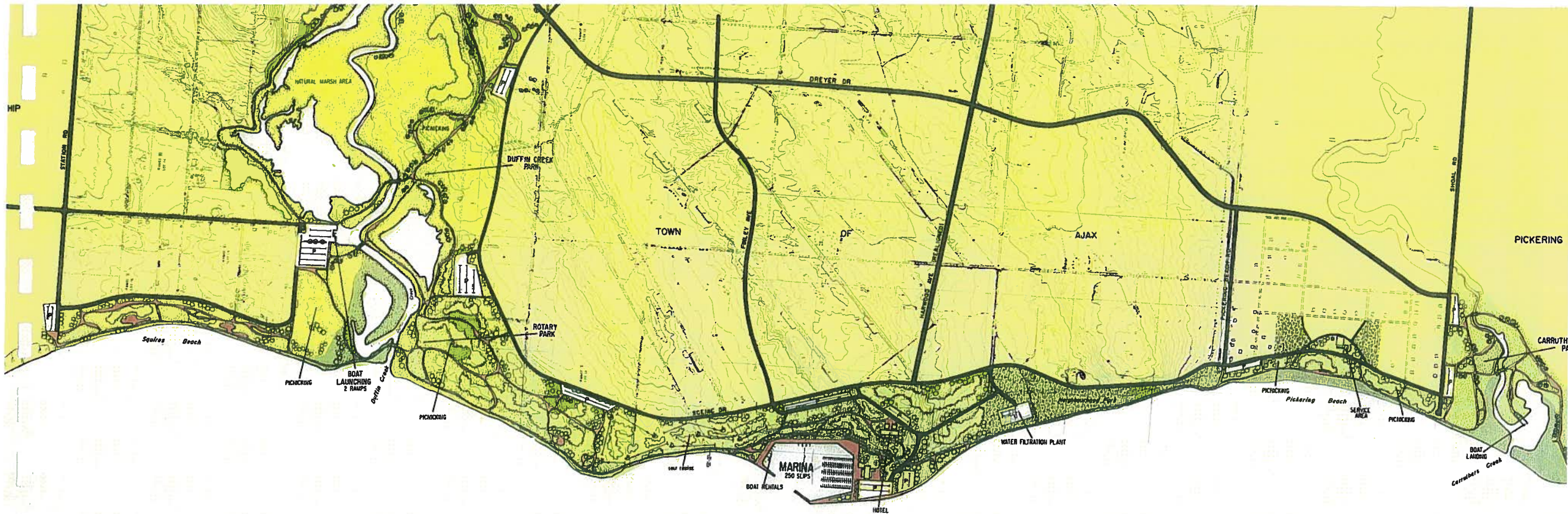


**PHYSICAL DESIGN CONCEPT**

**PICKERING SECTOR (WEST)**

**PLATE NO. 18A(i)**





LAKE ONTARIO



corner. Both sand bars are in private hands, as is the floor of the Bay itself.

The Plan for this locality recognizes the outstanding opportunity to establish new public and private recreation facilities in and around the Bay. Substantially increased marina development is allowed for within the Bay, and it is proposed that the beach frontage from the the western sand bar to Petticoat Creek Park be acquired for public recreation purposes. This will complete a continuous arc of public shoreline stretching nearly four miles westerly to Port Union Road. Plate No. 18B is a perspective illustrating the features planned around the Bay.

It is neither desirable nor necessary, and certainly not financially feasible, to bridge the entrance to the Bay. The use of the two sand bars must be planned as separate entities, and this is entirely appropriate. The eastern sand bar should be developed as a local park since access can only be obtained through an established residential neighbourhood. However, with improved access the western spit can become an important feature in a regional park development if it has supporting service facilities such as swimming pools, parking areas, and small boat landing jetties.

The maintenance of adequate water depths in the Bay has been neglected in the past, and with the increased discharge of storm water from new residential subdivisions nearby, the basin is gradually silting in. In order to utilize the potential for increased boating activity in these protected waters, some improvement works will be necessary. The bottom must be dredged and maintained at an adequate depth. With the dredged material thus obtained, the marsh areas at the north and south west corners of the Bay can be filled to create marinas. A driveway can be constructed along the eastern shore in order to avoid the use of local residential streets for access. The information available indicates that the material dredged from the Bay bottom is suitable for the filling projects proposed.

To achieve these improvements in a co-ordinated

manner, it is necessary that the bottom of the Bay and the shoreline properties affected by these proposals be in public ownership, and it is on this basis that the Plan for Frenchman's Bay has been prepared.

The Plan recognizes the continued operation of the existing commercial marinas, and provides for a boat servicing centre and a new marina capable of accommodating over 500 boats at the north end of the Bay. A second marina of about half that size is proposed at the south west corner. Boat launching ramps are suggested on the west and east shores with associated access roads and parking areas, and small boat moorings are indicated on the westerly sand spit to serve boat campers and picnickers. Although a float plane base is incorporated into the scheme, it is possible that it will have to be discontinued in the interests of public safety as boating on the Bay intensifies.

Along the westerly shoreline, the local parks are retained and will afford public viewpoints overlooking the activities on the water. On the vacant 50 acres south of Sunrise Avenue, a new park is proposed to provide a local recreation area and ancillary features for Bay development including car parking, picnicking areas, lakeshore beaches, a swimming pool and supporting retail sales outlets. Because of the increased boating activity anticipated, it is recommended that all swimming be directed to the lakeside of the sand bars, and to the pool.

Access to the activities located on the northern and eastern shores will be obtained from Lawrence Avenue via special access roads on filled land. Access to the southerly marina, Fairport Beach, and Dunbarton Shores Park will be obtained from the Lawrence Avenue extension via Petticoat Creek Park, and from Fairport Road.

The possibility of using part of the large Nuclear Power Station property for park purposes has been investigated, but it appears doubtful that any part of these holdings will be available for recreational use. It will be some time before the total operational requirements

of the power station can be fully determined, and it therefore seems likely that several years will elapse before this point can be clarified fully.

Plate No. 18 A(ii) shows the features proposed in the eastern half of the Pickering Sector.

East of Frenchman's Bay the sandy beaches disappear, and for about one and a half miles the shoreline consists of cliffs without beaches extending almost to the mouth of Duffin's Creek. In its lower reaches, the Duffin's Creek valley is a broad marshland with areas of open water and isolated patches of woodland. It is proposed as a wildlife sanctuary, to be penetrated only by nature trails. Two stretches of sandy beach stretch in either direction from the mouth.

On the west side, Squires Beach extends for about 2,000 feet, and like much of the beach frontage in this sector, has attracted cottage development. Immediately adjoining the creek mouth about 800 feet of beach is relatively undeveloped although used in season as a private commercial park.

The lakefront from Frenchman's Bay to Squires Beach is designated for industrial use but it is proposed that such development be set back about 300 feet to allow for the continuation of the scenic drive system, and for the construction of parking areas and picnic facilities at selected points on the cliffs where the best views are available. The provision of public access to the water's edge will be co-ordinated by means of easements suitable to the requirements of future industries which will require direct access to the lake, either for dockage or as a source of raw water.

On either side of Duffin's Creek, the existing beach areas and immediately adjoining tableland will be developed as major public parks with emphasis on passive recreation. As the Duffin's Creek entrance is navigable by small boats, launching facilities may be located on either side near the mouth.

The possible need for a general cargo port in this vicinity was studied several years ago, and the suit-



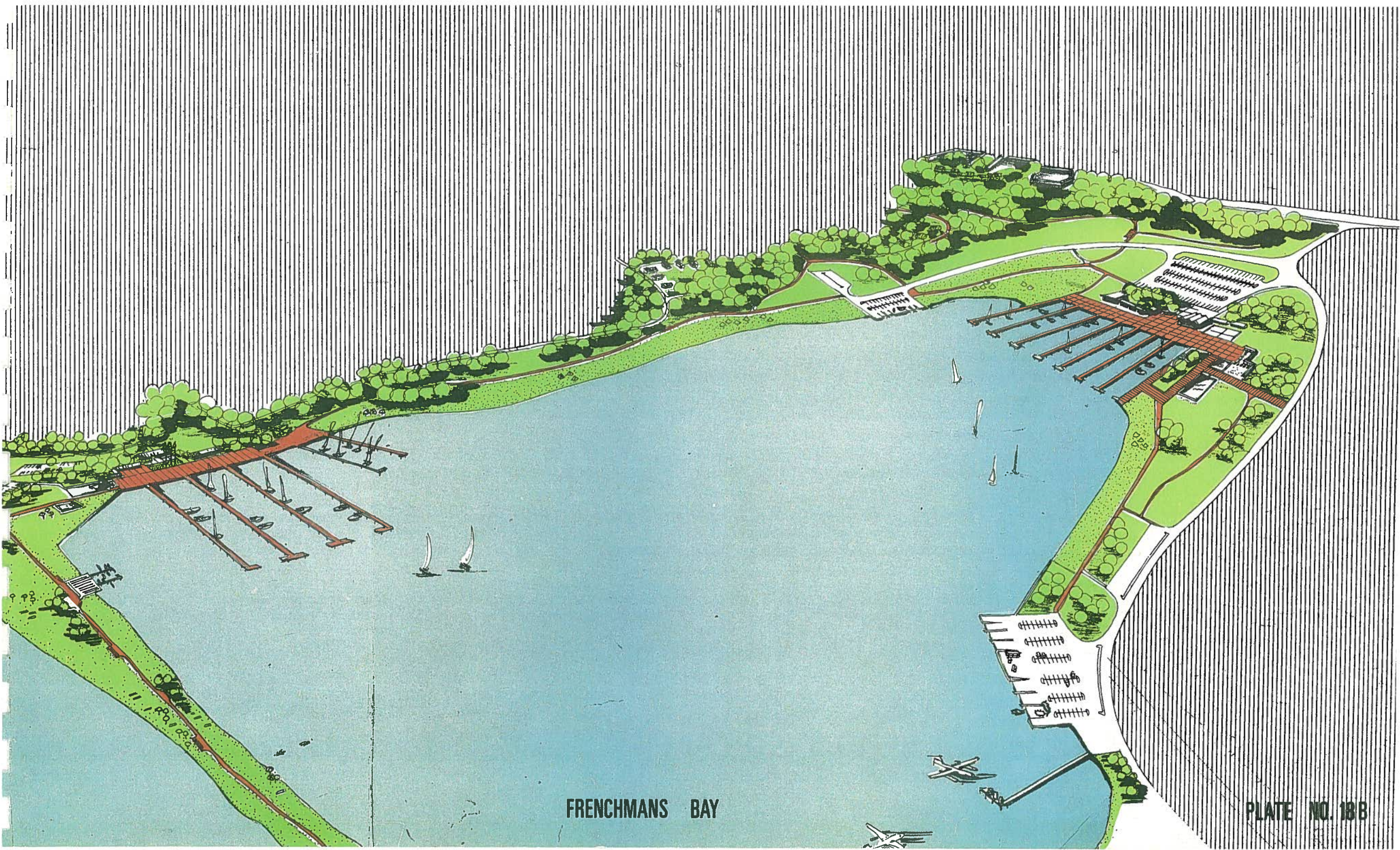


*The Moore Estate at the mouth of Petticoat Creek has been purchased by the M.T.R.C.A.*



*The lower reaches of Duffin's Creek will be preserved as a wildlife refuge. At Left Rotary Park, Ajax.*





FRENCHMANS BAY



ability of the shoreline immediately west of Duffin's Creek was investigated at the same time. However, neither the need nor the economic feasibility of such facilities were demonstrated, and it is considered that for the foreseeable future, the transportation requirements of the eastern waterfront will be met satisfactorily by the existing and planned highway and rail facilities.

Although the future land use at the westerly end of the Ajax lake frontage is not entirely certain at this writing, for the time being this Sector Plan presumes that all the lands south of Dreyer Drive will be developed in a series of residential neighbourhoods. The Town's zoning regulations will maintain a building setback of 400 feet from the water's edge. An addition to Rotary Park is proposed, and public and private recreational uses are planned for the full length of the shoreline.

At the foot of Harwood Avenue as realigned, a focal point for water-oriented recreation has been proposed. A hotel and associated marina and golf course are envisioned extending westerly from the high point of ground that dominates the central shoreline. Between the hotel site and the Ajax Water Filtration Plant, an active recreational area is proposed to serve the community. A swimming pool may be built adjacent to the beach which will form in the arc created by the fill for the small boat basin.

East of the Filtration Plant, use of the shore is planned primarily for neighbourhood park purposes. A high ridge affords a remarkable panorama along shore in both directions, but its slope to the lake is too precipitous for intensive use.

Access to the valley recreation areas can be obtained via Church Road on the west and Valley Road on the east. West of Duffin's Creek the waterfront drive will extend east from Station Road to the east limit of Squires Beach, where it will loop north to Range Line No. 3 and afford access to a parking and boat launching area. The scenic drive will cross the Creek on the

proposed Dreyer Drive bridge, rather than at the mouth. On the east side, an extension of Valley Road is proposed paralleling the valley to provide access to Rotary Park. From there, the driveway will turn east following the shore to Pickering Beach Road. The two sides of the Duffin's Creek valley may be connected by pedestrian bridges.

Along its course from Bayly Street to the lake, Carruthers Creek passes through a wide and lightly treed flood plain, which eventually converges into a narrow valley north of the Pickering Beach cottage area, and then widens to form an extensive marshland near the lake. The topography associated with the Creek is not as spectacular as that of other valleys in the Sector, but it will in the long term, be suitable for public open space.

The 1600 feet of beach, including a commercial park, in front of the Pickering Beach cottage area should be acquired together with the vacant tableland east of Shoal Road, in order to form the basis of a large public recreation area. Similarly, the beach to the east which forms a sand bar across the mouth of the Creek, should be obtained as part of the general valley acquisition; but until such time as a foot bridge is provided across the water course, it is not expected that this beach will be extensively used.

For the period covered by the Waterfront Plan, the Carruthers Creek valley will form the eastern extremity of the scenic drive system. However, care should be taken in the detailed design not to preclude a further extension eastward at a later date. Shoal Road, improved from Pickering Beach to Bayly Street, will provide access north to the arterial road system and to the smaller local parks to be established in the upper areas of the valley.

Access to the eastern extremity of this sector will not be achieved by an east-west road other than Bayly Street until Range Line No. 3 (Dreyer Drive) is extended across the valley in conjunction with the development of the lands east of Carruthers Creek.

### (iii) Method of Development

As has been described, most of the land proposed for public uses in the Pickering Sector is to be obtained through the purchase of existing properties, or the deduction of 5% lands in plans of subdivision. Very little new land is to be created by filling. The dredging of Frenchman's Bay will provide the material for the most extensive filling operation contemplated. Elsewhere, surplus excavations from construction and public works projects such as the Lawrence Avenue Extension will be used for the modest filling proposed.



## 5. IMPLEMENTATION

The formulation of this Plan would not be complete without consideration of machinery for its implementation. As background to the question this chapter contains a review of the public agencies presently involved on the waterfront, and describes the functions of those most directly engaged. The administrative organization for implementation in certain other waterfront cities is also outlined.

For the future, a number of alternative arrangements are suggested, and the most obvious advantages and disadvantages of each are enumerated. An interim organization is recommended, pending a decision on the ultimate administrative structure for implementation.

The planning and other controls to be exercised are discussed, and the continuing studies required to fully develop the Plan are described. Finally, some of the basic elements of costs and financing are considered in this section.

### a. Existing Agencies and Functions

Implementation of the Waterfront Plan will entail the exercise of the following functions on a regional scale:

- i. detailed surveys, planning, and design,
- ii. creation or assembly of land, and its disposal for public or private use,
- iii. construction of various public works,
- iv. operation and maintenance of public facilities,
- v. financing capital and operating costs,
- vi. enactment of use controls and regulations,
- vii. inspection and enforcement.

Appendix 'F' lists all of the public bodies now directly or indirectly concerned with the lakefront. Their functions, and the pertinent legislation which involves them on the waterfront are described. There are 34, but the number would be over 50 if the Works Departments, Planning Boards, Health Officers, and Parks Depart-

ments etc. of all of the local municipalities were listed separately.

In perusing the list, it will be apparent that the international, federal, and provincial regulatory, construction, and study agencies will carry on their present functions in much the present way irrespective of anything which is done, or is not done, on the Metropolitan Toronto Waterfront. At the other end of the scale, it may be reasonable to expect that the local municipalities might relinquish their functions if some sort of regional body is established.

For practical purposes then, the most important existing implementing agencies are: The Toronto Harbour Commissioners, the Metropolitan Works Department, the Metropolitan Parks Department, and, (its present legal limitations notwithstanding), the Metropolitan Toronto and Region Conservation Authority.

Heretofore, the great void in the waterfront picture was lack of an overall plan and development program. This deficiency has, of course, now been met by the Metropolitan Toronto Planning Board through this Plan.

From Appendix 'F' it will be apparent that there are no other voids of a functional kind; that is to say, at least somewhere on the waterfront, some agency is performing one or more of the functions of implementation listed above. The gaps which do exist are in territorial jurisdiction and overall co-ordination.

After their formation in 1911, the Toronto Harbour Commissioners prepared a waterfront plan and proceeded to implement it with the co-operation and assistance of the City and Federal Government. The Commissioners functioned as much more than a port development and operating body, they in fact became a complete city waterfront development agency. Their assumption of this role led them into a wide variety of non-port activities, including the creation of a great deal of parkland, the ownership of a baseball stadium, the operation of an amusement park, the initiation of two airports, and the operation of one of them. For a

time, they were the largest industrial land developers in the metropolitan area.

The City and Metropolitan Parks Department have now assumed the park development functions, but the Commissioners still provide police service, regulatory and maintenance services, and perform construction work outside the port on a work order basis. Although their present role is more confined to port (including air port) development and operation, the Toronto Harbour Commissioners still constitute the only waterfront organization which performs all of the functions of an implementing agency.

Outside the city limits, there was no overall plan, and development of individual projects was not co-ordinated. Financing was unavailable at the local level, and there existed no agency through which federal assistance could be obtained for construction and maintenance in the way that the Harbour Commissioners served the City, or in the way the Metropolitan Toronto and Region Conservation Authority serves its region with respect to river valley development.

It seems clear that what is required is an implementing body which can fill the vacuum outside Toronto Harbour in a comprehensive way, an agency which can design, develop, construct, finance, operate and maintain etc. on its own, and which can represent municipal and metropolitan governments in seeking assistance from the senior governments for waterfront development. In other words, what is needed is an agency that is equipped and empowered to do for the Metropolitan Planning Area waterfront, what the Toronto Harbour Commissioners accomplished for the city waterfront after 1911.

### b. Administrative Arrangements Elsewhere

In the course of preparing this Plan, the administrative arrangements in a number of large waterfront cities on this continent were studied. As might be expected, the circumstances vary widely from place to place. Ports



in Canada are administered under the Minister of Transport in three ways:

- i. By divisions of the National Harbours Board (eg. Montreal, Halifax, Vancouver).
- ii. By appointed commissioners (eg. Toronto and Hamilton. Toronto is unusual in having a majority of commissioners appointed locally).
- iii. By a harbour master appointed by the Federal Department of Transport (eg. Pt. Credit).

All are concerned with port development and operation, and again the Toronto Harbour Commissioners appear to be somewhat unique in their participation in development of other parts of the waterfront.

The Port of New York Authority administers some, but by no means all of the port facilities in the Hudson River estuary in both New York and New Jersey, and it runs the three major airports (La Guardia, Kennedy and Newark) serving the region. In addition, the Authority has a number of other functions of no particular concern for Toronto, such as the operation of certain bridges and tunnels, some railway tunnels, two bus terminals, two truck terminals, and the proposed World Trade Centre.

The other marine facilities are administered by the military, by private companies, or by the New York City Works Department's Division of Marine and Aviation. The latter has developed some of the public marinas, but the others, together with all waterfront parks come under the City Parks Department.

The Port of New York Authority is self-sustaining financially, and therefore enjoys a rather high degree of independence from state or municipal control. To involve itself in comprehensive waterfront development, including such essentially non-revenue producing ventures as parks, the Authority would undoubtedly require subsidies out of public funds. This would inevitably lead to a loss of its independence, a prospect not viewed with great enthusiasm.

Circumstances in Chicago and Milwaukee closely parallel those in the Toronto region, and the administrative solutions there may be found to be appropriate here. Chicago has two separately operated ports, and the remainder of the waterfront is developed and maintained by the Cook County Parks Commission, an elected body with taxing powers. Milwaukee has only one port authority, but the balance of the waterfront, including all recreational boating facilities, is developed and operated by the Milwaukee County Parks Commission. It is in these two cities, especially Chicago, where the comprehensive approach to the waterfront outside the port most closely parallels that proposed in this Plan.

It will be noted that port development and operation is always separated administratively from other waterfront development which is essentially recreational. Enquiries uncovered no instance where a single agency administers all aspects of waterfront development in any major city on this continent.

In contrast, it will be observed that port operation and port development are always administered by a single agency. The relative lack of success of the earlier Commissioners of the Harbour of Toronto prior to 1911 was, in many ways, the result of the separation of operation (by the Commissioners) from development (by the City).

#### c. Administrative Alternatives Here

The only important potential administrative solutions here would appear to be the following:

- i. **Toronto Harbour Commissioners**  
Expand their area of control, and their terms of reference.
- ii. **Metropolitan Works Department**  
Establish a Waterfront Development Division within the Department.
- iii. **Metropolitan Parks Department**

Establish a Waterfront Development Division within that Department.

#### iv. **Metropolitan Toronto & Region Conservation Authority**

Extend its area of control to include the lake-shore

#### v. **A New Waterfront Development Agency**

Create a new agency, along M.T.R.C.A. lines, with similar powers and functions and with control from Clarkson to Ajax outside Toronto and Port Credit Harbours.

The more obvious advantages & disadvantages of each are outlined below.

#### i. **Toronto Harbour Commissioners**

Advantages

- if there is merit in having a single agency across the whole waterfront, the T.H.C. can be the only candidate. No other body has any experience in port development and operation.
- The T.H.C. are already staffed, equipped and experienced in all phases of waterfront implementation.
- They have a proven record of accomplishment.
- They have well-established relationships with federal bodies from whom assistance may be sought.

Disadvantages

- waterfront development outside the Harbour would, in all probability, end their financial self-sufficiency and require municipal subsidy.
- even if it did not, municipal government would probably seek wider and more direct political representation on the Commission.
- at the other end, it is thought wholly unlikely that the federal government would agree to a further dilution of its direct representation.



- there might well be political objection to T.H.C. control over Pt. Credit Harbour.

## ii. Metropolitan Works Department

### Advantages

- waterfront development would be under the immediate control of a political body directly answerable to the electorate.
- this Department already has a marine division, survey crews and engineering forces, and is presently active along the lake with various water and sewage treatment plants and in pilot waterfront projects.
- it is responsible for refuse disposal, which may be a major factor in the lake fill program.
- it is in a reasonably good position to control the disposal of clean fill.

### Disadvantages

- unless there are changes to the Metropolitan Toronto boundary, any Metro agency will be without power in Pickering or Mississauga Twps. Together, these municipalities cover 40% of the length of the Waterfront Plan. As a result, many opportunities for land acquisition and development may be lost, especially in the east end, where opportunities are perhaps more immediate and local financing less of a probability.
- waterfront development would be part of a multi-purpose, rather than a single purpose agency.
- development would not be directly in the hands of the agency which will ultimately operate, which presumably would be the Metropolitan Parks Department.

## iii. Metropolitan Parks Department

### Advantages

- within Metro, the same political advantage that pertains to the Metropolitan Works Department.
- the Parks Department already has four large waterfront parks under its control which have been, are now being, or will be developed.
- Metro Parks is the agency most likely to operate the finished product. The combination of development and operating functions in one agency has been found to be important in ports, and presumably has contributed to the success in implementing the waterfront plan in Chicago.

### Disadvantages

- outside Metro, the same as Metro Works.
- the Parks Department is not now staffed and equipped for the land creation function, although there is no reason to suppose that it could not be accomplished, but at the risk of some duplication with Metro Works engineering forces.

## iv. Metropolitan Toronto & Region Conservation Authority

### Advantages

- it is a regional body, which goes sufficiently far beyond the limits of Metropolitan Toronto in the east end.
- it now performs all of the administrative functions of an implementing agency.
- it has a record of achievement in the construction and operation of recreational facilities.
- it has well established relationships with the Province, from whom assistance will be sought.
- the Waterfront Plan is strongly oriented toward conservation, for example, the prevention of erosion on the Scarborough Bluffs. It could also be argued that the conversion of various fill materials into something useful and desirable

is a type of conservation.

### Disadvantages

- conservation authorities in Ontario are traditionally oriented to river valleys and watersheds. There may be provincial reluctance to change policy in the case of M.T.R.C.A.
- the Credit Valley, and thus most of the Peel County lakeshore is outside the jurisdiction of the M.T.R.C.A.
- of the 23 municipalities represented on the Authority, only four are directly concerned with the waterfront.
- like Metro Parks, it is not now staffed or equipped to undertake waterfront development.
- the Authority may feel that the magnitude of the waterfront scheme may tend to reduce its ability to achieve its river valley, flood control, and conservation objectives.

## v. A New Special Agency (outside the ports)

### Advantages

- it would be a single purpose agency.
- with appropriate arrangements for representation and financial contributions from outside Metro, its jurisdiction could be extended to the limits of the Planning Area.
- it could become the single agency to represent the region in seeking federal and provincial assistance outside the ports along the whole waterfront.
- provincial enabling legislation establishing a waterfront development agency need not be drafted specially for the Metropolitan Planning Area. It should rather be made applicable to the shores of all the major lakes in the province, since the problems to be solved are not peculiar to Toronto.

#### Disadvantages

- the usual objections to a separate agency not directly controlled by an elected body.
- such an agency would have to be initiated from scratch.
- unless it took over some of the marine functions of existing agencies, or contracted for some of their facilities (eg. T.H.C. Harbour Police) on a work order basis, it would add to the duplication of functions.
- if it became a park operating agency, it would duplicate the Metro Parks Department within Metropolitan Toronto. If it did not, the development and operation of the lakefront parks outside Metropolitan Toronto would fall to the local municipalities, and this might be beyond their resources.

Whatever alternative is selected, it will be necessary to arrange for the transfer of control of the lake bottom from the Province by securing a water-lot covering the whole of the waterfront through a license of occupation, or beach management control under the Public Lands Act. A similar move was the key to the successful implementation of the Toronto Harbour Commissioners' Plan of 1912 and it is indicative of the foresight then exercised that only now after 55 years of continuous expansion, is an extension necessary to the waterlots obtained at that time. It is for note that an amendment to the Municipality of Metropolitan Toronto Act would be required to enable Metro to enter into an agreement with the Province for water management rights.

As in the past, the transfer of federally owned lands in the Inner Harbour to the implementing body will be required to permit the extensive redevelopment contemplated.

#### d. Interim Machinery for Implementation

It is to be expected that at least a year and probably more will pass before a final decision is reached on

the most appropriate form of organization for implementation of the Waterfront Plan. Depending on the choice, additional time may be required for the passage of legislation. It is also to be expected that proposals affecting the waterfront will continue to come forward, and that opportunities will arise from time to time to implement parts of the Plan in major and minor ways. Thus it will be important to formalize some procedures for waterfront administration in the meantime.

Throughout the production of the Plan, a substantial proportion of the Technical Committee's effort was directed to matters of immediate concern, and the original Appraisal budgetted time and funds for this purpose. The establishment of Petticoat Creek Park, the stockpiling of clean fill at Parklawn Road, consideration of lakefront subdivision plans and zoning applications, commenting on water-lot applications to the Province, the selection of the site for the Easterly Water Filtration Plant and the final development of the Westerly Plant are typical of the many items which came before the Committee. In the process, inter-departmental liaison and working arrangements with the local municipalities and senior levels of government were established, and these provided for systematic treatment of day to day problems.

It is therefore recommended that the Technical Committee be reconstituted as the Waterfront Development Co-ordinating Committee, reporting to the Metropolitan Council and Planning Board. The present system of referral of current matters from the local municipalities might be placed on a more formal footing through an agreement between the Metropolitan Council and the respective municipal councils. The active operating agencies such as Metro Parks and Works, and the T.H.C. can continue to keep the Committee appraised of progress on current plans and projects.

The present membership of the Technical Committee includes representatives of the T.H.C. and all of the metropolitan, city, and provincial agencies most directly

concerned, and it should remain basically intact. Representation should be extended to include all of the lakefront municipalities.

As the name indicates, the Committee's function would be to co-ordinate and advise. It is not anticipated that any of the continuing studies described below would be undertaken by the Committee itself, but rather by the individual departments or agencies concerned. Accordingly, no special budget need be assigned the Committee provided that secretarial services continue to be made available by the Metropolitan Toronto Planning Board.

In concluding this subsection, it must be strongly emphasized that the arrangements described above should be regarded as temporary only. The administration of day to day problems is necessary and useful, but the realization of this Plan will be dependent on the creative drive of an agency specifically charged with the responsibility to develop; infused with a sense of its purpose; and capable of mustering the financial resources necessary for an undertaking of this magnitude.

The T.H.C., Metro Parks, and other departments can be counted upon to proceed with energy in specific sections, but the present jurisdictional gaps must not be permitted to continue. Waterfront development on a comprehensive scale requires an early decision to place the assignment in the hands of those who are equipped to build.

#### e. Planning Controls

The Metropolitan Plan will require amendment to incorporate the appropriate parts of the Waterfront Plan. The changes will be largely the addition of open spaces, but some re-arrangement of present uses will be required in the Central Sector.

Similar changes will be necessary in the Official Plans of the local municipalities, and/or to their District or Secondary Plans which include sections of the



lakeshore. Amendments will also be required to municipal zoning bylaws. Where private property is involved, general amendments should not be passed in advance of applications for specific projects. Within the context of an overall plan, rezoning on a project by project basis is wholly proper. The use of the existing zoning as a holding device is, if not the best, at least a practical approach in most cases. Where waterlots are presently unzoned, they should be covered with some kind of holding zone category.

The project by project approach will enable the municipality to exercise some form of qualitative review of development in order to ensure that each proposal is in keeping with the standards of the adjacent public improvements to the lakefront scene. It will also enable the municipality to ensure that adequate access, services, and other facilities are available at the time of construction, and that suitable provision is made for open space, the scenic drive etc.

These techniques are very much standard practice in all of the local municipalities now. The only innovation recommended relates to riparian rights. Implementation of the Waterfront Plan will be greatly simplified if, wherever possible, the transfer of the riparian right to a public body is made a condition of approval of any application involving a lakefront property. It is thought that this can be effected by the dedication of a narrow strip along the water's edge to the municipality.

Until there is a general resolution of the question of control of the lake bottom, the Department of Lands and Forests will continue to deal with applications of various kinds which entail the filling of the lake outside private waterlots. On the question of filling, the Scarborough Bluffs present a special problem. Homeowners acting singly or in groups frequently dump quantities of material over the rim in attempts to preserve properties threatened by erosion. This practice is not only futile, but inherently dangerous, since the weight of the dumped material sometimes precipitates

major slides after heavy rains. The rate of erosion is actually accelerated.

It is believed that either the Borough of Scarborough, or the Metropolitan Corporation should be empowered to regulate dumping on private property below the rim of the Bluffs. The M.T.R.C.A. has exercised similar control over filling below the rim of the valleys within its jurisdiction since 1964, with very effective results. That body might undertake inspection along the Bluffs on a contract basis as a part of its monthly helicopter patrol of the river valleys.

#### f. Continuing Studies

The publication of this Plan should not disguise the need for a continuing series of detailed studies in specific areas. Foremost is the question of the suitability of various types of material for use as fill. Outside the Central Sector, the type of material to be used will largely control the rate at which development can proceed, and may influence the locations of major facilities within the proposed park areas. In the Scarborough Bluffs Sector, an entirely different development concept might be evolved.

The type of material will certainly decide the construction techniques employed, the shore protection necessary, and the sub-drainage works required. All of these will have a major impact on costs. As has been indicated earlier, a series of pilot fill projects will be necessary before a final decision can be made. It is expected that such tests will be carried out by the Metropolitan Works Department. Sites for such tests are immediately available at the foot of Brimley Road in Scarborough, and near the mouth of Mimico Creek in Etobicoke.

Mention has already been made of the experimentation with shore protection works, marina design, and waterway entrances which will be carried out as development proceeds. These in turn will entail hydraulic studies under the changed conditions. Further survey

work and property valuations will be part of the normal process of land assembly where private lands are to be acquired.

The Central Sector presents a whole host of additional studies. Further analysis of the dredging project may result in some alterations to the configuration of the areas to be filled. The nature and shape of the port facilities in the Outer Harbour will depend on the result of continuing review of the changing requirements for cargo transshipment. Similarly, all of the criteria for the new Island Airport are not known at this time.

Harbour City offers perhaps the most complex set of problems for detailed consideration. Many relate to other major projects also in the preliminary planning stages.

For example, the question of vehicular access, and the possibilities for a form of rapid transit will be closely tied to proposals for the development of the CN-CP lands south of Front Street. The access and parking requirements for the Island Park and Airport are part of the same equation. The actual size and layout of the community will be determined by any limitations imposed by access and by the services, schools and other public facilities which can be made available. Finally, a great deal remains to be done on the timing and sequence of the several stages which will be necessary to complete the project.

All of this work is expected to be part of the Toronto Harbour Commissioners' planning program, carried out in conjunction with the various City and Metro departments concerned.

For the Canadian National Exhibition, the Waterfront Plan does little more than indicate that space will be made available for substantial expansion. A very wide range of possibilities exists. Detailed and concrete proposals can only be put forward when the C.N.E. Association Directors have decided what kinds of facilities can and should be provided in the future, and the Metropolitan Parks Department has determined how

the new setting can best be designed to accommodate them.

Clearly, much remains to be done. However, the prospect should not be permitted to discourage commencement of the waterfront development wherever and whenever circumstances and funds permit. At no point in time will all possible investigations be completed, and every fact known. Nor is any facet of the Plan so rigidly fixed that adjustments cannot be made during the process. What is important now is that a total concept has been evolved which is basically feasible. Competent people are aware of the additional work ahead, and are equipped to handle it. What is required now is support from above to maintain the momentum of the scheme.

#### g. Time Required

It is hardly meaningful to suggest a date when this Waterfront Plan might be 'completed'. For example, in the Outer Harbour the construction of new marine terminals will only be undertaken in response to increased demand, and this remains essentially unpredictable. In the park areas, to take another case, sufficient new acreage will become available so that additional recreational facilities can be added to meet changing needs and desires well past the turn of the century.

The fact remains that waterfront development and redevelopment will continue as long as the metropolitan area continues. Long before this particular Plan can be considered to be 'complete' in any total sense, there will be a new master plan prepared in the light of all the circumstances which then prevail.

All of that notwithstanding, it is at least possible to say something about the time which will be required to create the new land shown on the Plan. There are two important variables which make it difficult to be precise: the rate at which funds are allocated, of which more will be said in the next section, and the rate at which fill materials become available, which is discussed below.

In the Central Sector, it is estimated that the 43 million cubic yards of dredging required can be completed in a period of 5 years using one large hydraulic dredge. In fact, the need to ensure that certain facilities, such as the new Island Airport and new harbour entrances are in operation before the old are closed down may result in a staging program over a slightly longer period. In any event, the time required is definitely within foreseeable limits.

Outside the Central Sector, the major areas where new land is to be created are along the Eastern Beaches, the Etobicoke Sector, and in front of the Scarborough Bluffs. Except in its initial stages, the Eastern Beaches will be filled by the same hydraulic dredging technique as the Central Sector. Two years are expected to suffice for the dredging work involved.

In the Etobicoke Sector, almost all of the 30 million cubic yards of fill required must be trucked in. The time necessary for filling obviously depends on the types of material used, and the rates at which such materials are generated within economic haul distances of the lake. If it were found that refuse can and should be used in conjunction with clean fill and other material, it is estimated at 19 years would be required. If refuse is not used, 30-35 years is thought to be more probable. However, what is perhaps more likely is that the extent of the filling would be cut back, especially at points where the deepest water is encountered, in order that a 25 year program would be possible.

In the Scarborough Bluffs Sector, the Limited Fill Alternative proposed is largely dependent upon clean fill trucked in. Although only 9 million cubic yards are estimated to be required, the rate of delivery is expected to be so slow that 20-25 years must be anticipated for completion of that work.

Elsewhere along the waterfront, sufficient clean fill can safely be expected to become available within the next two decades to complete the relatively minor filling operations proposed.

In summary, the Scarborough and Etobicoke Sectors will require the longest filling programs, about 25 years in each case. It is expected that filling can be completed in all of the other sectors within that period.

#### h. Financing the Project

It will be apparent from the extent of the detailed work still to be done, as described above, that no total cost figure for the whole of the Waterfront Plan can be suggested at this time. Preliminary estimates prepared for the Etobicoke Sector will afford some hint of the magnitude of the expenditures involved. In that sector, the costs of private land acquisition, filling, shore protection, subdrainage, and utilities alone will total about \$38 million, at 1967 prices. Add to that some 5.8 miles of scenic drive, the bridges and access roads, park landscaping and equipment, the marinas, the artificial lake and other facilities, and the gross cost quickly exceeds \$50 million, or more than \$2 million a year for 25 years. Although Etobicoke is admittedly one of the more costly sectors, it must be remembered that, as presently projected, the capital budget of the Metropolitan Parks Department over the next five years will average about \$4.4 million per year, and this must be stretched to cover projects throughout the whole of Metropolitan Toronto. Suffice to say that, if all of the gross costs represented a potential levy on taxes, the scale of the development proposed would be out of the question, and the Waterfront Plan would never have been published in this form.

There are, of course, other important sources of funds which will reduce the net cost to the municipality. In addition, there are other potential sources which must be exploited to the full, if waterfront development is to proceed at a reasonable pace, and within supportable costs to the taxpayer.

Consistent with their past policies, the work of the Toronto Harbour Commissioners in the Central Sector is expected to be largely self-supporting. Preliminary



estimates indicate that returns on the sale or lease of lands for private development in Harbour City and the Outer Harbour Industrial Area will defray most of the costs to the Commissioners for creating land. In this, the most expensive of the sectors then, the prospect is that development will take place substantially without cost to the taxpayer. It can be safely predicted too, that the tax return on the high density residential, commercial and industrial assessment generated will yield a continuing surplus over and above the municipal capital and operating costs for schools, parks, streets and other facilities which will be required.

Outside the port, where the development proposed is essentially recreational, revenues from the re-use of lands for private purposes will be less substantial. In the Etobicoke Sector and the Mississauga Lakeview area some funds will be realized from the disposal of public land for apartment and hotel sites. Mention has already been made of the long term potential for similar recoveries in parts of the Scarborough Sector if construction down the face of the Bluffs ever becomes a practical possibility. Elsewhere, the receipts from leases for private clubs and concessions will assist the operating budget to a limited extent, but cannot be expected to affect capital financing in any appreciable way.

In the park areas to be filled, the major financial assistance will derive from savings on the costs of disposal of waste materials. Again taking the Etobicoke as an example, of the 30 million cubic yards of material required for the scheme presented there, 11.3 million cubic yards would be refuse, and 4.0 million cubic yards would be fly ash, primarily from the Ontario Hydro Lakeview Generating Station. Assuming potential savings in capital and/or haul costs for waste disposal up to the order of \$1/yard for refuse and up to 50¢ for flyash, this could be sufficient to offset substantially the cost of creating the land and the provision of services, shore protection etc.

For the port, the Federal Department of Public Works will normally underwrite the costs of works for navigation, including breakwaters, channels, channel walls, lights etc. Recently this policy has been extended to cover similar works for marinas. The amount of federal expenditure, in each case, will be equivalent to what the developer of the marina is prepared to spend.

The policy of the Federal Department of Transport is to pay for runways and lighting and signal systems for municipal airports provided they are used for scheduled airline flights.

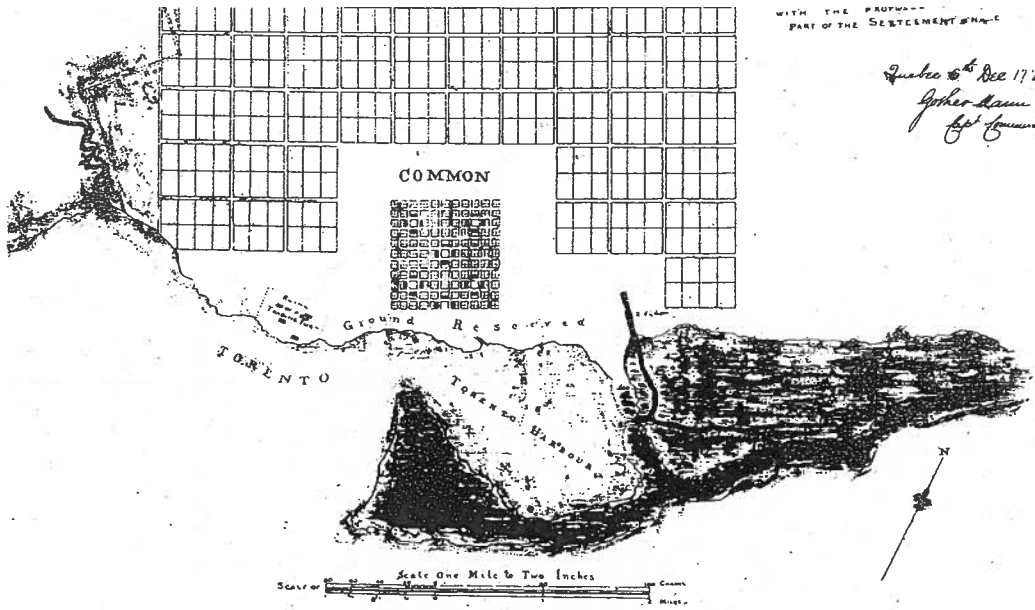
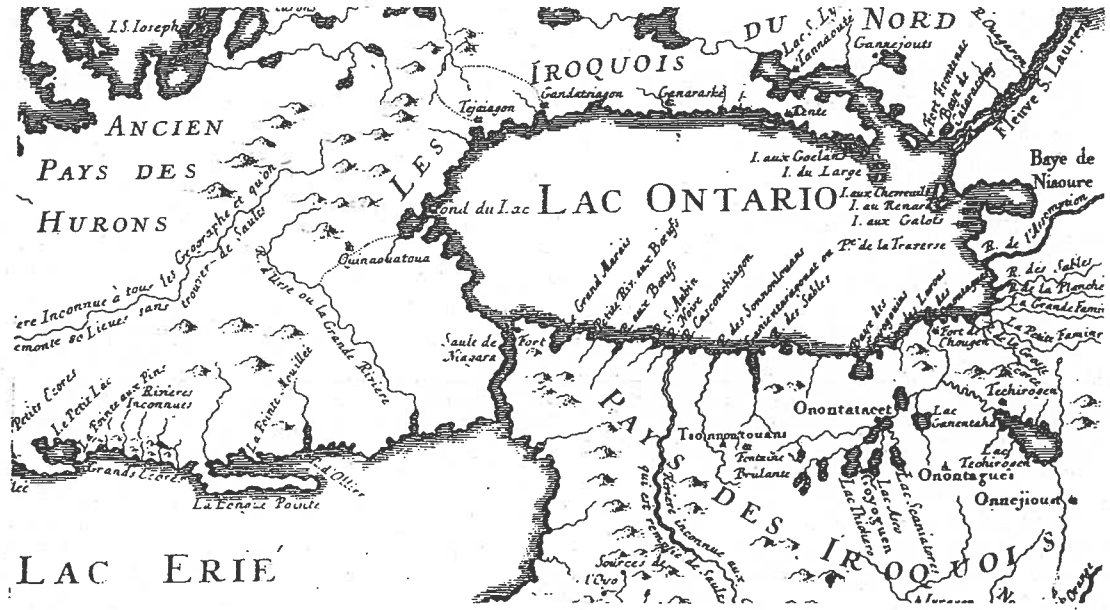
Provincial grants are available on the construction of roads, bridges and some road drainage works under the Highway Improvement Act. Grants up to \$50,000 can be obtained under the Parks Assistance Act for camping facilities for tourists, and this subsidy should also be pursued for the development of those areas set aside for boat campers. Assistance may also be forthcoming under the Conservation Authorities Act for the improvements proposed at the mouths of the rivers.

Having in mind that a major purpose of the Plan is to afford public access to the lake, provincial subsidy for the whole project should also be sought in the form of lake bottom land required for filling and for small boat harbours and channels. In addition, it is recommended that an approach be made at both senior levels of government for subsidies on property acquisition and works necessary to control shore erosion.

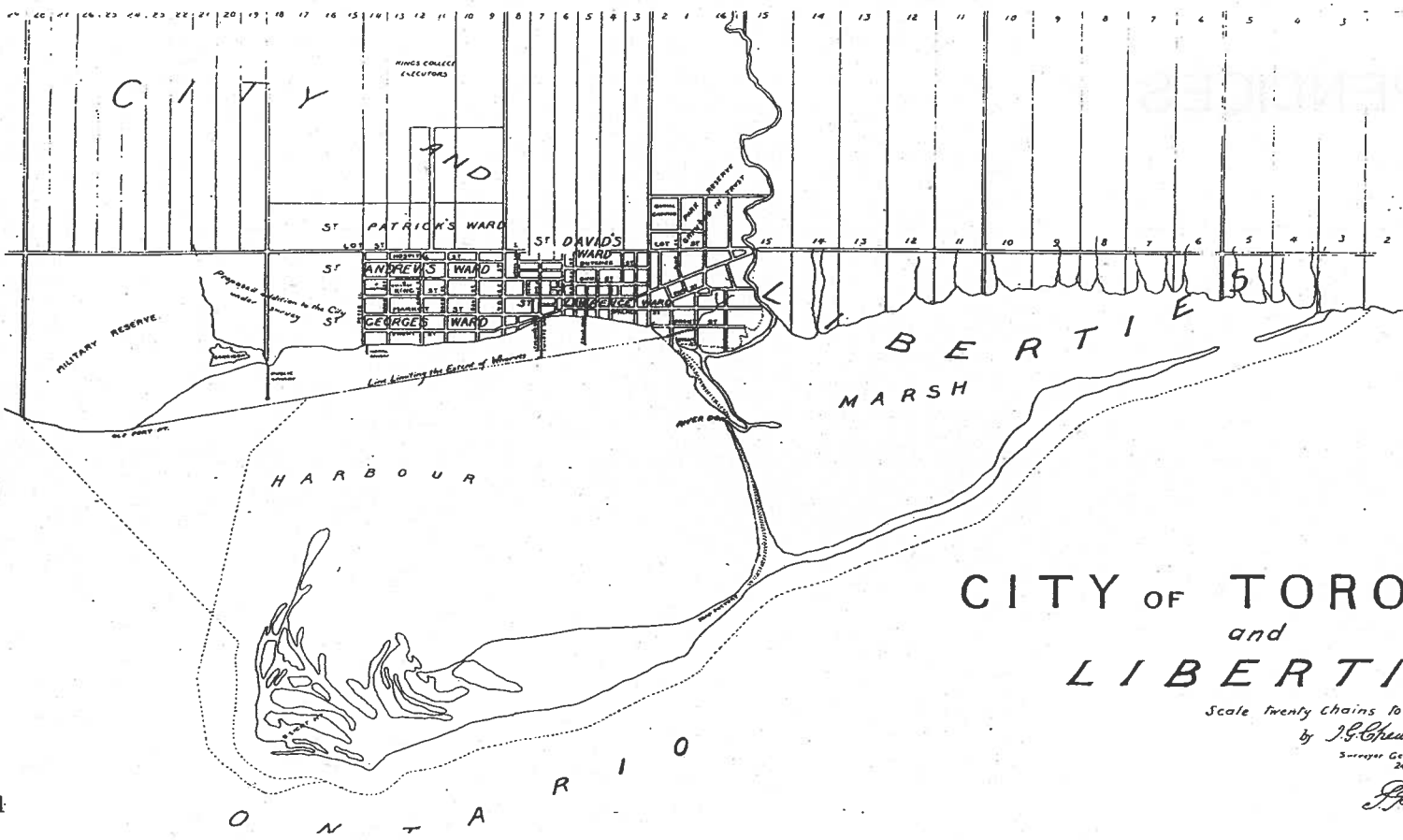
Subsidies are not always granted to those who seek, but they almost never come to those who do not apply. Obviously, the vigorous exploration of all avenues to financial assistance will be a prime function of the agencies assigned to implement the Waterfront Plan.

## APPENDICES





Quatre Dec 1786  
Gother Mann  
Capt. G. Mann



Upper Left

Part of the map "Partie Occidental de la Nouvelle France" by M. Nicholas Bellin in 1755. Source: Toronto Public Libraries.

Upper Right

An early town plan of York drawn for Lord Dorchester by Capt. Gother Mann in 1788, using Alexander Aitkin's townsite. Source: Public Archives.

Lower Left

Toronto at the time of incorporation, 1834. Source: Toronto Public Libraries.

J.P. Hardy, etc.

## APPENDIX 'A'

### AN HISTORICAL SKETCH OF THE WATERFRONT

#### 1600-1788: THE MEETING PLACE

Toronto was an important meeting-place on the overland route between Lake Ontario and Georgian Bay before the coming of the white man. The word "Toronto" is known to be Huron in origin, but its exact meaning is still disputed — a "place of meeting" according to some authorities, and "much", "many" or "plenty" according to others. On the oldest maps it refers to Lake Simcoe. Later the name became associated with the southern section of the Georgian Bay route from Lake Simcoe down the valleys of the Credit, the Humber, or the Rouge to Lake Ontario. Finally the "Toronto Region" was accepted as the area around the mouth of the Humber River, the meeting-place where the Indians passing up and down the portage crossed paths.

Etienne Brulé is commemorated in Brulé Park near the mouth of the Humber, for it was there at the meeting place that he stood in 1615, the first white man to see Lake Ontario.

During the next half century, bands of Senecas, one of the Iroquois nations, displaced the Hurons along the north shore of the lake. Among the numerous villages they established were Teiaigon, at Baby Point on the Humber, and Ganatsekwyagon, just east of the mouth of the Rouge. At the Indians' request, a young Sulpician missionary, François de Salignac de Fenelon, came to found a mission at the latter village in 1669. Although the bitterly cold winter forced him to leave, his visit is remembered in the name "Frenchman's Bay". Soon afterwards in 1681 the explorer La Salle passed through the Toronto region on his way to Georgian Bay to begin his epic journey to the mouth of the Mississippi.

By this time, fur-trading had been carried on at the meeting-place for many years. Dutch traders had pre-

ceded the French and British, who became the chief competitors during the early Eighteenth Century. The main British post was at Oswego on the south shore of Lake Ontario, while the French headquarters were at Niagara, but both maintained small outposts in the vicinity of Toronto. The British post was at the mouth of the Credit River, a name supposedly derived from the British policy of extending credit to the Indians during poor hunting seasons instead of insisting on a cash-and-carry policy, as did the French. During this period, the Senecas were displaced by Mississauga-Chippewa Indians from the north, who encamped near the site of Teiaigon. To win their furs from the British, the French erected a succession of posts at the mouth of the Humber, ending in a small trading fort built in 1749. The next year a slightly larger, permanent fort was constructed further east on what is now Exhibition Point. It was named "Fort Rouillé" after the French Minister of Marine and Colonies, but during the ten years of its existence it was known by the local name "Toronto". The end came in 1759 when the French were defeated at Quebec. The local garrison was recalled to Niagara and Fort Toronto was burned and abandoned.

#### 1788-1815: A MILITARY BEGINNING

The ruins of this fort were the only evidences left by the traders and explorers after nearly two centuries in the Toronto region. However, plans were soon in the making which would irrevocably change the landscape and the lakeshore. As early as 1788 Lord Dorchester, Governor of Canada, sent out Alexander Aitkin to lay out a townsite on the land above Toronto Bay.

Despite Dorchester's ambitious ideas, there was no sign of a settlement by 1793 when the Lieutenant-Governor, John Graves Simcoe, visited the area. Since his arrival in Canada, late in 1791, he had felt Toronto to be the "natural arsenal of Lake Ontario" with an "easy access overland to Lake Huron". A sheltered anchorage was an important asset at a time when thick

forests discouraged overland communications, and as Simcoe fully realised when he saw it, Toronto had one of the best natural harbours on the lake



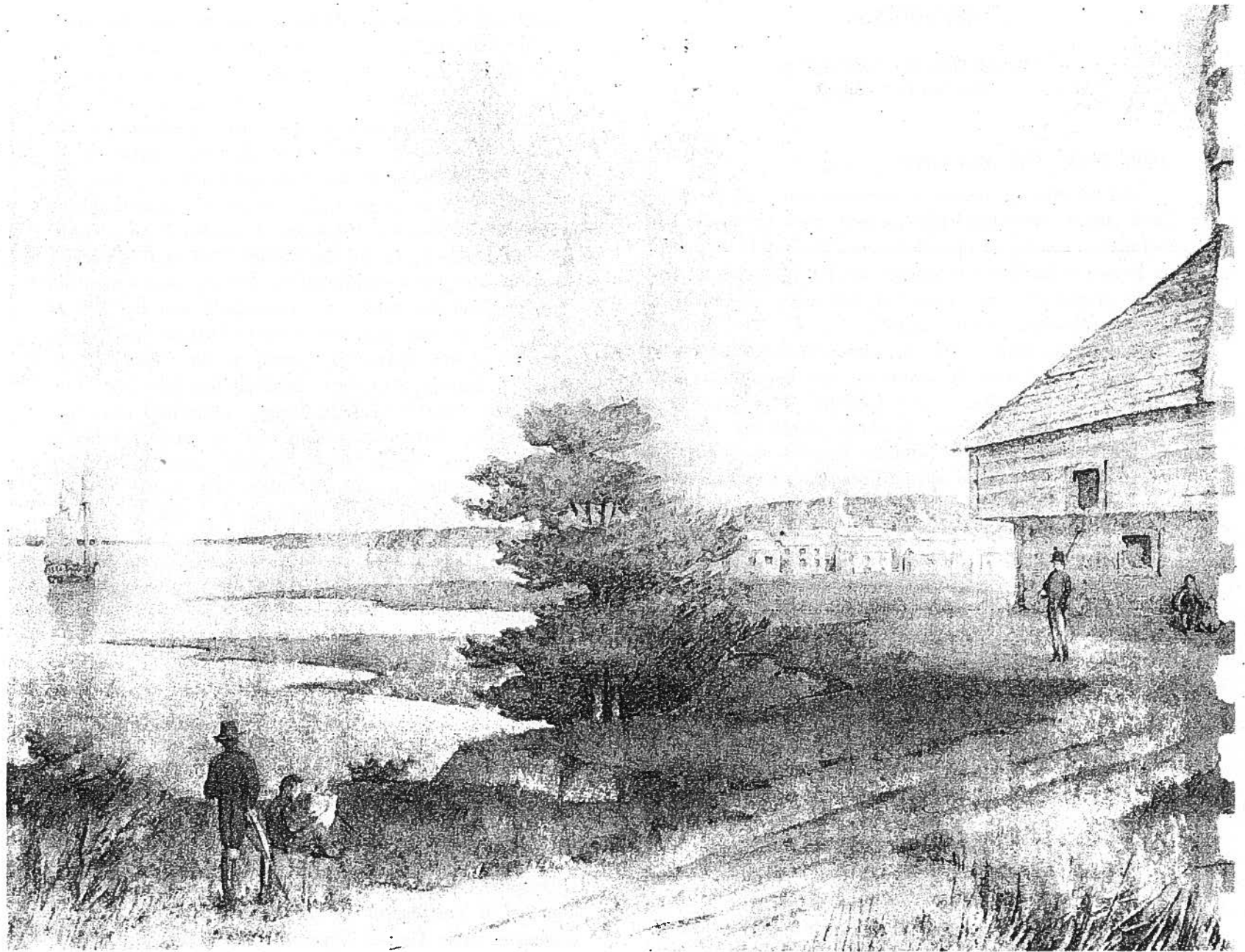
*Lord Dorchester, whose attempts to frustrate Simcoe gave York a reason for being. Source: John Ross Robertson Collection, Toronto Public Libraries.*



In Simcoe's opinion, the first capital, Niagara (now Niagara-on-the-Lake) and the naval ship-yards at Kingston were both dangerously close to the hostile United States. He proposed a new seat of government at London and a new fortified naval yard at the potentially strong defensive position on Toronto Bay. Dorchester thought this scheme extravagant, and forced Simcoe to establish his capital with the naval base at Toronto. Montreal has its Dorchester Boulevard, but curiously, the Governor's name and his role in these events are virtually unrecognized in Toronto to this day.

Consistent with his policy of changing the Indian place names to English ones, Simcoe officially named his new settlement "York", in commemoration of the Duke of York's recent victory over the French in Holland. To guard the harbour entrance, Fort York was constructed on the west bank of Garrison Creek near the present Bathurst Street and Lakeshore Boulevard. Blockhouses were erected first on Gibraltar Point at the head of what is now Blockhouse Bay, and later near the present corner of Queen Street and Gorevale Avenue. A third was built near the foot of Berkeley Street where the town and Parliament Buildings were to be located in Simcoe's new Town plan by Alexander Aitkin. Small vessels could beach near here at a gravelly landing place between the present Princess and Sherbourne Streets with an easy ascent up the short steep bank running along the shore. A wharf was later built at the foot of Frederick Street for larger ships, and a wharf and canals on Garrison Creek facilitated the loading and unloading of vessels at the fort.

The land around York had been purchased from the Mississauga in 1787, but not until 1805 were the boundaries settled. They extended from the mouth of the Etobicoke Creek to the present-day Woodbine Avenue, and north almost as far as Newmarket, some 250,000 acres in all. In the same year, the tract along the lakeshore between Etobicoke Creek and Burlington Bay was also bought. A special clause gave the Indians



*York in 1810, looking east from near the first Parliament Buildings, showing the blockhouse destroyed during the War of 1812. Source: John Ross Robertson Collection, Toronto Public Libraries.*

fishing and camping rights along the creeks of this territory. The land east of Woodbine Avenue was not purchased in one piece, but rather as needed, to comply with the orders of Lord Dorchester, to "join the settlements of the Loyalists near to Niagara to those west of Cataragui" (Kingston).

Settlement along the lakeshore in both directions from York was slow for some time, because much of the land was not made available to the settlers. Some sections of the territory were reserved for the use of the clergy, the Crown, and the Indians, and thus could not be given to the settlers. A further delay resulted from the granting of large tracts to local military and civilian officials who held them in anticipation of higher prices later.

Simcoe had ordered the extension of his Dundas highway to connect Detroit, Niagara, York and Kingston. At the same time, a military way (Yonge Street) was being constructed north to link York with Georgian Bay. Neither of these served to open up the land close to the lake, nor did they effectively end York's dependence on water communication. They were little more than trails and really passable only by cutter in winter. A road easterly through Scarborough was built by the pioneers themselves in 1801, which did help to draw settlers to that area, but development westerly was much slower. The main trail west led only to the Government Inn built under Simcoe's orders at the mouth of the Credit. Farm lots were not even surveyed here until 1807.

During the War of 1812, the little capital was attacked by a determined American force. Ironically, the site described by Simcoe as a "natural arsenal" was swiftly overwhelmed, and much of the settlement burned. It was an inglorious ending for the military era, but a new period had already begun.

### 1815-1850: THE EARLY PORT

The first steamboat on Lake Ontario, the "Frontenac", appeared in 1816, and by the next year was making trips once a week from York to Kingston and Queenston. In the winter, communication with Kingston was kept up by a weekly stage, so that York at last had regular year-round connections with the outside world.

The lasting impetus for growth came with the great influx of immigrants that began about 1825. The effects of the Napoleonic Wars and the Industrial Revolution combined to bring about a severe depression in Great Britain, and large numbers of English and Scottish people moved to Upper Canada to escape it. The resultant surge in population caused York to spread along the Bay, while the forest was cleared further and further back from the roads and inland from the lake. Government and private lots went to the highest bidder, and the demand for land was such that the Reserves were sold or rented.

Water traffic grew with settlement. The immigrants were brought in, and their wheat, lumber, farm goods, and flour were carried away under steam and sail. Wharves and warehouses appeared on every bay and river mouth until there were over half a dozen bustling little ports from the Credit River to Duffin's Creek.

Mississauga Indians lived in the swamps of their reserve at the mouth of the Credit until 1825, when the lieutenant-governor had a village built for them further up stream on land now owned by the Mississauga Golf Club. This freed the shores of the natural harbour for commercial development which reached such proportions that by 1837 Port Credit was one of the busiest harbours on the north shore of the lake. Similarly, a brisk trade developed at the mouths of the Humber, the Rouge, Highland Creek, Frenchman's Bay and Duffin's

Creek. Wheat, lumber, flour and farm produce were traded well into the 1850's, mostly with the United States.

The waterfront at York was, of course, the busiest of all, for it was the centre of the whole region. The government had control of the harbour, and for some time operated two wharves and the commissariat stores at the foot of Peter Street. Most of the commerce of the harbour was handled on five private wharves near Church Street.

Unfortunately, no attempt was made to keep the port in good condition for navigation. When a committee report in 1833 suggested several changes to improve the harbour, the only one supported by the government was the construction of the Queen's Wharf at the foot of Bathurst Street. The relatively small grant for this work was the first, and almost the only, money that the government spent on the port while it was under direct management.

In 1834 York was incorporated as a city under the old name of Toronto, but the control of the harbour was not affected. One important measure established the "Windmill Line", drawn from the Gooderham and Worts' Windmill (near the west end of Mill Street) to Old Fort Point (Exhibition Point), to limit the length of the wharves. This resulted in the extension of the old wharves and the construction of ten new ones.

In what was perhaps the first Waterfront Plan, a mall along the water's edge had been proposed in 1818, but it was not until 1840 that an act was passed enabling the City to build an esplanade along the harbour front. After assuming all waterfront lots not yet privately owned, the City tried to make all the private owners and the lessees fill in their property for about 350 feet out into the Bay. The attempt could not be enforced, however, and work was discontinued in 1851.



## 1850-1911: THE STRUGGLE AGAINST THE RAILS

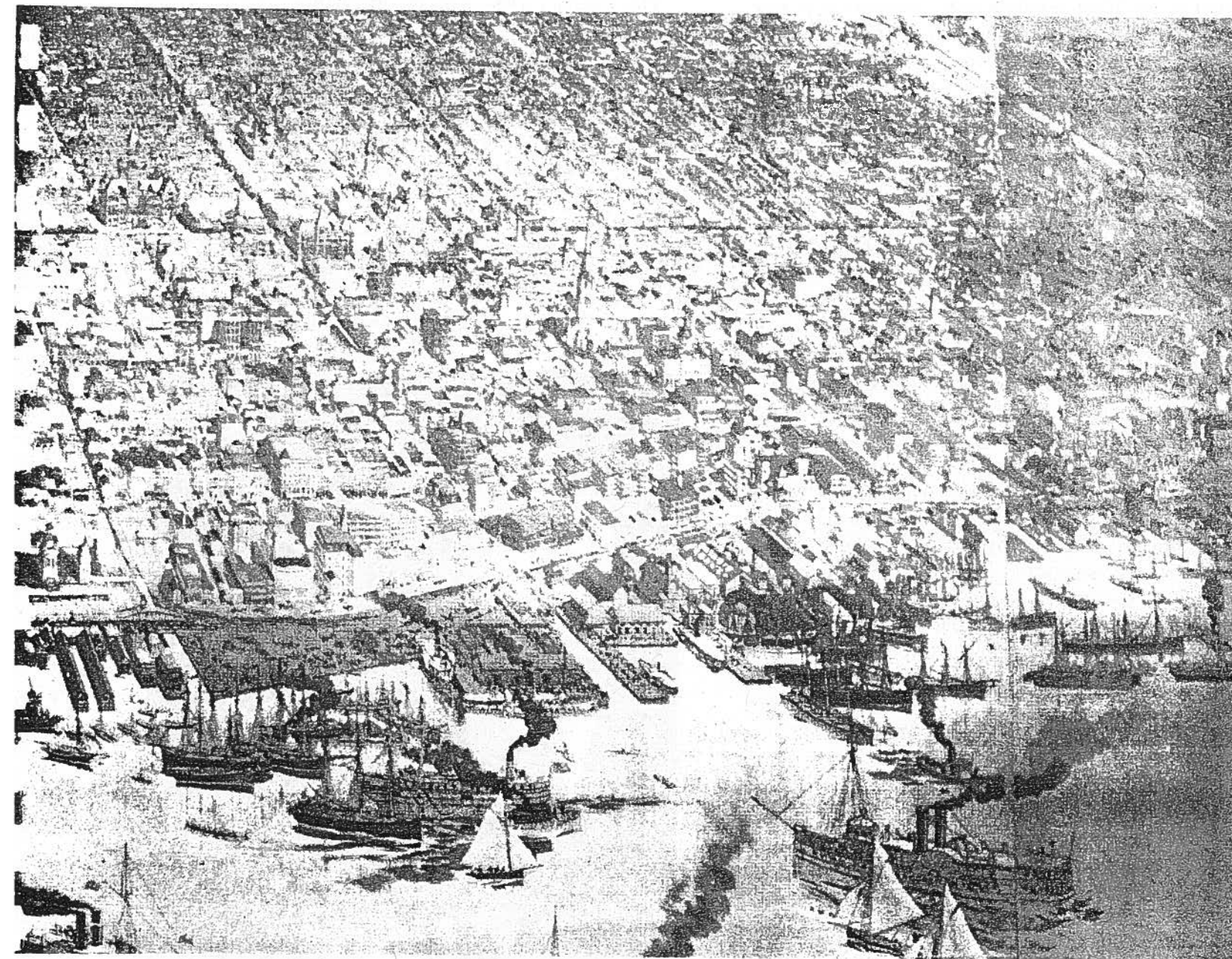
In 1852, sod was turned on Front Street between Simcoe and John Streets to commence construction of the Ontario, Simcoe and Huron Railway. It also marked the beginning of a new era. Within four years Toronto was connected by rail to Georgian Bay and Montreal, and soon afterward to Detroit. The city quickly became the centre of a web of steel which covered southern Ontario and changed the whole transportation pattern. The main lines along the lakeshore brought a sudden boom to most of the towns, but the small ports that had served the rural hinterlands soon lost business and deteriorated. The adverse effects of the rail competition were intensified by the dwindling timber supplies and the growing influence of burgeoning Toronto. Over the next two decades, these factors and natural disasters of fire and flood had combined to put an end to the prosperity of Port Credit, Port Union, Humber Bay, Frenchman's Bay, Duffin's Creek, Highland Creek, and Rouge River. Storms damaged the wharves and piers, until the only ships using their harbours were the stonehookers – small sailing craft which scoured the the shore for boulders for use as building material in the growing city.

Toronto harbour itself was suffering from neglect and deterioration of facilities, despite the expansion of the rest of the city. Official indifference had allowed most of the wharves to be overworked and fall into disrepair, while the slips had filled with silt and weeds. Harbour dues, introduced to pay the interest on the grant for the Queen's Wharf, had been raised in 1840. The pressure of the dissatisfied shipping interests finally resulted in the formation of an independent Harbour Commission in 1850. The Commissioners were given management powers in the port, but control of the waterfront property was left to the City. This division severely handicapped the Commission throughout the the sixty years of its existence.

Nevertheless, the first Commission did bring about some constructive changes. A lighthouse was built by



*Maitland's Wharf at the foot of Church Street around 1840. Source: John Ross Robertson Collection, Toronto Public Libraries.*



*Part of the waterfront in 1893, from a panorama of Toronto by Barclay, Clark & Co., Lithographers. Source: Toronto Public Libraries.*

the old Western Channel, some dredging was carried out near the Queen's Wharf, and a storm signal service was installed. A new Windmill Line was also drawn which extended the old one by 644 feet. Loud public criticism about the dangerous entrances resulted, too, in the construction of the Eastern and new Western Gaps.

Toronto Island was originally a peninsula, joined at its eastern end to the mainland. The lake had breached the Narrows of the Peninsula in 1852, and despite a sand and gravel dike put up by the Commission, had broken through again in 1858. Various reports differed on the advisability of closing the gap again, so the Commission put in buoys and left it. In 1882, by which time the gap was a mile wide with frequent sandbars, the Commission and the government agreed to build breakwaters on each side of a channel 500 feet wide. Over the years it was narrowed to 400 feet, and gradually deepened to accommodate larger ships.

The old Western Gap was becoming too shallow for larger vessels, but it was underlain by rock and could not be deepened easily. In 1907 the Commission decided to construct a new deeper channel, 1300 feet south of the old one, where the rock bed was not as close to the surface. This work was completed in 1911.

The major cause of the deterioration of the port in the latter part of the Nineteenth Century was the railway, not only by its successful competition with water transportation in general, but by its impact on the Toronto waterfront in particular. The greatest failure of the first Harbour Commission was its inability to prevent the railway companies from building on the Esplanade. Soon after the inauguration of the Commission, work on land-filling for the Esplanade had stopped. Two years later, in 1853, the mayor was still speaking of a "healthy and ornamental frontage", but the influential waterfront lot owners and railroad companies were to win the day. By 1865 the street that had finally been built on made land at lake level served the railways for loading and unloading freight, rather than



providing the citizens with a public promenade. With the resulting increased efficiency of the railroads, industry fairly mushroomed along their lines. For a time, the harbour got enough of this trade to warrant the construction of new wharves and elevators, and some new ships. However, the lack of co-ordination between rail and water traffic and the barrier of tracks which cut the docks off from the city soon resulted in a steady decline in business for the port. Trade losses led to the neglect of harbour facilities, which in turn decreased the trade.

By 1908 there were from nine to sixteen railway tracks at street level the length of the waterfront, separating the harbour from the business and industrial centres of Toronto. As a consequence, the forty wharves between Bathurst and Parliament Streets were all in very bad repair, and the slips so full of silt and sewage that a twelve foot draught was not maintained. Of the two and one half miles of Inner Harbour waterfront, only the property between York and Yonge Streets was available for development and improvement, the rest being privately owned or leased. In contrast to these crowded and neglected lots, twelve hundred acres of land and water in Ashbridge's Bay were idle, and from Woodbine to the Humber there were eleven miles of undeveloped city-owned lakeshore that could be made into parkland.

#### 1911-1960: THE YEARS OF FULFILLMENT

Continued agitation for more effective harbour administration resulted in the Toronto Harbour Commission Act of 1911, which is still in effect. The new Commission, unique in that the majority of its members are appointed by the City rather than by the Federal Government, was given far greater powers than its predecessor. The Commissioners were now responsible not only for the management of the harbour, but also for the administration of all waterfront lots and waterlots held by the City (except the Islands and areas in use in 1911 for municipal services). They were given

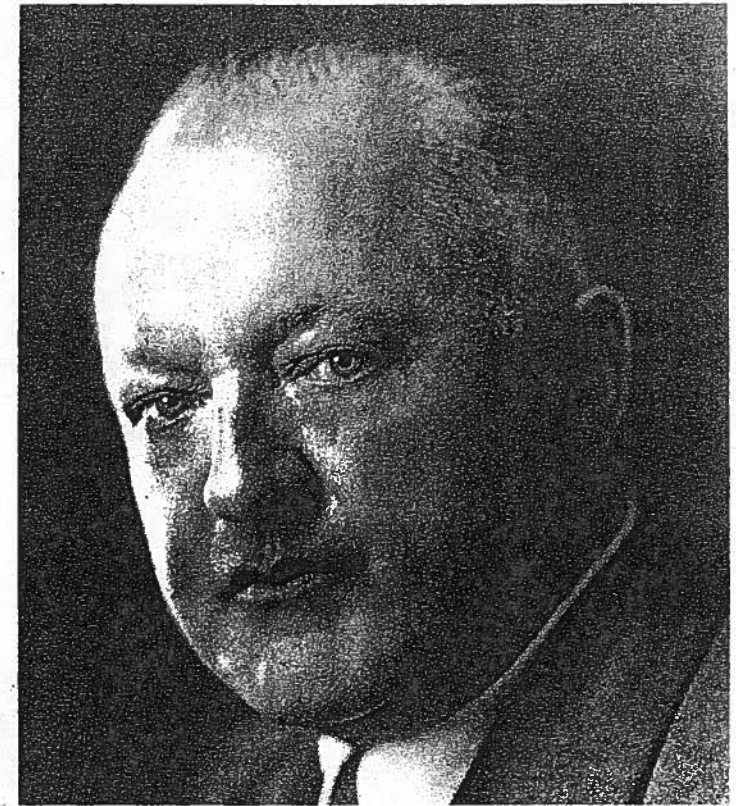
the power to purchase or expropriate property necessary for development, and to borrow money to finance improvements. They could also construct and operate the wharves, channels, warehouses and equipment used in the transport business, and railways within the port and harbour.

With the freedom to act at last, the Commission set about organizing the rehabilitation of the harbour and the development of the whole of the City's waterfront. The first step was the Waterfront Plan of 1912 (see frontispiece), the first and only comprehensive lakefront plan the City has ever had. In scope and imagination it was patterned after the famous Burnham Plan for Chicago. Over the next fifty years, this ambitious and far-sighted plan was almost completely fulfilled.

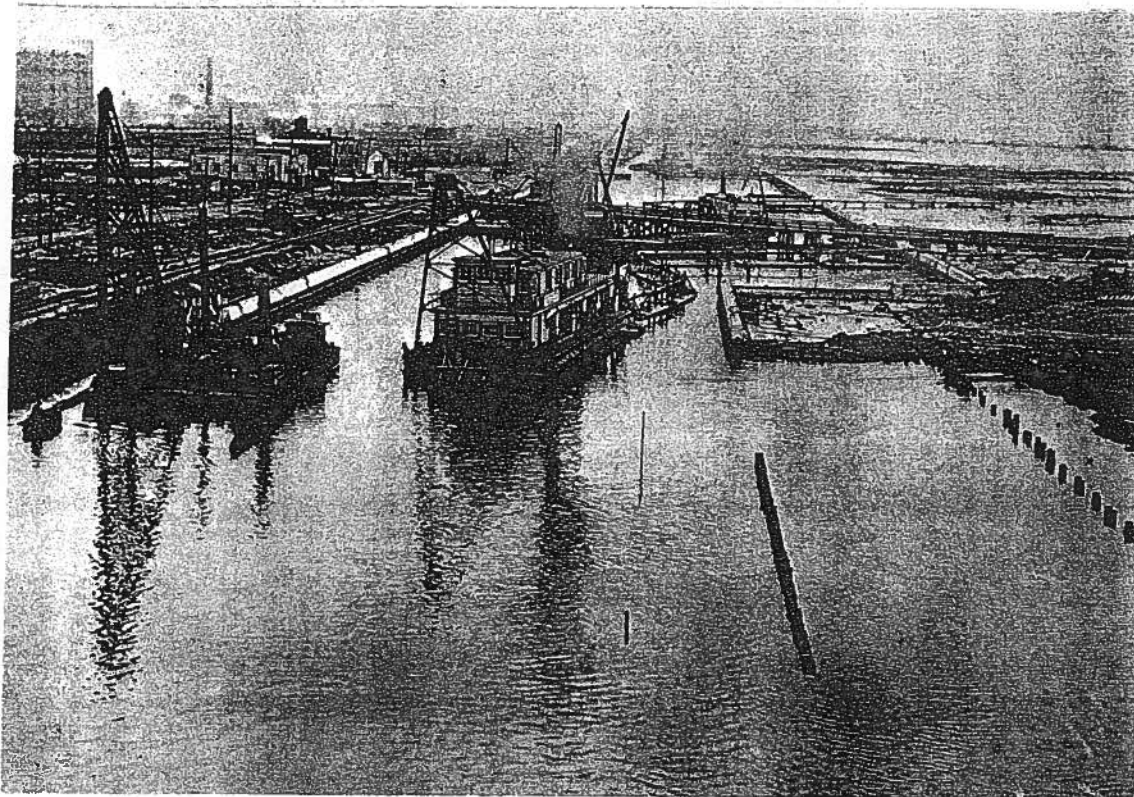
Although World War I raised the costs of construction and delayed the work, the most startling changes were still accomplished before 1930. With remarkable energy, and the co-operative efforts of the City and the Federal government, the port had achieved by then much the same appearance it has to-day. Using two huge, specially built sandsuckers, a large fully serviced industrial area was built up on the reclaimed land in Ashbridge's Bay, now called the Eastern Harbour Terminals. Modern docks with good rail connections were constructed in the Inner Harbour out to the Harbour Head Line, 1100 feet beyond the New Windmill Line. Parkland was created off the Islands and the western lakeshore. To protect this new land a breakwater was constructed between the Humber River and the new Western Gap

After several unfulfilled contracts with the railways, work was finally begun on a grade separation in 1924. Six years later direct access to the Inner Harbour under the completed viaduct was at last a reality. To further facilitate movement along the waterfront, the Toronto Harbour Commission planned wide streets such as Fleet Street and Commissioners Street to be part of a cross-town express route, linking up with the Boulevard Drive in the west and Woodbine and Kingston Road in the east.

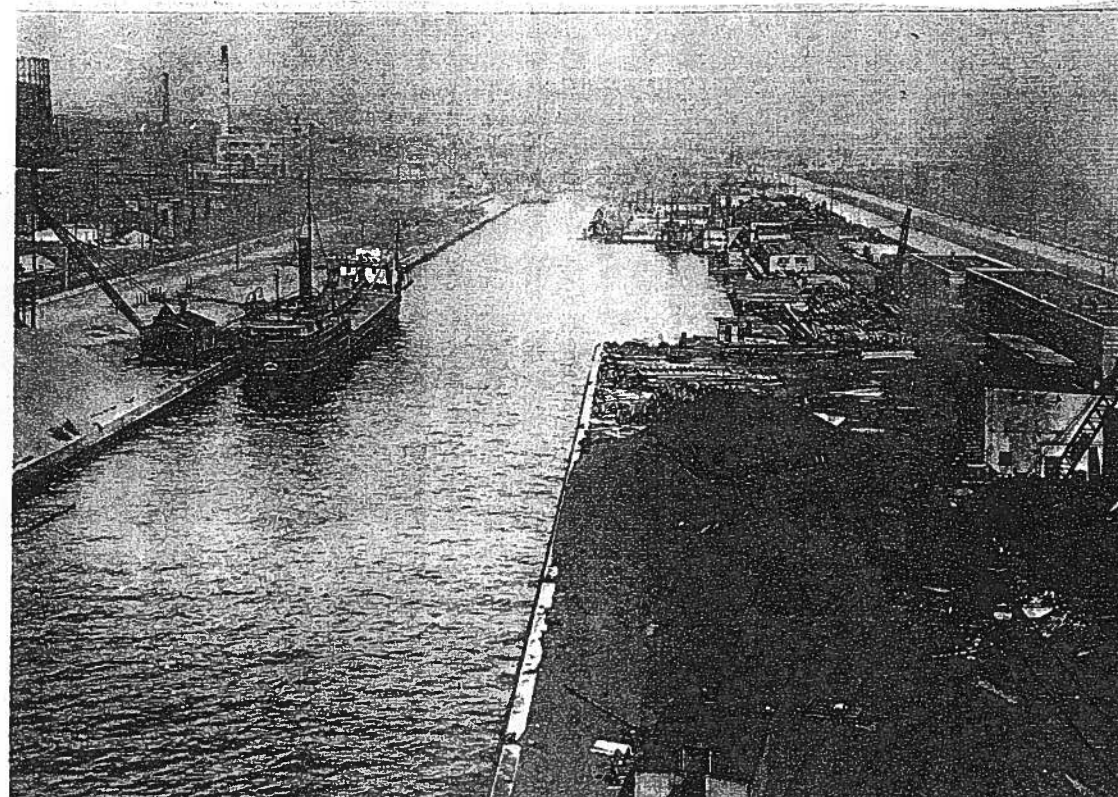
The Boulevard Drive in the 1912 Plan was a scenic road running mostly on reclaimed land, along the western lakeshore, through the Islands, and down the outer edge of the Eastern Terminals to the Eastern Beaches. Only the section from the Humber River to Bathurst Street was completed, but work commenced briefly on a tunnel under the Western Gap in 1934, and a vestige of the eastern section remains in the boulevard Unwin Avenue at the foot of Cherry Street. The Sunnyside amusement park has gone, but the beach, bathing pavillion and boardwalk are parts of the original plan which remain, while parts of the Island and the Eastern Beaches have long been public recreational areas.



Edward Lancelot Cousins, 1883-1961. He drew up the Waterfront Plan of 1912, and subsequently served the Toronto Harbour Commissioners for forty years, as chief engineer, general manager, and consultant. Source: *The Toronto Harbour Commissioners*.



*Beginning work on the diversion of the Don River and the reclamation of Ashbridge's Bay, according to the Plan of 1912. Source: The Toronto Harbour Commissioners.*



*The same area by 1920. Source: The Toronto Harbour Commissioners.*

Streetcar lines had long been serving the lakeshore by 1930, but fifty years earlier excursion steamers had made the same areas popular. It was over fifty years before that that a road brought the townspeople of York out to what was then the Peninsula for an afternoon at the race course. Towards the end of the Nineteenth Century, the Humber and the mouth of Mimico Creek were the favourites for picnickers. As on the Islands, resorts and summer houses appeared. To the east, Victoria Park and Birchcliff had similar beginnings as summer communities of tents and villas, and after the turn of the century Scarborough Beach Park became an immensely popular amusement park served by the tram-line.

Some wealthy families began to settle permanently in these areas. With the appearance of small industries in Port Credit, Mimico and New Toronto at the end of the century, the number of fulltime residents increased, but it was the extension of the Toronto and York Radial Railway east as far as Highland Creek and west to Port Credit by 1906, which really changed the status of those communities. It became possible to work in Toronto and live on the lakeshore. Soon afterward, the introduction of the automobile and the consequent improvement in the roads made daily commuting even more feasible. New municipalities were established: Mimico in 1911, New Toronto in 1913, and Long Branch in 1930. At the beginning of the Second World War,

urban development was virtually continuous along the lakeshore extending from West Hill in Scarborough to beyond Port Credit.

During World War II, Clarkson became an oil refining centre. In Pickering, a shell-filling plant and some staff housing were built, which in the post-war years have grown into the Town of Ajax. The past two decades of phenomenal suburban growth have witnessed the complete development of the lakeshore between Frenchman's Bay and Oakville. New heavy industries have been established west of Clarkson, and the huge nuclear power station being built by Ontario Hydro in Pickering portends similar industrial growth in the east.



To accommodate the increasing flow of traffic, express arteries have been built along the lakeshore. The foresight of the Harbour Commissioners kept the waterfront clear for a cross-town route, which has been expanded today into the six-lane Lakeshore Boulevard. Paralleling, and in part elevated above it, the Frederick G. Gardiner Expressway is now being extended easterly beyond Leslie Street to cope with the ever-increasing volume of traffic.

One reason for this increase has been the emergence of trucking as the pre-eminent mover of goods in Southern Ontario. The Port of Toronto serves one third of the buying power of the nation, but its hinterland covers a relatively small area. 99% of the general package freight for the region can be most efficiently handled by trucks. In recognition of this change the modern terminal built in the harbour on the E. L. Cousins Dock gives priority to trucking, and only secondary facilities to the railways.

An ability to recognize and act upon the trends in transportation has distinguished the development of the past. Foreseeing the importance that air transport would attain, the Harbour Commissioners initiated the development of both Malton Airport (1937) and the Toronto Island Airport and still administer the latter. The great opportunities in flight could not be predicted as far back as 1912, but the plans made in that year for the harbour did prepare for the St. Lawrence Seaway. Over forty years before it opened, pier construction was allowing for dredging to a sufficient depth for ocean-going vessels. A modern marine terminal on a newly created harbour section at the foot of Yonge Street was built for such ships in 1954, and two more were completed on the Queen Elizabeth Docks in time for the opening of the Seaway in 1959, when Toronto became an ocean port.



*Toronto Harbour, 1967. looking west over the E. L. Cousins Dock, now known as Terminal 35. Source: The Toronto Harbour Commissioners.*

## THE CHALLENGE OF THE FUTURE

The Plan of 1912 is finally nearing completion. The vision of an efficient, up-to-date harbour in the middle of an attractive waterfront has been faithfully pursued by the Toronto Harbour Commissioners and other governmental bodies ever since. The result is the Port of Toronto, one of the best equipped ports on the Great Lakes, handling overseas ships as capably as lakers. To the east and west of it are lakeside parks, now being redeveloped by the City. To the south, the Toronto Islands are being transformed into a unique recreational area by Metropolitan Toronto.

Clearly it is time for a new plan, for change is constant. In the Inner Harbour, evidence of a new and fundamental change is apparent in the Marvo Project, in which commercial and residential uses for the first time are displacing transportation and industrial uses at the central core of the waterfront. The ever-increasing trade in the port, however, points to the need for harbour facilities elsewhere; an Outer Harbour is consequently taking shape near the Eastern Gap. West of the Humber, private development has all but sealed the public off from the lake. There is a need to create a wholly new waterfront, as was accomplished in Parkdale nearly half a century ago. To the east, the Scarborough Bluffs remain undeveloped and forbidding.

For these reasons, the Metropolitan Toronto Planning Board, in 1962, established the Waterfront Advisory and Technical Committees, and charged them with the preparation of a new comprehensive plan. This Plan is their product.

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## APPENDIX 'B'

### Recreational Facilities & Outstanding Features

The material in the Appendix was compiled by the Study Co-ordinator at the beginning of the study program, in order to guide those preparing the various Sector Plans as to the need for and distribution of major recreational facilities throughout the study area. Where applicable, design standards are suggested.

Also included is an inventory of the outstanding material and artificial features along the waterfront, on a sector by sector basis. Ways were suggested whereby these features might be incorporated into the various sector plans.

### 1. RECREATIONAL FACILITIES AND STANDARDS

#### a. A. Protected Waterway

Before discussing the shore-based recreational facilities which are necessary or desirable, it is perhaps appropriate to consider the suitability and attractiveness of the lake itself for various types of aquatic activities.

For the sailor, Lake Ontario offers size and an infinite variety of conditions to test his skill and the efficiency of his boat. On the other hand, the generally featureless shore and frequently rough conditions are rather less attractive for the power-boat operator, particularly in comparison with the Muskoka, Haliburton and Kawartha Lake districts. This is borne out by the current trend in the private clubs which is definitely toward sail craft. The power-boater is more interested in navigating a scenic and calmer waterway with many stopping places at points of interest on shore. For paddlers and scullers, tranquil water over a regulation course is essential for competition.

To afford such an environment, it has been suggested that consideration be given to the extension of the present protected waterway between the Eastern Gap and the Humber River, both east and west. It is very strong-

ly urged here that the establishment of a semi-continuous waterway be adopted as a basic objective of the Plan. From Port Credit to Frenchman's Bay represents a 70 mile return trip. On a three-day week-end it should be possible for a family to embark at, say, the Marie Curtis marina, putter along to a campsite at the Needles, carry on to Petticoat Creek Park and return the following day. Such a waterway is one of the few possible means to link the various sectors. It will be a feature which is unique, and unmatched by the waterfront development of any Great Lakes city.

Between the Humber and the Western Gap, protection is afforded by a sea-wall. It is suggested that, wherever feasible, protection take the form of an island chain created by land fill. An archipelago will create a more varied and interesting waterway and make possible a wider range of aquatic facilities. In winter, it will act as a wind screen for ice-skating and other sports on the frozen surface, and for strollers along the shores of the lagoons.

Vehicular and pedestrian bridges to the islands will limit the use of the channel to power boats and the smallest classes of sail craft (say 25 foot clearance). This will be of no concern to larger sail craft provided their access to mooring areas is unimpeded. The waterway should be irregular in width (perhaps a minimum of 150 feet except at structures) with an 8 foot depth.

The calmer and warmer water may prove more hospitable for swimmers than the open lake, but it is questionable whether the waterway will ever be wholly suitable for bathing. Boat traffic will constitute a definite hazard to swimmers. The extension of storm sewer outfalls beyond the outer protection, and the treatment of algae by chemical or mechanical means will improve water quality, and will undoubtedly be required to some extent irrespective of the use of the waterway by bathers, for general aesthetic reasons. Whether these measures will raise the quality of the water to acceptable levels by future, or even contemporary standards, is impossible to say. Obviously the chances are greater

in the Pickering and Scarborough Sectors where sanitary and storm sewers are separated and where the lake bottom is sandy. Prospects are less bright for the City Sectors until the combined sewers are separated, or in the western sectors where a rocky lake bottom prevails which is conducive to algae growth.

#### b. A Scenic Drive

The "Sunday afternoon drive" has perhaps the most universal attraction of any form of recreation which may be connected with the waterfront. For this reason alone, it is recommended that the creation of a scenic drive on as continuous an alignment as is practicable be adopted as a major objective of the Plan.

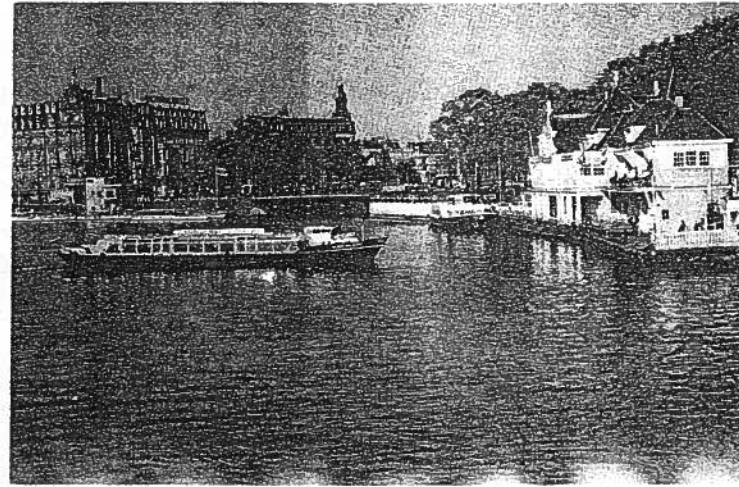
Such a drive would be the equivalent on land, of the waterway proposed above, connecting all of the components of the total scheme. It will make possible some enjoyment of the waterfront throughout the inclement months. It will provide a route for transit vehicles to serve the weekend crowds and will collect and disperse at suitable points the heavy vehicular traffic which would otherwise filter down to the lake via minor residential streets. The driveway will open up imposing settings for public buildings of all sorts including museums, a planetarium, etc. It will be the avenue to show to the visitor what is hoped will become one of the outstanding assets of the area. If portions are threatened by rush hour traffic of detrimental proportions, this can be discouraged by vigorous speed control, frequent stops, no turn prohibitions during peak hours at their intersections with main arteries, and other regulatory methods.

The drive need not be of uniform specification or character. In industrial areas it will be purely functional, with only signs and some turnoffs at visual vantage points to mark it. In park areas it may be boulevarded if space permits. As a general rule, the alignment should follow the lake side of any neighbourhood recreation areas, and the land side of any major water-oriented facilities.

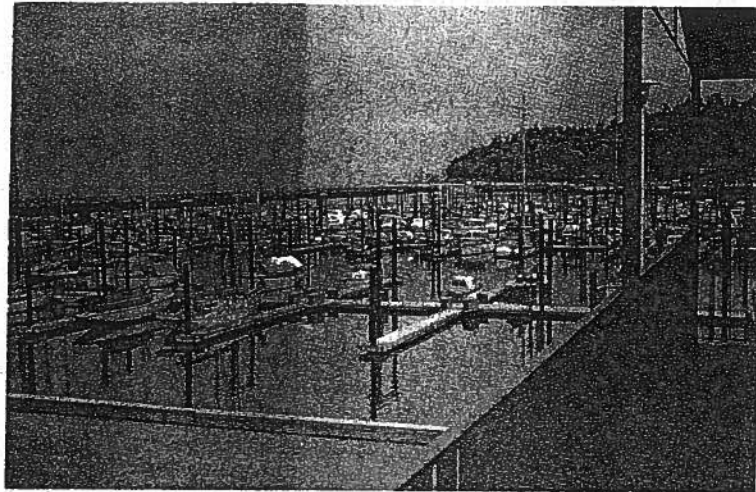
In parts of the Etobicoke Sector and the Port Credit



*Boat campers on the Rideau system*



*Cruise boats — Amsterdam*



*Shilshole Marina — Seattle*



*Lakefront restaurant and boat landing — Hamburg*



area, where existing development extends close to the water, the scenic drive can provide the access which not only makes possible but stimulates redevelopment for new high-rise buildings which take appropriate advantage of the setting. The greater assessment (and in some cases the sale of what is now lake bottom) will help to offset the costs of the whole project, and the increase in resident population will assist the economic provision of public transit service. The buildings themselves will add immeasurably to the visual excitement along the scenic drive, and from the water will provide a spectacular backdrop to the park areas similar to those which line the great waterfronts of the world.

### c. Boating Facilities

Boating facilities required include launching ramps, marinas, winter storage space and, in the case of the rowers and paddlers, courses for competition. Before discussing each of these in detail, there are two general aspects to consider. The first problem is to arrive at some estimate of total facilities needed as a target to aim at in the Plan. The second question relates to the proportion which can and should be made available as public projects rather than by private clubs or by commercial enterprises.

#### (i) Future Needs

The difficulty in estimating future needs rests in the fact that there are no meaningful past trend data which can be projected as guides to future requirements. In a general way, one may be sure that, given continued high levels of prosperity, more leisure time, and a consequent general rise in living standards, the current boating boom will continue. However, the impact in any community will depend on the extent and attractiveness of the facilities which are made available as compared with the facilities elsewhere.

For example, figures supplied by the Federal Department of National Revenue for Toronto and Port Credit indicate that something over 30,000 boat licenses have been issued to residents of the Metropolitan Planning

Area. (1) The number has been increasing by about 4,000 - 4,500 per year over the past seven years. However, most of the boats are used and permanently stored on lakes in the vacation areas. There are about 1,500 (2) power and sail craft at the thirteen yacht clubs in the Planning Area, and perhaps another 1-200 kept at commercial marinas or private slips on the lakefront or lower reaches of the rivers. There is no ready way to determine how many boats are kept in backyards and trailered to launching sites on the weekend, but it is doubtful that these, plus those stored at the clubs amount to more than 10% of the boats owned by residents of the Planning Area.

How many more would be used and stored on Lake Ontario given adequate mooring and launching facilities, and a more hospitable aquatic environment? There is no doubt that the summer cottage is a North American phenomenon which is here to stay, and that the weekend ritual is as highly developed in Metropolitan Toronto as anywhere on the continent. However, one may be equally certain that the trek north will become longer and more tedious as the summer population of the resort areas increases, and available cottage sites become more remote. It is therefore logical to anticipate a much greater proportionate use of Lake Ontario in the future, and an accelerated demand for facilities.

Some very broad assumptions, and quite approximate figures will furnish an idea of what that demand might be. Presently, there are some 30,000 boats licensed in the Metropolitan Planning Area to slightly over 500,000 households, a ratio of one boat per 17 households. Assuming that over the next two decades that ratio increases to about one boat per 10 households, the 1985 population of the Planning Area (estimated at 3,000,000 people and 800,000 households) will own about 80,000 boats. This

(1) This estimate is far from precise since the Customs and Excise Division licenses only power boats using a 10 H.P. motor or over, and only sailboats using Toronto Harbour.

(2) According to replies in questionnaires sent to all clubs, summer, 1964.

is not necessarily an over-enthusiastic estimate. If, for example, boats continue to be purchased at the rate indicated by the present issuance of licenses, there will be over 100,000 boats owned by residents of the Planning Area, a ratio of one per 8 households.

If, for the reasons cited above, the proportion of boats stored and used on Lake Ontario increases from the present less than 10% to, say, 30% of those owned by residents of the Planning Area, the prospects are that facilities will be required for close to 25,000 boats along the waterfront.

Two other Great Lakes cities have attempted long term forecasts of their requirements for boating facilities. Milwaukee (3) has embarked on a program aimed at providing for about 15,000 boats by 1980. Cuyahoga County (Cleveland) (4) expects that facilities will be required for about 25-30,000 boats by 1970.

Although these cities roughly approximate Metropolitan Toronto in size, comparisons are of questionable validity because their geographic circumstances differ. Cleveland must rely almost entirely on Lake Erie for all its boating activities. This is evidenced by the fact that, although there are considerably fewer boats owned by residents of Cuyahoga County, facilities are already available for three times the number of boats on their lakefront than are available here. Their numerous launching sites have given rise to "trailer" clubs, which have no lakefront sites, but whose members stage events using the ramps as bases.

Milwaukee is more readily accessible to a lake district which is perhaps not as extensive as that in Ontario. Until recently, their facilities on Lake Michigan were roughly equivalent to Toronto's in capacity, but not in type. Milwaukee has more launching ramps but,

(3) "Small Boat Facility and Marina Requirements for Milwaukee County" Ralph M. Burke Inc. Engineers and Architects, 1957.

(4) "Boating" - Preliminary Report, Cleveland Regional Planning Committee, 1959.

with fewer yacht clubs, has fewer slips and mooring areas. That deficiency is now being made up by the McKinley Marina, presently under construction, which will have a capacity of 1,400 boats in slips.

The two studies concur in providing for about 20% of the boats in marinas and the remainder on launching ramps. Using this breakdown as a guide, 25,000 boats in the Metropolitan Planning Area would require 5,000 slips or mooring spaces. These and other sources generally agree that, given suitably tranquil water, slips are to be preferred over mooring.

Milwaukee calculates its ramp requirements on the basis of one lane per 250 boats, whereas Cleveland uses a ratio of one lane per 200 boats. Both estimate usage at about 15% of all boats on the average weekend day, but the former figures capacity at 75 launchings or recoveries per day per ramp lane. That means one operation every 10 minutes in a 12-13 hour day. From observation, this may be possible using wide lanes (and Milwaukee's design standard is a quite generous 20 feet) and with assistance from park staff, but it would seem to leave little margin for the shorter days at the ends of the season, and nothing for the peak hours. Experience will tell, but at this writing it would seem to be advisable to use the Cleveland estimate which is based on 60 operations per day per ramp lane. On that basis, 20,000 boats in Metropolitan Toronto would generate 6,000 launchings and recoveries on the average weekend day, and would require 100 ramp lanes to accommodate them.

For winter storage, Milwaukee is aiming at provision for about 85% of the boats 25 feet in length and over, exclusive of dry sail storage for the centreboard classes. This amounts to about 30% of the expected fleet using slips. On the same basis, 5,000 boats in marinas in Metropolitan Toronto would require about 1,500 winter storage spaces.

In its submission to the Waterfront Technical Committee, the Argonaut Rowing Club advises that competitive rowing requires tranquil water over a length of

20,000 metres, with turning areas at either end, a total length of the order of 7,000 feet. A width of 150 feet is adequate, and will allow other boats to proceed along one side to the start line while another race is in progress. Sections of the proposed waterway should be planned to afford tranquil water for the required length, so that rowers will have suitable practice areas at least in the early morning hours before heavy use by pleasure craft.

In conclusion, it is evident that future needs for boating facilities in the Metropolitan Planning Area cannot be predicted, nor are there any past trends which can be usefully projected. In the face of the many variables, it is suggested that further pursuit of the meagre statistics presently available will yield estimates of future needs no more reliable than those based on the broad assumptions enumerated above.

Accordingly, it is suggested that the Waterfront Plan adopt the provision of 5,000 slips and 100 ramp lanes to accommodate 25,000 boats as the target for boating facilities. Implementation will be carried out over the next twenty years and, it is hoped, much longer. As the work proceeds, there will be ample opportunity for adjustments to correct deficiencies or excesses in the light of experience and the observation of new trends which materialize.

#### (ii) Public Projects and Private Clubs

At present there are 13 yacht clubs, 3 rowing or canoe clubs, and one hydroplane club in the Planning Area, which have a combined membership of more than 4,500 persons. (5)

It is only to be expected that many boat owners, including the great majority of sailors, will want to join a club. Enthusiasts in any sport tend to congregate, and clubs are the obvious gathering places. It is recommended that the Waterfront Plan should provide for and encourage this inevitable and healthy tendency.

(5) Two of the yacht clubs have a canoe section as well. The total membership figure includes only those Boulevard Club members who belong to the sailing section.

Such a policy makes good sense from a financial standpoint as well. Members build and maintain the club houses, slips, and grounds at their own expense. Committeemen devote countless hours to arranging competitions, training juniors, and staging the other events which constitute such a large part of the life of the waterfront. If attempted by a public agency, these facilities and programs could only be duplicated at tremendous expense to the taxpayer.

It is axiomatic, of course, that the public interest is paramount, and that public needs are to be served first. However, where it is clear, and it must be quite clear, that public needs will not be jeopardized, or that they can be as easily or conveniently met elsewhere in close proximity, there would appear to be no reason to prevent the expansion of the existing clubs or the allocation of space for new clubs, subject to appropriate conditions.

Those conditions should include leases at rates sufficient to defray costs for the construction and maintenance of protective works by a public authority which are of exclusive benefit to the club, architectural control, maintenance standards, dignified behaviour, etc. There is no acceptable alternative to an anti-discrimination clause having reference to race, creed or ethnic origin, but membership committees should be privileged to eject or reject boaters.

Twelve of the yacht clubs have amongst them about 1,400 slips, mooring spaces, or dry sail berths. The thirteenth has no facilities of its own, its members using a commercial marina in Frenchman's Bay. In reply to a questionnaire circulated during the summer of 1964, most clubs indicated that some additional space is required, but only four were specific in listing immediate requirements which totalled about 260 spaces.

Only when the detailed plans for each sector are near completion will it be possible to determine the extent to which each of the existing clubs may be permitted to expand. However, in order to establish some broad targets, we suggest, for the moment that 2,000 spaces be



assigned to the existing clubs. The spaces can be distributed among them to the extent that their present locations and immediate surroundings permit, as part of the detailed study attendant upon the Sector Plans. This will allow close to a 50% expansion of the present combined facilities of the clubs.

**(iii) Marinas**

Marinas should be located where direct access to a major artery and sufficient parking space are available and at some distance from home owners. Locations across the waterfront which appear to have these general qualifications are:

- Mississauga - just west of the Lakeview Generating Station
- Etobicoke - just east of Mimico Creek and near the mouth of Etobicoke Creek
- Toronto - Ashbridge's Bay and The Island<sup>(6)</sup>
- Scarborough - foot of Brimley Road and Beechgrove Drive
- Pickering - in Frenchman's Bay
- Ajax - foot of Harwood Avenue.

Without implying a limitation of investigation of other locations, it is recommended that the development of sites at these locations should be studied as part of the respective Sector Plans.

The marinas proposed or built in the major cities visited thus far have had capacities of 1,000 boats or greater. It is suggested that each boat basin should be designed for an ultimate capacity in that general range, notwithstanding estimates which indicate that the facility will not be fully utilized by 1985.

Slips are almost universally preferred over mooring spaces, although the latter are frequently used until funds are available for the construction of slips.

The canvass of the yacht clubs revealed this breakdown as to size and type among the boats presently kept on the waterfront:

<sup>(6)</sup> Improved access to the Island Park generally will be part of the study of the Central Sector.

Size and Type of Boat	Percentage
<b>Sailcraft</b>	
- Dry sailed	31.2
- At slips or moorings	
- less than 20 ft.	11.6
20 - 29 ft.	23.6
30 - 39 ft.	11.2
over 40 ft.	2.3
Sub-total, sailcraft	79.9%
<b>-Power Boats</b>	
less than 20 ft.	2.1
20 - 29 ft.	7.7
30 - 39 ft.	7.8
over 40 ft.	2.5
Sub-total, power boats	20.1
<b>TOTAL</b>	<b>100. %</b>

Having in mind the present lack of attraction of Lake Ontario for power boats, particularly small ones, it is not surprising to find such a heavy preponderance of sailcraft, and the high proportion of larger craft among the power boat fleet.

It is really quite impossible to gauge the composition of the fleet at any future point in time. Milwaukee has made some long range forecasts, but these are based on an existing fleet composition entirely different from the breakdown here. In Milwaukee for example, power boats comprise 62% of the total as compared to 20% in Toronto. It seems reasonable to expect a tremendous increase in the proportion of power boats as sections of the waterway are completed. Although the smallest outboards and inboards are the main traffic at the launch ramps, a great increase in the demand for small boat slips should be anticipated. Shilshole Marina in Seattle (where the average boat size tends to be larger than here) has revised its initial estimate of 43% to provide for a greater proportion of the smallest size of slips.

Great accuracy is not required at this stage however, and it is neither likely nor necessary that each boat ba-

sin have the same combination of facilities. The following suggested breakdown parallels the Milwaukee forecast, but is adjusted to take cognizance of the present emphasis on sailcraft here. This chiefly affects the extent of dry sail accommodation, since, insofar as slip size is concerned, it makes no difference whether the occupant is a sailboat or a power boat. This breakdown is put forward simply as a point of beginning to be revised in the light of demands current at the time of construction.

Size of Boat	Percentage
- Dry sailed	15
- In slips - less than 20 ft.	40
20 ft. - 29 ft.	25
30 ft. - 39 ft.	15
greater than 40 ft.	5
<b>Total</b>	<b>100%</b>

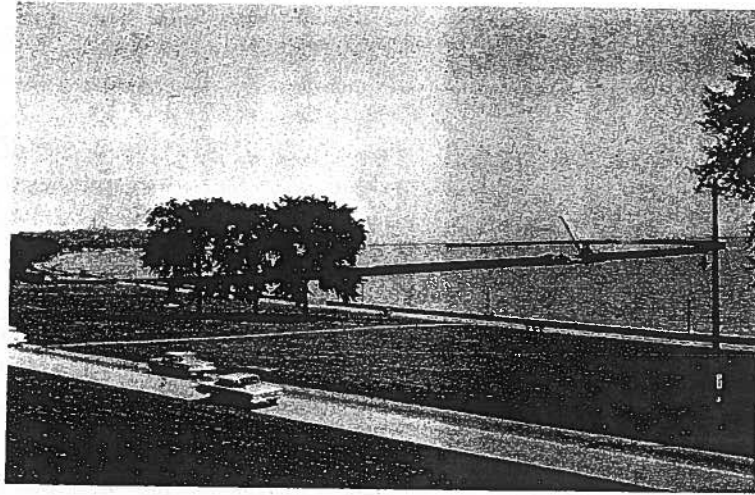
From the literature reviewed, it would appear that the following slip dimensions should be provided:

Boat Length	Slip Dimensions
under 20 ft.	15' x 8'
up to 30 ft.	20' x 10'
up to 40 ft.	30' x 15'
up to 50 ft.	40' x 20'

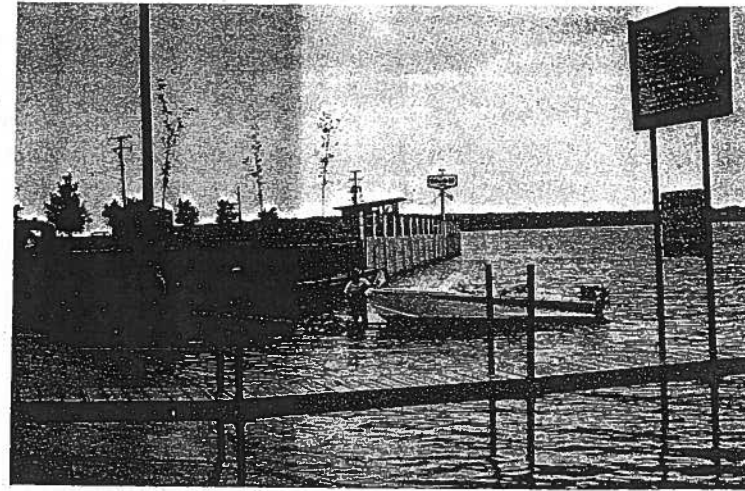
House boats and catamarans may require greater widths.

Marinas should provide the following additional facilities:

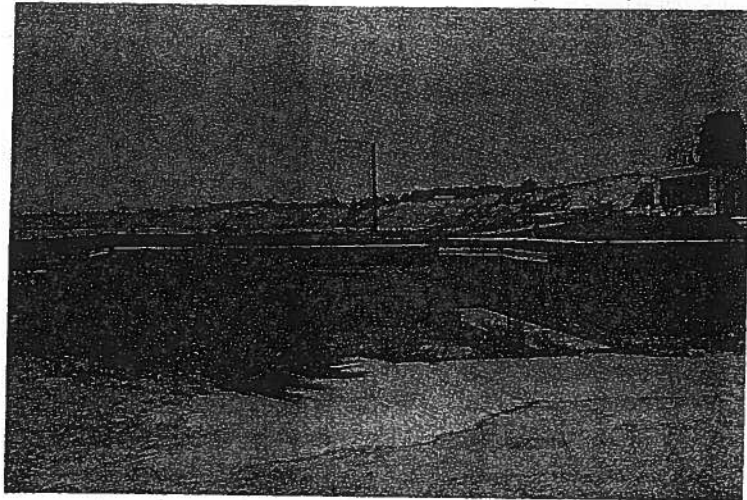
- At the slips - power, water, lockers, and lighting.
- General services - parking, marine fuel, toilets, vending machines, pay telephones, garbage collection, boat lift service, slips for visiting boats, and security.
- Optional facilities - restaurant, bar and lounge, showers, boat and motor sales, repairs, outdoor winter storage, marine insurance, charter service, picnic tables, barbeques, etc.



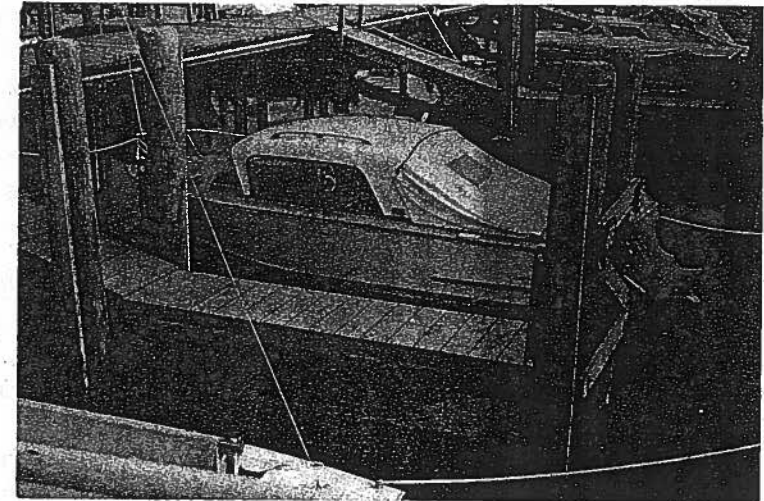
*McKinley Marina – Milwaukee (under construction)*



*Boat Launching Ramps – Muskegon, Michigan*



*Launch ramps in creek mouth, silted in and abandoned – Milwaukee County*



*Adjustable Slips – Traverse City, Michigan*



Slips are now usually constructed to permit height adjustment to cope with fluctuations in lake levels. Slip rentals are usually based on the length of the boat and the period of rental. The fees include all services at the slip and a windshield sticker for parking. Visitors' cars are usually charged, and in some cases floodlights are coin operated after normal hours. Milwaukee plans its parking on the basis of 0.6 spaces per slip, Shilshole originally planned to provide 1.6 spaces per slip, but is apparently operating satisfactorily on a 1:1 basis, and it is suggested that this latter ratio be tried in the beginning here. A loading space should be kept clear at the end of each pier. Most of the optional facilities can be provided by clubs, or by commercial operators if they are permitted.

Winter storage is perhaps the most vexing problem. For the most part, only the larger craft will require it, and presumably their owners are the most likely to be willing and able to pay the rental, (which is usually based on length). The problem is not only one of space and security costs, but of appearance as well.

Although boat owners naturally prefer the storage space adjacent to their club and its repair facilities, Milwaukee proposes a central winter storage yard in a fortunately available site up the Milwaukee River where it will not be exposed to the public eye. At this writing however, there does not appear to be a similar opportunity here. The bridges across the mouths of Toronto's rivers are too low to permit the passage of the large craft likely to desire storage. It is understood that the Harbour Commissioners' marine terminals have been used to a limited extent during the winter season, but not without complications to the harbour operations and the insurance rates. A site may be found in the new Outer Harbour, at least on a temporary basis, with the expectation that it would be shifted when the land is required for port purposes.

Failing this latter alternative, it will be necessary to provide for winter storage in conjunction with each marina site, or on the closest launch ramp parking areas,

allowing for 30% of the boats at slips, and 60 storage spaces per acre, with room for appropriate screen planting.<sup>(7)</sup>

Although most boat owners prefer to make their own minor repairs, commercial facilities for larger and more difficult jobs are a necessary part of the total waterfront picture. Boat and motor sales are an essential part of any such commercial undertaking, and winter storage at such locations will make possible an all-year operation.

#### (iv) Launching Ramps

Launching ramps require the same general locational characteristics as marinas. They generate considerable traffic and thus should not use local streets for access. Although they usually close shortly after dusk, they should be as remote from residential areas as possible.

Using the estimated 1980 population<sup>(8)</sup> as divided by Yonge Street as the only criterion, there should be about 54 ramps west of the Harbour, and 46 east. Unfortunately, there are more potential sites on the east side, and it would be well if a location could be found between Sunnyside and Ashbridge's Bay. Ramp sites should be proposed at or very near marinas in order that maximum use can be made of the supporting facilities there. Those ramps not at the marinas should have protected water, and it is therefore doubtful if a suitable site can be developed beyond the waterway during the period covered by this Plan, except at places like Frenchman's Bay, Port Credit Harbour or Lakeside Park, which enjoy partial protection from adjacent industrial piers.

Lanes are usually 12 - 15 feet wide and may be grouped in any number depending on the parking space available. At multi-lane ramps, they are designed in pairs separated by short jetties for loading and unloading.

(7) Keeping the anchorage ice free by mechanical means is another possibility, and inquiries in this direction should be continued.

(8) By the Metropolitan Toronto Planning Board.

Milwaukee plans for parking on the basis of one acre per lane, since each car with its trailer takes up two spaces. It is suggested that a ratio of 0.8 acres per lane be tried here since a lower capacity per ramp lane is expected. Except for a barrier to clearly delineate and protect the entrance driveway, the parking lot surface should be free of any curbs or planting which will necessitate backing in or out of parking spaces. Angle parking will facilitate manoeuvring with trailers. The lot need not be lighted and screen planting is preferable to fencing around the perimeter, unless the lot is to be used for winter boat storage.

The only other facilities required at the ramps are marine fuel, vending machines, toilets, a pay telephone and a small office for the operator.

#### (v) Competitive Courses

The existing rowing and paddling clubs have a total membership of nearly 1,500,<sup>(9)</sup> 85 canoes and 44 shells. In its brief, the Argonaut Rowing Club suggested that Long Pond on the Island offers ideal conditions, but is too short for a competitive course. If Long Pond cannot be lengthened, three schemes for a course in front of the Canadian National Exhibition were proposed as alternatives.

This latter location is central, and would probably be the best for spectators, and for multi-use. However, it seems doubtful that such a course will be constructed unless it is part of a major expansion for one or more other purposes.

The lower reaches of the Humber are presently used, but the circuitous route is a distinct disadvantage for training for competition. From time to time proposals have been put forward for the dredging of a straighter channel, but the initial costs, the silting, and the effects on wildlife have always discouraged any such action. More promising if less immediate opportunities may be offered by new sections of waterway in Etobi-

(9) This figure includes the whole of the memberships of the Island Yacht Club and Toronto Sailing & Canoe Club.

coke or Scarborough. If an island chain proves feasible, the course will have protection from wind as well.

#### d. Bathing Facilities

In the face of the uncertainties as to water quality, the prospective danger from boat traffic in the waterway, and in the sure knowledge that the open lake will continue to be unattractive by reason of temperature, it appears to be necessary to provide for extensive artificial bathing facilities along the waterfront. The most desirable combination is a large pool adjacent to a sand beach, perhaps the outstanding example of which is to be found at Jones Beach on Long Island.

##### (i) Future Needs

At present there are about four miles of public beach frontage in the Metropolitan Planning Area. Almost all of it is located in the City of Toronto, and none is available east of Nursewood Road (Victoria Park Avenue). The two major swimming pools at the lake, Summerville and Sunnyside, are both in the City.

Even more than in the case of boating facilities, one must grope for meaningful criteria on which to base estimates of future needs for bathing facilities. In the body of literature canvassed, the only standards encountered with reasonable consistency were a figure of 75 square feet per person for beach capacity, and usage by 15% of the population on an average week-end day in season. Using the above standards, our present beaches should be able to accommodate 50-60,000 people, or about 3% of the present population in the Planning Area. In fact, with the exception of Olympic Island, their use is frequently if not usually discouraged by water temperature or pollution or both.

Given swimming conditions more favourable than presently pertain here, what proportion of the bathing facilities should be provided at the lakefront as opposed to swimming pools elsewhere in the Planning Area, or bathing facilities in the Conservation Areas? What allowance should be made for the exodus to vacation areas which is so unusually high here in comparison to the

American cities on which the aforesaid 15% is based?

There are no answers to those questions which can be substantiated of course, but simply to provide a target to aim at, it is suggested that the figure be halved, and that provision for usage by 7.5% of the population be adopted as the objective for the Waterfront Plan. Assuming an average width of beach of 200 feet, and rating beach capacity at 75 square feet per person, one mile of beach will serve 14,000 people. The estimated 1985 population of 3,000,000 will then require about 16 miles of public beach, or quadruple the length presently available.

The parking required will vary from location to location, depending on the proximity to public transit. Assuming 50% come by car, and an average of 3.5 persons per car, one mile of beach (which is equivalent to 24 acres) will require space for 2,000 cars. These will occupy 16 acres.

Other facilities required include food concessions, toilets, drinking fountains, change rooms and life guard stations. The Chicago people report that changing rooms are becoming less popular with the general use of quick-drying materials for bathing suits. Umbrella, deck-chair canoe, rowboat, and waterbicycle rentals may be part of the concession. The bathing area should be supported by a picnic ground.

##### (ii) Types of Facilities

The provision of satisfactory conditions for swimming is an obvious corollary to the development of beaches in the Plan. For the reasons already stated, it will be necessary to rely on man-made facilities. Large swimming pools adjacent to the beaches have already been recommended and nothing need be written here about such a well recognized facility.

In addition to swimming pools, however, it appears that opportunities may arise to create artificial lakes, which have the advantage over pools of a more natural appearance, and many times the capacity. The accompanying figures illustrate how such a lake might be designed.

As in any standard swimming pool, water quality and temperature must be controlled accordingly. However, since the area, shape and volume of the lake will be so great in relation to the probable use, it would seem that the design criteria for ordinary swimming pools need not be applied. As there do not appear to be any design criteria available for this particular circumstance, the application of Public Health Act regulations was discussed with the Ontario Department of Health. The following criteria are suggested as a basis for consideration in the design of the proposed artificial lake.

Filter capacity should be designed to permit the recirculation of the total volume of water in the lake once in 24 hours. Chlorination equipment should maintain a residual of free available chlorine at 0.5 p.p.m. Chemical feeder facilities should maintain the pH of the water between 7.0 and 8.0. Screening facilities must be provided to remove any large particles, hair, etc.

Make-up water from a potable water source should be added at the rate of 5 - 15% of the total pool capacity per day. Overflow from the pool will be equal to the amount of make-up water added to the pool plus any rain water falling on the surface, less losses through evaporation.

The recirculation system should be specifically laid out to permit a more rapid recirculation rate in the more heavily used portions.

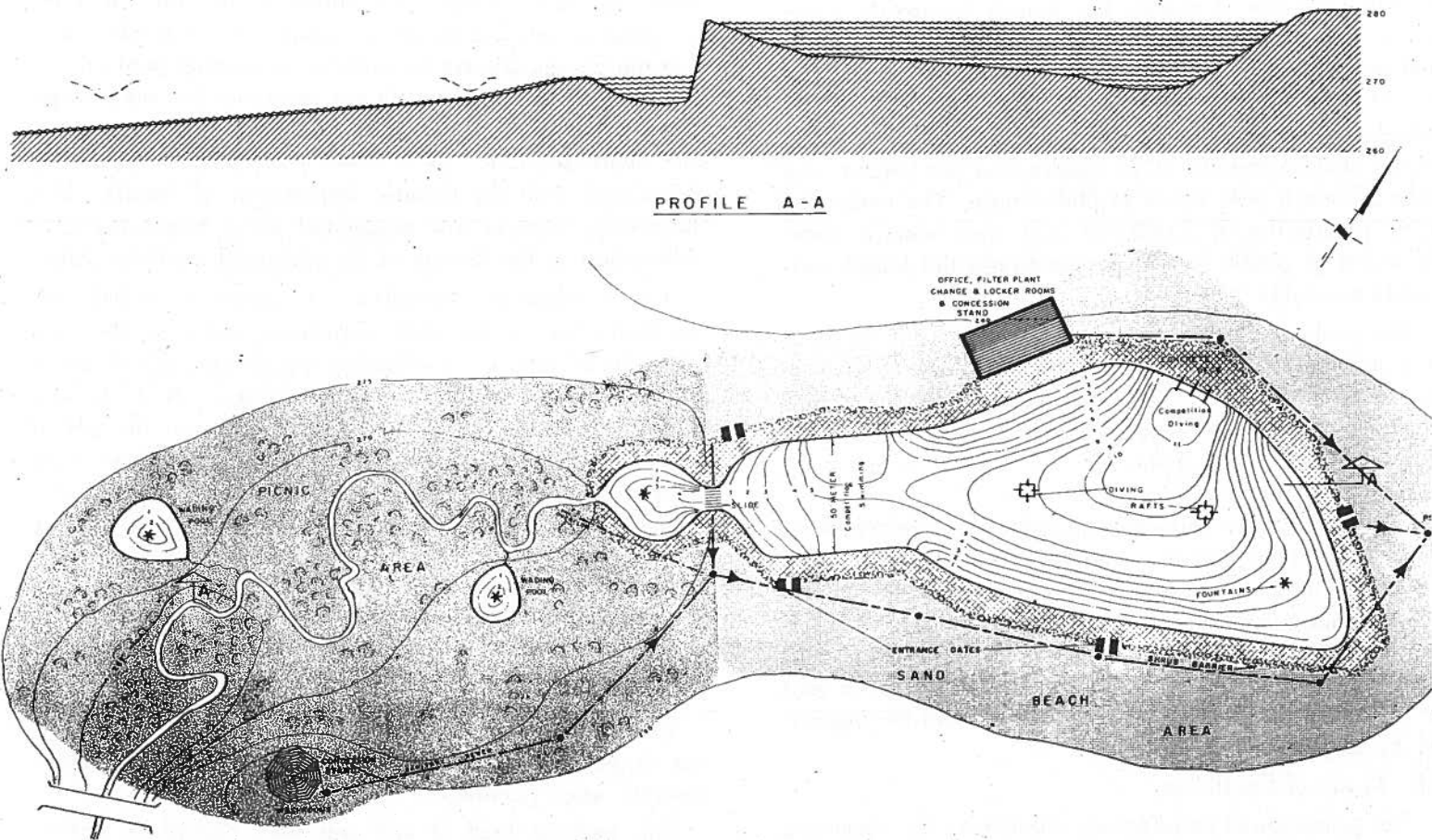
The bathing load at any one time should be calculated on the basis of:

- providing 40 sq. ft. or area per bather
- providing 1300 gallons of pool capacity per bather.

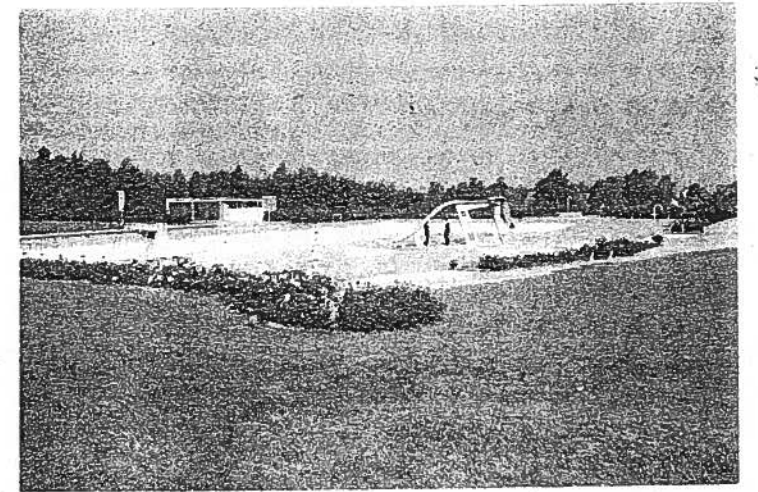
The maximum bathing capacity of the lake in any one day should be established on the basis of 5 persons per 1,000 gallons of water recirculated within the hours that the pool is open.

The above criteria were developed by pro-rating the regulations prepared by the Department of Health relating to swimming pools under the Public Health Act.

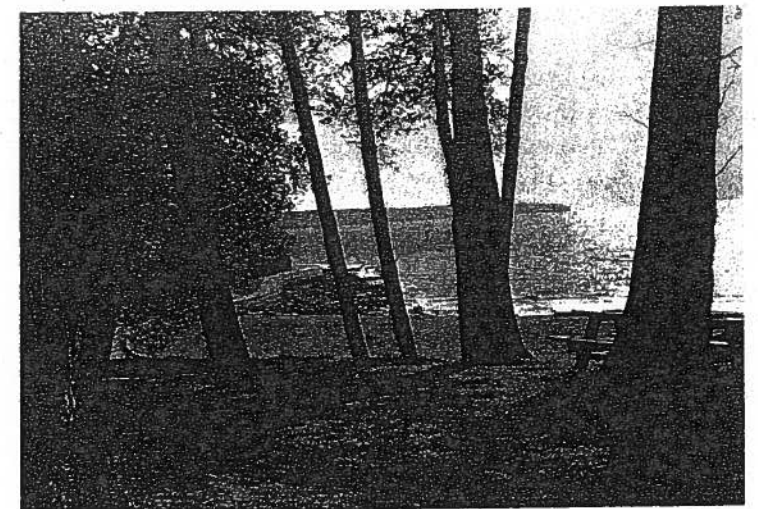




POSSIBLE LAYOUT FOR ARTIFICIAL LAKE



Swimming pool with barrier shrubs and footpath entrances — Hamburg



Walkways and Beaches — Stanley Park, Vancouver

All other features of the lake must conform to those regulations.

The lake shown in the accompanying figure has an area of 240,000 sq.ft. and a volume of approximately 7.8 million Imperial gallons. Based on the above criteria, this would permit a bathing load at any one time of 6,000 persons and a daily capacity of 19,500 persons.

In view of the size and nature of the lake, it does not seem practical to recirculate and filter the water more than once per day. It may be necessary however to circulate without filtering at a greater rate, providing only screening and chlorination to maintain a proper chlorine residual.

The lake requires an impervious lining such as concrete so that the quality and clarity of the water can be maintained. Specialized areas in the lake would be provided with vertical walls to permit such activities as diving and competitive swimming. All other areas within the lake should have a bottom that slopes from the shoreline at approximately a 15:1 slope. Piers may be constructed in the central part of the lake to provide additional platforms for diving as well as accessible points for major inlet and outlet piping. A paved decking of at least 15 feet in width should be provided around the perimeter.

A barrier should be placed completely around the lake with either a fence or, more preferably, a special band of low planting to limit the access to approximately four points at which change rooms and washroom facilities should be provided. Showers and foot sprays should be required as in all normal pools before entering the water, and provision must be made for checking clothing and valuables. Entrance and exit to the pool area should be through automatic counting turnstiles which register on one master counter so that the total number of persons using the pool each day and the number of persons in the pool at any one time would be known. No concession facilities or food could be permitted in the enclosed pool area since this would add heavily to the chlorine demand and filtering load.

Due to the quantities of water that are involved and the cost of installing intakes into Lake Ontario, it is recommended that the water supply for the lake be obtained from the local potable water system.

The temperature of the make-up water will be in the order of 50°F but it may be expected that due to the size of the lake, solar radiation will be adequate to maintain the temperature of the water in a comfortable swimming range.

Sanitary waste from the toilets and shower rooms, and any sullage from food concessions must be directed to the sanitary sewerage system.

### (iii) Distribution of Bathing Facilities

Like marinas, swimming pools and artificial lakes will generate heavy traffic volumes, and should therefore have direct access to arterial streets. They must be located where there is sufficient space for off-street parking and supporting picnic areas. Proximity to public transit, or ease of service by public transit on week-ends is particularly important.

Economies will be realized in the construction and operation of the artificial lakes if use can be made of existing filtration plants which will one day be phased out of regular service. The New Toronto and Scarborough Plants are in that category. The new Easterly Water Filtration Plant may be designed to provide treatment for an artificial lake at Beechgrove Drive.

Enquiries have been made in an attempt to establish further criteria for the sizes and locations of swimming facilities at the lake. The search was not notably rewarding. One public pool (approximately 1000 persons capacity) per 50,000 people is a standard<sup>(10)</sup> sometimes used, but its relevance to the Metropolitan Toronto picture is perhaps questionable. The summer exodus of population is unusually high here, and the Metropolitan Toronto and Region Conservation Authority provides a number of large and easily accessible swimming areas in its regional system which cannot be related to urban

(10) American Institute of Park Executives.

swimming pools in any statistical way. If artificial lakes are constructed as metropolitan facilities along the waterfront, it would seem that they too should be regarded as regional attractions.

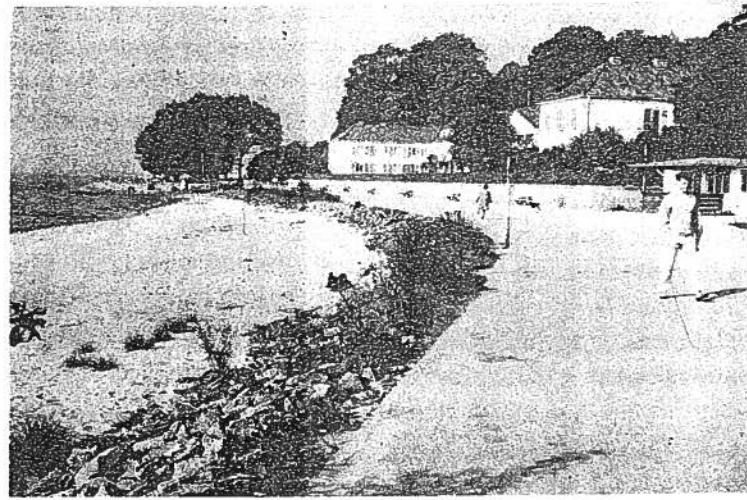
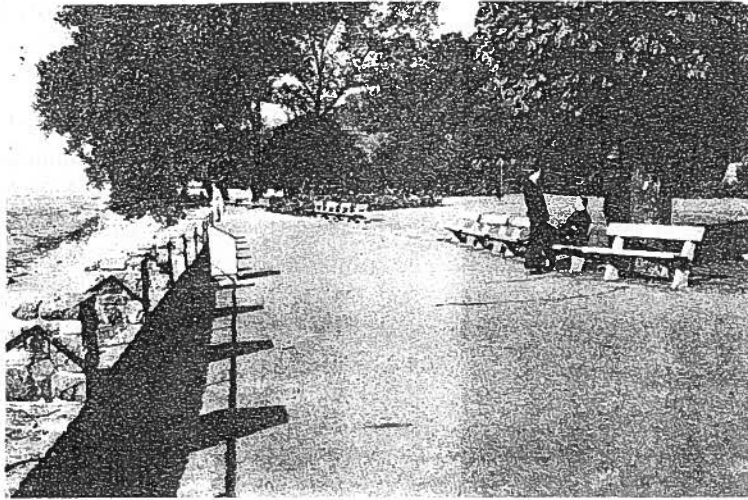
There does not appear to be any similarity in objectives or standards for swimming facilities between the various recreation departments in the Metropolitan Area. Scarborough was the only municipality to state specific objectives, which are: a pattern of large, 1000 person capacity pools on the 1/50,000 population basis (e.g. Agincourt, McGregor, Heron Park, Birchmount); supplemented by smaller "splash pools" on a 1/25,000 basis (e.g. Knob Hill, Maryvale, Blantyre and Halbert). Most of the larger municipalities keep indoor pools at schools open for summer instruction.

The conclusion is that any attempt to fabricate a statistical basis for waterfront bathing facilities would be at best an academic exercise. It is rather suggested that the planners for each sector exercise judgement, based on what is feasible in terms of access, space and cost, on consultation with local recreation officials, and on what is already available in the general vicinity.

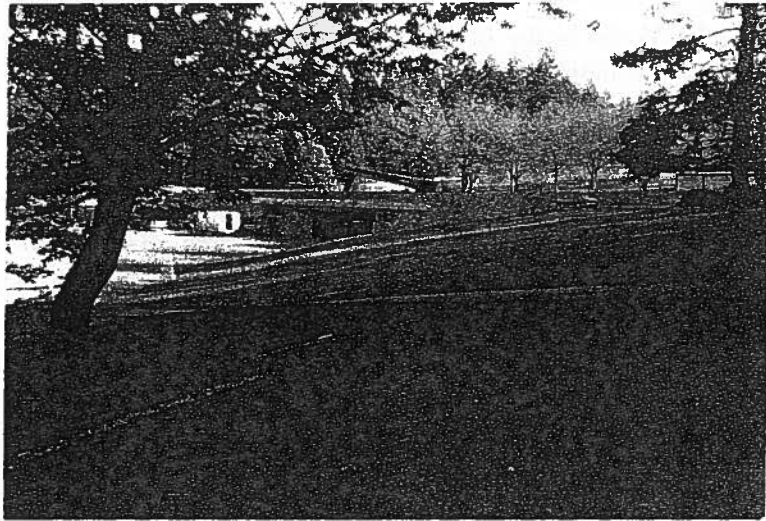
To assist in the latter aspect, the accompanying table lists the bathing facilities available in each municipality. By any standard, the City of Toronto would seem to be well served with ten outdoor pools in the 800 - 1000 capacity range, plus indoor pools in 18 secondary and 13 elementary schools which are open in summer for some public use. Although the city-wide distribution is not especially even (6 of the outdoor pools are in the east end, none in the north-central) there does not appear to be any pressing requirement for additional facilities along the city waterfront, other than the need to supplement the swimming at Olympic Island beach and along the south shore at the Island Park with a major swimming pool.

The Scarborough program has already been referred to. The west end is the part least endowed with bathing facilities. It is also the section where access to the lake is most limited, and where natural conditions are

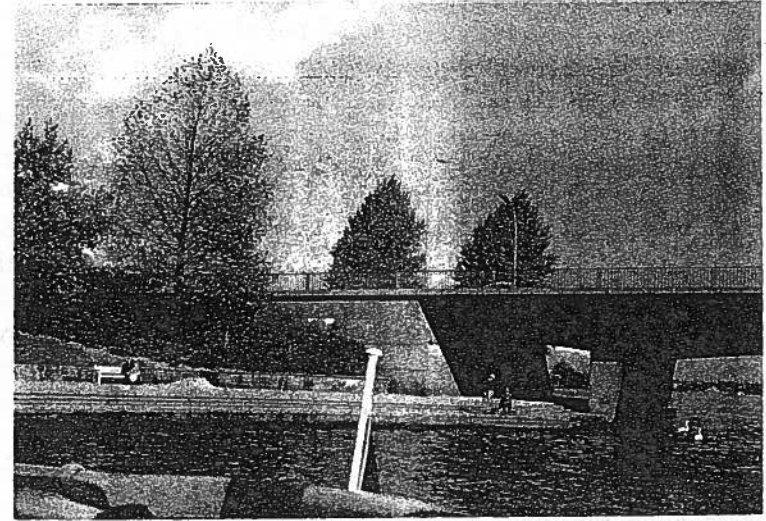




*On the famous Elbe "Wanderweg" — Hamburg*



*Pedestrian Underpass — Stanley Park, Vancouver*



*Separation of vehicular and pedestrian ways — Hamburg*

poorest for swimming in any event. Accordingly, it is in this area that the Waterfront Plan can do the most to make up for deficiencies in local requirements, as well as provide for swimming facilities of metropolitan significance.

**e. Other Recreational Facilities**

Among the other recreational facilities, priority should be given to picnic grounds and camping areas which are complementary to the water-oriented facilities described above. All the types of equipment and sports facilities which may be provided can hardly be listed here. If space can be made available, there are requirements for large playing field complexes in the south-western and south-eastern metropolitan areas suitable for baseball, soccer and other league competition. The shortage of tent and trailer sites for tourists at the approaches to Metropolitan Toronto is well known. A floral park may be established at some permanent location.

An extensive system of walkways and cycling paths should be constructed. Where feasible, these should connect to trails in the lower river valleys. The bridges over the channels can be used conveniently to separate pedestrian and vehicular movement.

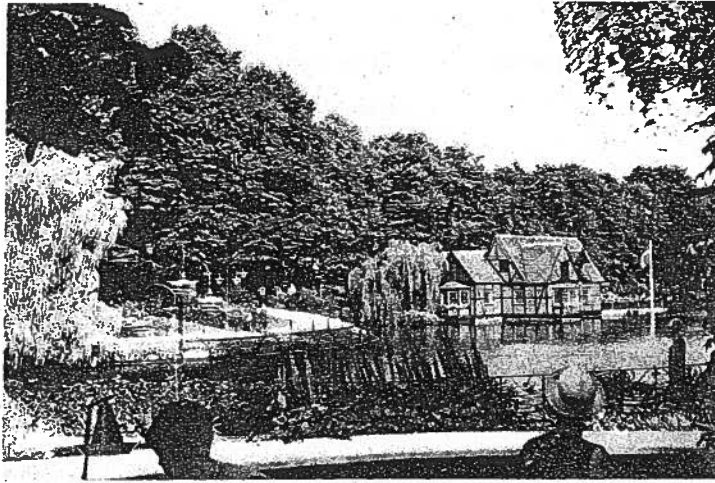
Space should be available for water shows at several places along the shore. Special features such as an aquatic theatre similar to the popular Minneapolis model might best be included among the unique attractions being developed on the Island Park. A pleasure garden along the lines of Copenhagen's famous Tivoli has been suggested in conjunction with proposals for the expansion of the Canadian National Exhibition. A site for an Olympic stadium has also been proposed there.

This brief list is not intended to be exhaustive, but hopefully will afford some idea of the range of opportunities present. At this stage there is no need to write the definitive word. Fifty miles is a lot of waterfront to fill up and it is certain that as development proceeds there will be many other imaginative proposals to exploit the great potential of the waterfront.

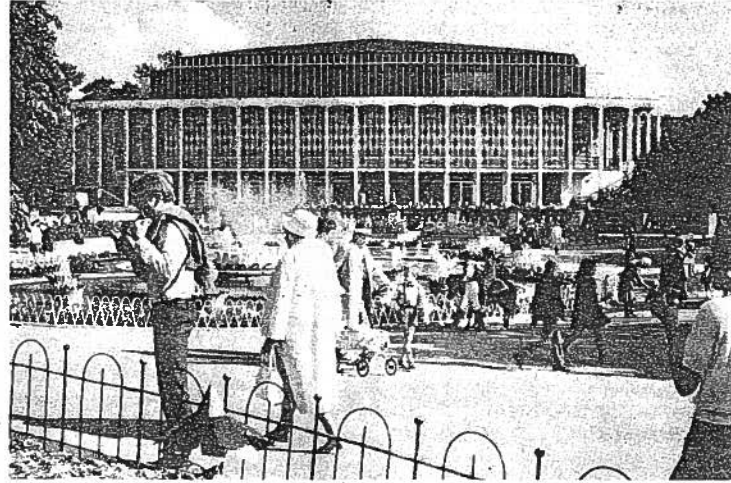
**INVENTORY OF EXISTING MAJOR SWIMMING POOLS (1967)**

Municipality	Major Outdoor Pools	School Pools Open in Summer	Other Pools
City of Toronto	Alexandra Park Alex Duff Donald D. Summerville Earlscourt Eglinton Greenwood High Park Monarch Park Riverdale Sunnyside	Allenby Bickford Park Bloor C.I. Brockton Castle Frank Central Commerce Deer Park Eastern Commerce Earl Grey Fairmount Park Fern Glen Ames Glenview Harbord C.I. Jarvis C.I. Lawrence Park C.I. Lord Dufferin Malvern C.I. Monarch Park North Toronto C.I. Northern Secondary Oakwood C.I. Osler Parkdale C.I. Parkway Vocational Queen Alexandra Riverdale C.I. Sunny View Western Tech.-Commerce Winona Drive Woodfield Road	Harrison Baths Central Y.M.C.A. West End Y.M.C.A. Broadview Y.M.C.A. Y.M.H.A. (downtown) F.H. Armstrong Recreation Centre Elizabeth Recreation Centre John Innis Recreation Centre McCormick Recreation Centre Pape Recreation Centre Trinity Recreation Centre
Borough of East York	Cedervale Kiwanis	Oak Park Junior High St. Clair Junior High	East York Community Centre Leaside Memorial Gardens
Borough of Etobicoke	Richmond Gardens	None	Albion Alderwood Lakeshore Swimming Club Memorial
Borough of North York	Belmar	Bathurst Heights C.W. Jeffreys Don Mills Downsview Emery Georges Vanier Nelson Boylen Northview Heights Victoria Park York Mills	Italian Gardens Memorial Y.M.H.A. (North Branch)





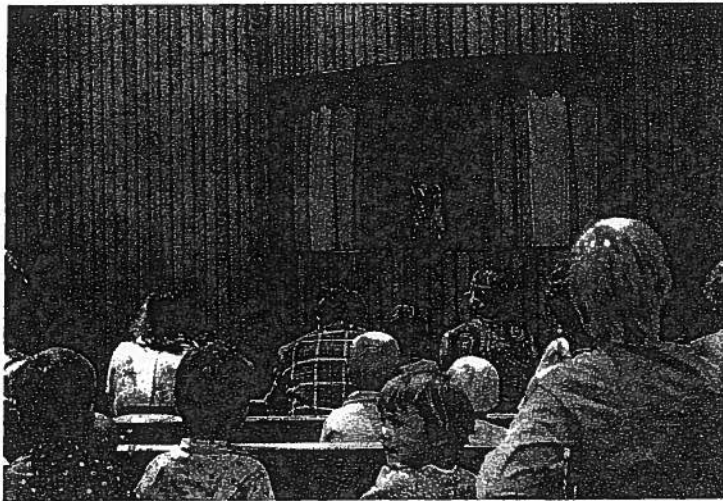
*Inside Copenhagen's famous Tivoli*



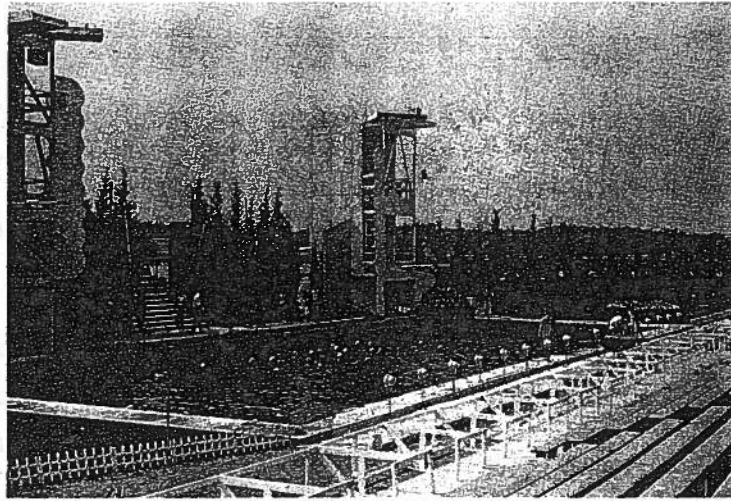
*by day*



*and by night*



*The puppet show at Centre Island*



*Aquatic Show - Minneapolis*



*Picnicking in Island Park*

**INVENTORY OF EXISTING MAJOR SWIMMING POOLS (1967)**

Municipality	Major Outdoor Pools	School Pools Open in Summer	Other Pools
Borough of Scarborough	Agincourt Birchmount Blantyre Halbert Heron Park Knob Hill Maryvale McGregor	Cedarbrae C.I. Midland C.I. W.A. Porter C.I.	Centennial Recreation Centre
Borough of York	Fairbank Smythe Weston	George Harvey Runnymede Vaughan Road York Memorial	York Centennial Building
Mississauga	West Acres Erindale	None	None
Port Credit	Lions' Club	None	None
Ajax	Ajax Swimming Pool	None	None
Pickering Township	None	None	None

**2. OUTSTANDING FEATURES ON THE WATERFRONT**

In the following pages, outstanding natural and artificial features in the study area are listed by sector. Where possible they should be afforded some prominence in each Sector Plan. Their appearances should be preserved and enhanced, and the detailed designs should provide for maximum utilization of the aesthetic, cultural and recreational potential that each feature offers.

**a. Mississauga Sector**

**(i) Rattray Marsh**

The Rattray Marsh is the most significant natural formation along a somewhat featureless shore. Technically, it is a liman, a phenomenon better exemplified by Grenadier Pond or Frenchman's Bay. The question of its ultimate use is a familiar one since, owing to its

relatively small size, it is improbable that it can be developed as a small boat harbour without terminating its use as a wildlife sanctuary. Its potential as a boat harbour may be determined by the adequacy of vehicular access from arterial routes, and the feasibility of cutting and maintaining a channel to deep water in the Lake.

**(ii) The Beach west of Port Credit**

The curving shoreline from the Orsini Estate west beyond the Rattray property provides a fairly continuous and expansive beach at present lake levels. Although bathing is frequently limited by algae and water temperatures, the beach has obvious future potential in association with artificial swimming facilities. It may be necessary to look beyond the time period covered by this Plan in forming ideas for utilizing this poten-

tial more fully, in order to decide the type of access to be obtained now, and the extent of acreage to be acquired on shore to support aquatic facilities along the water.

The shore cliff reaches a height of about 25 feet at the western end of the beach and some attempt should be made to preserve public access to the view easterly from the headland at the British-American Oil Company refinery at Clarkson.

**(iii) Port Credit Harbour**

The plan for this sector will have to make an assumption as to the future extent of port uses in this harbour, and, conversely, the extent to which its periphery and abutting areas can and should be used for residential and recreational uses. In this regard, it should be noted that periodic dredging will be required to maintain a channel depth of 8-9 feet in the river mouth. The frequency of dredging may be expected to increase with further development in the Credit watershed. The Federal Department of Public Works now maintains only the approach to the Canada Steamship Line terminal, and it is the Yacht Club of Port Credit which undertakes dredging operations in its own approaches. North of the No. 2 Highway bridge, the Credit River valley is analogous to the lower Humber, which will be discussed in the next Sector.

**(iv) Waterworks Park**

This municipally-owned land is the obvious base for major recreational facilities in the east end of the Township. The possible future use of the water filtration plant in conjunction with artificial bathing facilities should be investigated.

**(v) Artificial Features**

The heavy industries along this shore are the most outstanding artificial features, and provide points of interest of a sort not duplicated west of Yonge Street. The Lakeview Generating Station, and the future nuclear



power station west of Clarkson present opportunities for integration with the scenic drive route. The Architectural Conservancy reports no buildings of architectural merit in this Sector.

#### **b. Etobicoke Sector**

##### **(i) Humber Bay**

It is important that public access be preserved to the view easterly from the west shore of the Bay, particularly from the Norris Crescent - Superior Avenue section which affords an excellent panorama of the central city and Toronto Island.

##### **(ii) The Rivers**

The lower Etobicoke Creek has a well established use in Marie Curtis Park which, if it is to be extended, should include provision for artificial bathing facilities in conjunction with the relocated beach. Mimico Creek would appear to have limited potential, as it is now known that the land adjacent to the old Etobicoke Sewage Treatment Plant cannot be made available for other uses. Silting in the lower Humber makes it unsuitable for economical use for continuous boating, although it will afford an interesting side trip when natural conditions permit. Its future as a waterfowl refuge and natural park appears more likely.

##### **(iii) Artificial Features**

Aside from the new Westerly Water Filtration Plant, which should be integrated as a major point of interest, there are no buildings of architectural interest which merit special attention. In fact, one of the prime objectives in this Sector must be the creation of sites for new buildings which will add visual excitement. Probably the most important historical event was La Salle's passage of the Humber, which might be marked in a manner similar to the dramatic Champlain monument in Orillia.

The potential use of the New Toronto Filtration Plant in conjunction with artificial bathing facilities

has already been mentioned.

#### **c. Western Beaches Sector**

##### **(i) Natural Features**

This section of shore is almost entirely man made, and is without natural features of any significance. Although it is almost entirely in public use, it is somewhat unfortunate that the highest point just east of the Boulevard Club, which affords the best view across Humber Bay, is not.

##### **(ii) The Breakwater**

It is already well recognized that this important feature can only be fully utilized if the protected channel behind it is dredged to provide adequate depths for small boats and oarsmen. Careful design will be necessary at the western end, where silting from the Humber River promises to be a continuing problem. The protected channel is now, and for some time will continue to be, the focus of small boating activity in the west end of the Metropolitan Area, and offers the best short term solution to the need for a training course for oarsmen. Consideration should therefore be given to new public and expanded private facilities ashore to maximize the potential for aquatic sports.

Sunnyside Pool is a model of the successful combination of beach and artificial bathing facilities, and any doubts as to its future should be erased.

##### **(iii) Historical Features**

This Sector is particularly rich in historic features, all of which have been detailed in a letter from the Toronto Historical Board dated February 23, 1965 which is part of this appendix.

#### **d. The Central Sector**

##### **(i) The Canadian National Exhibition**

This Plan must make some provision for the future expansion of the C.N.E. If it appears necessary to fill

further into the lake, it is essential that the protected waterways be relocated rather than eliminated. Similarly, the basin in front of Coronation Park, which is one of the best small boat anchorages outside Toronto Harbour, should be replaced if it cannot be preserved.

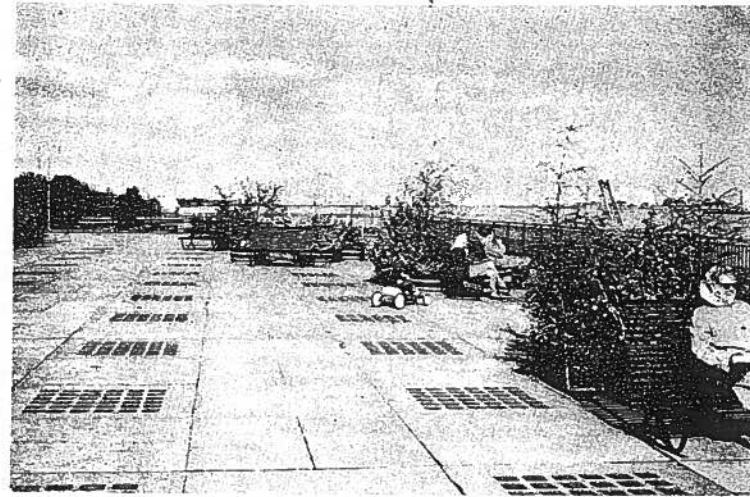
##### **(ii) The Island Park**

Little need be added here to what has already been written elsewhere regarding the natural and artificial features, including access, which are present or proposed for Toronto Island Park. At this writing, no large scale artificial bathing facility is included in the Island Plan, but the potential does exist, notably along the beach west of the Avenue of the Islands, adjacent to the proposed terminus of the Island bus route. On the basis of evidence available to date, it is to be expected that the Island Water Filtration Plant will continue to be used as part of the supply system for Metropolitan Toronto, and will probably require rehabilitation at some future date. Consideration may be given at that time to providing equipment to treat and recirculate water for a large swimming pool, and to making the plant part of the park attractions.

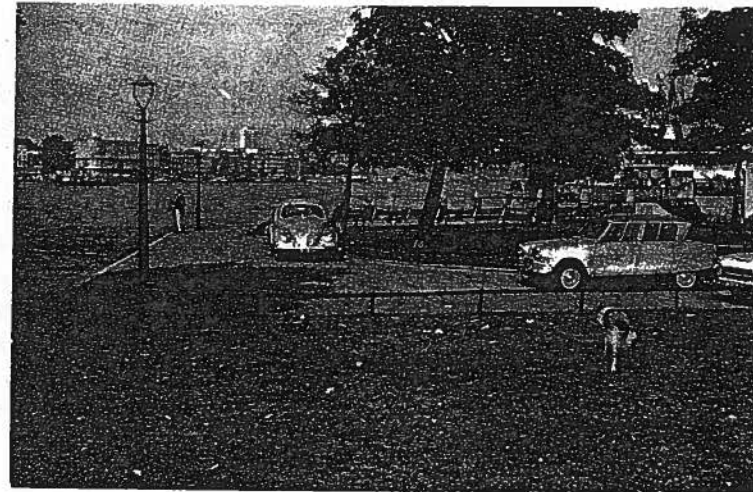
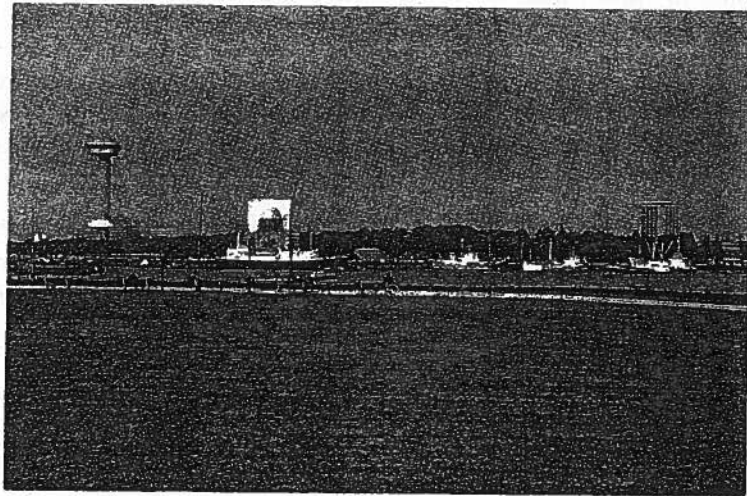
Construction of the Outer Harbour and the widening of the Eastern Gap will profoundly affect the east end of the Island. Opportunity may arise to enlarge the Island Park to provide additional recreational facilities, including vantage points to view the busy scene of construction and shipping in the Outer Harbour.

##### **(iii) The Western Inner Harbour**

The combination of terminal, commercial and residential uses proposed in the Marvo Project may be found to have equal validity as a replacement for the existing storage and industrial uses along the Western Inner Harbour, although, in staging such redevelopment, it may be necessary to look beyond the time period covered by this Plan. The grain elevators present perhaps the most serious problem. Proper accommodation for



*Parks over marine terminals – Copenhagen*



*Harbour viewing sites – Rotterdam*



H.M.C.S. Haida should be found somewhere in the Central sector, perhaps adjacent to the war museum presently situated in front of the C.N.E.

#### (iv) The Eastern Inner Harbour and Industrial Area

The Eastern Harbour is developed for port uses, and for industrial uses which are, in the main, port-oriented. Changing demands for fuels and new methods of transportation will necessitate and make possible the redevelopment of the Eastern Harbour, but it seems improbable that redevelopment alone will suffice to provide adequate space for port facilities over the long term. The decision to reconstruct the Cherry Street bridge over the Keating Channel will improve prospects for incorporating the little known but striking views of the City which are available from the eastern side of the Inner Harbour (e.g. at Polson Street and the Eastern Gap).

#### (v) The Outer Harbour

The Outer Harbour will be intended primarily for new terminal facilities, but may include additional industrial land south of Unwin Avenue. The new Eastern Gap, which will be a focus of shipping activity, the R.L. Hearn Generating Station, and the Ashbridge's Bay Sewage Treatment Plant are major public works which can be fitted into the route of the scenic drive.

#### e. The Eastern Beaches.

This Sector includes the longest and best beach within the Metropolitan Area. West of Woodbine Avenue, the swimming pools and park have been developed to take advantage of this asset, and the potential of vestigial Ashbridge's Bay for a small boat harbour has already been recognized in numerous proposals. However, east of Woodbine Avenue, the lack of sufficient space for supporting recreational facilities and poor access combine to limit the function to that of a neighbourhood park. Unless protected water is to be provided,

Balmy Beach Canoe Club is not well located for its purpose.

If the extensive filling operations contemplated for the Outer Harbour materialize, this Sector will become the inner curve of a large bay, offering a setting with exciting possibilities for redevelopment.

#### f. Scarborough Sector

##### (i) Natural Features

This is the one sector where a natural feature will dominate, and the opportunity to take full advantage of the Bluffs is of paramount importance. It must be expected that in the long term, interception of surface drainage at the rim and arrestment of erosion at the toe will change the character of the Bluffs. A stable angle of repose will be achieved, and growth conditions on the face will encourage a cover of vegetation similar to that which preceded the coming of the white man.

Accordingly, special measures should be taken to preserve the rugged grandeur at such locations as the Needles (at the foot of Midland Avenue) where the composition of the parent material produces sheer cliffs and spires, and at the Cathedral Bluffs (at the foot of McCowan Road) where the coincidence of the Lake Iroquois and Lake Ontario shores produces cliffs over 300 feet high. The promontory at the foot of Beechgrove Drive (East Point) provides a spectacular view in both directions, and the height at this location should be preserved.

The two deep ravines which extend from the lake to Kingston Road at Brimley and Bellamy Roads suggest themselves as major access points. It will be well if they can be so used in a manner which will not eliminate all potential for recreational purposes. At Sunny-point Drive, a tremendous natural amphitheatre is available for imaginative treatment, possibly including winter sports on the east facing slope. If the lower Highland Creek Valley is to be used as an access point at the eastern end, care must be exercised to preserve its present use as a wildlife refuge.

The high land along the rim now owned by the Metropolitan Corporation poses two challenges. The existing limited access must be improved if these lands are to be developed and used as metropolitan rather than local parks. Careful study must be given to measures which will effectively integrate the upper lands with new park areas developed below.

##### (ii) Artificial Features

The R.C. Harris Plant presents a quite remarkable facade to the lake, and it is probable that the proposed Easterly Water Filtration Plant (for which a site must be preserved) can be designed to do likewise, and fitted in as a point of interest and visual impact on the scenic drive. When the latter is in operation, it is possible that the existing Scarborough Filtration Plant may be phased out of service, and become available for treating water for a large scale artificial bathing facility.

The Toronto Hunt Club and the Guild Inn are two private uses which might be encouraged to develop their water frontage in a way which would complement the total scheme. One day it may prove economic to construct apartment buildings right down the face of the Bluffs, to a deck covering small boat slips. Such buildings would add immeasurably to the picture. There are only a few places where arterial streets provide adequate access and transit close enough to the Bluffs for this purpose, and perhaps these areas should be reserved for high density redevelopment.

The railroad comes to the lake at the mouth of Highland Creek. This circumstance, unique in the study area, should be preserved for the possible future transportation of fill materials to the foot of the Bluffs.

#### g. The Pickering Sector

##### (i) Natural Features

Most of the sectors are fairly uniform topographically, but this, the most easterly, offers considerable variety. It is also the least developed, and affords the

greatest opportunity for lakefront development without recourse to costly filling operations.

Four river valleys, two of them major, provide the means whereby a waterfront park system can be extended into the hinterland. The Rouge and Duffin's Creek valleys are perhaps best utilized as natural parks and wildlife refuges, with possibly some winter sports. The acquisition of a large tract surrounding the lower Petticoat Creek by the Metropolitan Toronto and Region Conservation Authority will make possible the establishment of a major camping and picnicking area, and might be developed in part for some winter sports.

The shoreline itself includes several exceptional natural beaches, as for example, at Ferguson's Beach, Petticoat Creek, the Frenchman's Bay spits, Duffin's Creek, and Carruthers Creek. The land behind varies from a low configuration to bluffs reaching elevations up to 60 feet, where viewing sites may be located.

The naturally protected water of Frenchman's Bay is the obvious focal point for boating provided steps are taken to ensure that the channel is kept open. The Metropolitan Toronto and Region Conservation Authority has already initiated steps to ensure public access to the Bay, and provide sufficient acreage to support recreational facilities on the westerly sand spit.

#### (ii) Artificial Features

Most of the sectors are rather homogeneous in land use, but the Pickering Sector, like Mississauga, includes a variety which should provide for stimulating sections of scenic drive.

With the support of the Hydro Electric Power Commission, the nuclear power station east of Frenchman's Bay can be made into one of the outstanding attractions on the eastern waterfront. The Commission has acquired substantial additional acreage around the actual plant site, and it is possible that some of it can be used for some recreational purposes under agreement.

It is probable that, at least for the duration of this plan, the Pickering Water Filtration Plant will be used

for no other purpose than providing potable water supply. In Ajax, however, the original water treatment plant might be investigated for use in conjunction with artificial bathing facilities as a long term possibility.

The C.N.R. follows the shore very closely from Highland Creek to the Rouge, and it is to be hoped that the potential of this section will not, in consequence, be ignored. In the very, very long term, it may be appropriate to consider some scheme involving filling operations but, in the short run, it has distinct possibilities as a section of "wanderweg" on the Hamburg model.

Finally, it must once again be reported that enquiries have not yielded any indications of historical events, or buildings of architectural merit, which warrant special attention in this Sector Plan.

### NAMES, PLACES AND EVENTS OF HISTORICAL SIGNIFICANCE TORONTO HISTORICAL BOARD FEBRUARY, 1965

Sieur de La Salle	- (1643-1687) First prominent explorer to visit Toronto.
Etienne Brulé	- First white man to sight the mouth of the Humber.
Jean Baptiste Rousseau	- (1758-1812) A fur trader whose post was situated near the mouth of the Humber in 1791.
Site of the Indian Village of Teiaiaagon	- Seneca Indian Village on the East bank of the Humber River (probably Baby Point).
Colborne Lodge and Studio	- 1836 - Home of John G. Howard, City Surveyor and Engineer.
Landing Place of the Americans, in April 27, 1813	- Sunnyside.

Marilyn Bell	- Girl of 16 years who was first known person to have swum the full width of Lake Ontario - September 9, 1954.
Site of Fort Rouillé	- (1751-59) C.N.E. grounds, foot of Dufferin Street - marked by granite column.
Douville, Philippe, Sieur de la Saussaye	- First lessee of trading rights at York, 1720.
Douville, Capt. Alexandre	- Commander of Fort Rouillé when it was burned in 1759.
Chevalier de Portneuf	- (1708-61) - Commander of Fort Rouillé.
Edward Hanlan Memorial	- (1855-1908) - Renowned oarsman - Memorial in C.N.E. grounds.
Peace Monument	- C.N.E. Grounds - erected 1930 - dedicated to the cause of universal peace.
Scadding Cabin	- Home of John Scadding, erected east of the Don River 1794, moved to C.N.E. grounds 1879.
The New Fort (Stanley Barracks)	- C.N.E. grounds, erected 1841.
Fort York Armouries	- Erected 1936 - oldest Militia armouries in Toronto.
Old Fort York	- Original site of the first British post in Toronto, 1793 - restored to 1813-15.
John Graves Simcoe	- First Lieutenant-Governor of Upper Canada and founder of York.
Military Cemetery	- (1860-1913) Strachan Avenue west of Fort York.
Queen's Wharf Lighthouse	- Erected 1834 - junction of Fleet Street and Lakeshore Blvd.
H.M.C.S. York	- Lakeshore Blvd.



Victoria Memorial Square – First Toronto cemetery and monument to commemorate the fallen of the War of 1812 – Portland and Wellington Streets.

Gibraltar Point – Now Hanlan's Point.

Gibraltar Point Lighthouse – 1808 – located on Hanlan's Point.

L.E.S. & D. Corners – King and Simcoe Streets.

Osgoode Hall – (1829–32) Built to house the Law Society of Upper Canada – northeast corner University Avenue and Queen Street West.

Site of Bishop's Palace – 1818 – Home of Bishop John Strachan while he was incumbent at St. James' Church – corner of Front Street and University Avenue.

Clarkson Gordon Building – 1843 – 15 Wellington Street West.

Jesse Ketchum – Established first industry in Toronto – Tannery located at southwest corner Yonge and Adelaide Streets in 1812.

St. James' Cathedral – 1853 – King and Church Streets.

St. Lawrence Hall – 1850 – southwest corner King and Jarvis Streets.

Campbell House – 54 Duke Street (1822) – Home of Chief Justice Sir William Campbell.

Original Plot of Town of York, 1793 – consisting of ten blocks bounded by the present-day George, Duke, Parliament and Front Streets.

Site of the Birthplace of Standard Time – corner of Richmond and Berti Streets.

Gooderham and Worts Distillery – (1859–61) Foot of Jarvis Street.

Site of First Parliament Buildings – (1794–1824) Foot of Berkeley Street

Site of Little Trinity Church 1843 – King and Mill Streets.

Maple Tree – 62 Laing Avenue (Queen and Pape).

## APPENDIX 'C'

### TECHNICAL SUPPLEMENT ON FILL

#### a. Introduction

The Appraisal of the Waterfront Plan adopted a basic hypothesis for lakefront development which recognized the need for creating additional land by filling along the shore of the lake. In order to explore this possibility, it was obviously necessary to investigate the quantities of material which might become available for lake filling during the period covered by this plan.

Sources of fill may be divided into two basic categories. The first consists of materials already on the development site. The chief components in this group are the sands, silts and clays lying on the lake bottom which may be dredged to create new land forms immediately adjacent. Large diameter suction dredges are usually employed. From investigations carried out by the Toronto Harbour Commissioners, it is known that suitable deposits in sizable quantities cover the lake bed from roughly Victoria Park Ave. to Gibraltar Point. This material was, in fact, the source of much of the fill used to develop the 1912 Waterfront Plan.

Preliminary surveys conducted during 1966 indicated less sizable, but still appreciable quantities of overburden on the lake bed in front of Scarborough Bluffs, but considerably more investigation will be required to determine more precisely the nature and pattern of the deposits if a massive fill program is undertaken in that sector. West of Exhibition Park, the lake bottom sands and silts taper out to uneconomic quantities. In establishing the contours of the lake bottom off the Etobicoke shoreline, the Metropolitan Works Department survey crews were able to confirm that only a thin layer of silt covers the shale which forms the lake bed.

Of secondary importance, but also within the same general category, is material which can be excavated from the shore directly adjacent to areas proposed for lake filling. Certain vacant lands along the Scarborough

Bluffs offer limited possibilities. Elsewhere, the extent of existing development precludes major excavations.

The second main category embraces all materials which must be transported to the fill sites. The group includes a wide range of materials derived from other activities throughout the Metropolitan Area, such as surplus excavation from construction projects, all kinds of domestic refuse and industrial wastes, fly ash from the hydro generating stations, and materials dredged to maintain channels. The central thought behind the proposal to use such materials is that they must be disposed of in some fashion, and if in so doing, new lands can be created along the waterfront, a double purpose may be served. In other words, there should be a better goal than simply "getting rid of the stuff". To fashion something worthwhile out of waste is surely a desirable social objective, and constitutes a very real part of true conservation.

It was recognized that the use of on-site materials could only be decided upon by the engineers for those sectors where such resources were available. In order to assist the planning in sectors less fortunately endowed, a comprehensive study (1) of imported fill materials was commissioned early in the waterfront planning program. This Supplement on Fill is a synopsis of that report.

The terms of reference for the Land Fill Study as set out in the original Appraisal were:

"The feasibility enquiry will cover in detail sources of suitable fill, its composition and quality, the rate at which it will become available, distances and means of transportation to fill areas, access from arterial routes to fill sites, methods of placement, as well as competing demands for fill"

The report was prepared with one qualification. Means of transportation and access from arterial routes were incorporated into the detailed planning and staging for each of the sectors.

(1) Land Fill Study, Proctor, Redfern, Bousfield & Bacon, November 1964

Available sources of fill material were investigated from many authorities. Questionnaires were sent out and answers received from all municipalities in the Metropolitan Toronto area regarding availability of fill. From this study, the following materials appeared to be the only sources of fill available in sufficient quantity to warrant consideration:

- Clean fill (excess excavation, demolition debris, etc.)
- Refuse (domestic and industrial wastes.)
- Dredged material from the lake and harbour.
- Hydro ash, a byproduct of the H.E.P.C. Thermal Generating Stations.
- Digested sewage sludge.

A detailed study was made of each of these materials regarding its suitability and availability.

#### b. Types of Fill and Their Suitability

##### (i) Clean Fill

Clean fill is considered in this report as material which has been produced from excavations performed on land, and building rubble which contains only small quantities of combustible material. This material generally consists of clay, silt, sand, gravel, rock and masonry building materials. Clean fill derives in varying quantities from all sections of Metropolitan Toronto, and the surplus is transported by truck to the nearest disposal area.

Large quantities of clean fill are being used as cover material for sanitary land fill sites in Metropolitan Toronto, for land reclamation at various locations along the lakeshore, particularly at the foot of Leslie Street and immediately west of the Humber River in Etobicoke, and for filling low properties throughout the Metropolitan Area. Small private areas for disposal are becoming fewer as development extends and more of this material is finding its way to major dumping areas.



Clean fill is the most suitable fill material available since it is easily handled and compacted to produce good load bearing values. The material is relatively innocuous and since it generally contains a large percentage of clay, it will support growth of vegetation.

The only major problems associated with its use and placing are dust in the dry weather and mud tracked onto adjacent streets in wet weather. These can largely be overcome by properly maintaining access roads on the fill area.

Clean fill can be used by itself, as it now is and always has. However, as will be shown later, when clean fill is used in conjunction with other materials in various ways, the potential acreage which can be created in the next twenty years and hence the extent of development along the waterfront can be increased enormously.

Other materials require special handling and protection in order to be used in a filling operation. Clean fill, then, is the most important material available and must be used for the greatest advantage possible in the handling and protecting of less suitable material and for final cover for the area.

Clean fill is well suited for the construction of impervious dikes providing that the percentage content of sand, silt and rubble is well controlled during placement. As proof of this, the Metropolitan Works Department successfully created and dewatered diked areas at the foot of Leslie Street for the disposal of incinerated sewage sludge.

The shoreline will require protection from erosion. This can be done with the heavier demolition rubble on a temporary basis until the material consolidates, when permanent protection works to suit the land use and shore conditions will be required. Where dikes can be created in the lake with sufficient slope to provide a stable condition (having regard to erosion) this material should form a reasonably good base for a beach.

#### (ii) Refuse

The term "refuse" as used here is defined as solid

municipal waste including domestic garbage, rubbish, ashes, street refuse, industrial wastes, and demolition and construction wastes. It consists primarily of combustible material and contains some putrescibles. This material is presently collected and disposed of in incinerators and various sanitary land fill sites in the Metropolitan Toronto area. Refuse is the largest single source of fill material available in the Metropolitan Area, being approximately 55% of the total quantity of all fill available. Its possible use for lake filling would, of course, require secure containment by means of impervious dikes, adequate cover material, and control of any leachants. If refuse can be used together with clean fill, the volume of refuse available increases the potential area of land fill enormously.

Settlement in land fill areas can be expected for many years. Therefore, this land should not be considered for areas where structures are proposed.

In the Metropolitan area there is an immediate need for additional large sites to meet the ever increasing requirement for sanitary land fill areas. The use of refuse as a fill material at the waterfront in a properly operated sanitary land fill project could therefore fulfil the needs for two major Metropolitan requirements:

- Provide badly needed sanitary land fill sites.
- Increase the potential amount of land that can be created in the Waterfront Plan.

Despite the extensive knowledge and experience available concerning sanitary land fill, the greatly increased areas of fill that can be created as a part of the ultimate waterfront plan hinge on the successful construction of such sanitary land fills abutting a fresh water lake. The basic hypothesis adopted in respect to this problem anticipates the creation of dikes employing clean fill material. To date, a completely analogous situation has not been found. During the course of the study, visits were made to Cleveland and Seattle, as well as to local sites, in order to study the effects of

refuse disposal land fill schemes on the adjacent land and water.

The City of Cleveland had filled an area on its waterfront with all types of material including some garbage containing putrescible and combustible material. This latter material was burned on the site in pits, and it was because of this highly unsatisfactory type of operation that this practice was stopped by court injunction a number of years ago. Cleveland is still filling in this area using clean fill, building and construction wastes, and refuse incinerator ash. This material is placed behind a partial dike constructed of heavy stone and slag. No attempt has been made to seal the dikes and dewater the filling area. Although some pollution may be contributed to the lake, the effect is not apparent and no test results could be located.

Encouraging reports (2) have been prepared by the University of Washington in Seattle where a refuse disposal land fill scheme has been performed by the City on University property to reclaim land from a peat bog along the edge of Union Bay, which is an inlet on Lake Washington. This area is surrounded on three sides by the University buildings and a good class residential area. This land fill scheme has been in progress for over 20 years and has provided land for parking lots, playing fields, and a golf course.

Porous dikes of non-putrescible rubbish were constructed to contain the refuse. The fill consolidated the peat as it was placed to give a final depth of garbage of approximately 35 feet, 23 feet of which is below lake level. Despite this, only minor effects have been noted along the shore adjacent to this fill and the water leaving Union Bay within one half mile of the fill operation is equal in quality to the water entering the Bay.

Two land fill operations utilizing refuse have been conducted adjacent to the lake in the Metropolitan Toronto

- (2) "Proposed Reclamation and Utilization of Union Bay Swamp" by Walter L. Dunn, and  
"A Study on the Effect of Refuse Disposal on Water Quality in Union Bay" by Robert W. Seabloom.

area. Ashbridge's Bay has been filled using incinerator ash, and the low land at the mouth of Etobicoke Creek was filled as a sanitary land fill to create Marie Curtis Park. Although both of these operations were conducted from land above lake level, they were both immediately adjacent to the lake. The Metropolitan Toronto Works Department has also conducted numerous land fill projects in ravines throughout the Metropolitan area in a satisfactory manner with no undue complaints from the operation. No irreparable pollution problems have been evident in the adjacent streams or lake because of these operations.

Other encouraging reports have been received from the Ministry of Housing and Local Government and the Urban district of Egham, Surrey, England where experiments and field tests have been performed in wet and dry pits to determine the degree of water pollution by "tipped" refuse. Many cases exist where tidal plains and swamp land in salt water have been used successfully for sanitary land fills but the existence of any site where refuse is disposed by sanitary land fill below water level in fresh water could not be established other than those noted above.

Proposals for creating dewatered diked areas for sanitary land fill in Lake Ontario have been discussed with those officials visited in Cleveland and Seattle. They concurred that, from their experience, certain methods may create no problem if well controlled. The opinion of a number of eminent authorities was sought concerning the proposed approach to this method of land filling. While aware of the need for careful procedures, their replies were encouraging. Conversely it should be stated that a number of replies expressed doubt or reserved endorsement.

Should refuse be used as fill on the waterfront, it would be necessary first to construct watertight dikes with clean fill out into the lake, dewater within the

(3) Recommended Standards for Sanitary Land Fill Operations - U.S. Department of Health Education and Welfare and Public Health Service.

dikes and then place the refuse within the dewatered cells by a well controlled sanitary land fill program (3). The area would have to be kept dewatered during the filling operation, and it may be necessary to pump the leachant for discharge to a sanitary sewer system, or other means of handling.

It is appreciated that sanitary land fills have had a checkered history and in the public eye have been regarded as undesirable generally. This is undoubtedly a natural human instinct and regrettably encouraged by those refuse disposal and sanitary land fill sites, improperly operated. However, as one would anticipate, successful operations of this nature have one characteristic in common - they have had competent and continuing engineering planning and control. In view of the encouraging information received to date, and having in mind the extent of possible benefits, it appears reasonable to suggest that small pilot projects be undertaken to test techniques for the use of various waste materials in conjunction with clean fill in the manner generally indicated. Sites which may be most readily used are at the foot of Parklawn Road in Etobicoke, and at the Brimley Road ravine in Scarborough.

### (iii) Hydro Ash

Hydro Ash is produced in Metropolitan Toronto by the Lakeview Thermal Steam Generating Plant in Mississauga and at the R.L. Hearn Thermal Steam Generating Plant in the Harbour Industrial Area. The ash may be divided into two types: Fly Ash and Bottom Ash.

**Fly Ash** - The fine residue from furnaces burning pulverized coal has about the same grain size and properties as silt. Fly ash will compact readily if handled in a damp condition but being fine grained, is quite unstable if dumped in water, and some particles will float. For this reason, if used as a fill material below lake level, it must be contained by earth or otherwise confined. Up to 5% of fly ash is soluble in water, being calcium

carbonate and calcium sulphate. The sulphate content is not large enough to create a corrosion problem. There is no indication that any leachant from the material would be toxic. The material when dry will cause dust on a windy day. It is also relatively barren, and therefore is not suitable for top dressing.

Fly Ash is known to have pozzolanic properties and has been used to produce a light weight aggregate for concrete. When this material is blended with a small percentage of lime, it may be compacted to produce excellent bearing characteristics. The H.E.P.C. has a great wealth of knowledge on the properties of this material from daily handling and from experimental work performed in their testing laboratories (4). They have been attempting to find an economical use for the fly ash but to date have not found an application for the vast quantity available.

Most of the ash is being hauled away and disposed of in pits at a considerable cost. It is available as fill at present but would not be if a market for it could be found.

**Bottom Ash** - Is simply a much coarser grained material and is denser than fly ash. This material can be utilized for access roads over fill areas and as cover material, particularly for fly ash to minimize the dust problem.

If these materials are used in the proposed fills, it will be essential to have the co-operation and advice of the Hydro on proper methods of handling and placing. Their use should be tested in pilot projects as suggested above. The tests might include transportation of the material via pipeline.

(4) "Ontario Hydro Fly Ash" published by the H.E.P.C. of Ontario.



#### (iv) Dredged Material

This report is concerned only with material dredged for channel and other maintenance. At present, most of this material in the Metropolitan Toronto area derives from the Toronto Harbour and Keating Channel by deposition from the Don River, storm sewers discharging into the harbour and ship channels, littoral drifts across the entrances to the harbour, and construction, extension and deepening of new ship channels.

Lesser amounts have been dredged from the Island lagoon system for use in re-shaping parts of the Island Park and creating the Centennial Marina. Since this material is obtained adjacent to and used only for the the Island Park itself, no account has been taken of this quantity in figures given later.

Dredged material could be obtained from the mouths of the other rivers or large creeks in the Metropolitan area, but no regular program has been established to date to remove this material since none are used for navigation except to a limited extent at the mouth of the Humber River and the Credit River.

Most of the dredged material available is the result of soil erosion in the drainage area of the Don River. It is transported by the river to the Keating Channel and harbour, where it settles out with the reduction in velocity of the river. Pockets or bars of sand are sometimes found at the east end of the channel near the mouth of the river, while the lighter silts and clays are deposited along the length of the channel. The deposits at the west end of the channel contain organic material. Tests have been run on samples (5) of dredged material taken during 1964 from various locations in the lake and harbour to establish its suitability.

The dredged material from the Keating Channel may be used for land reclamation purposes, although settlement of the material placed may continue for several years, due to its silty nature. This material is not considered

- (5) Soil Reports prepared by E.M. Peto Associates :  
"Lake Ontario Bottom Samples" dated August 18, 1964 &  
"Keating Channel Dredged Material" dated Aug. 18, 1964

suitable for use as base fill in the formation of any control dikes or where permanent structures are required on newly placed fill. The material from the west end of the channel appears to be more organic and is best suited for use as a final top dressing for the site.

The material dredged from the entrances of the harbour probably consists of sand deposited by littoral drift. This material may be used as a fill material inside any diked areas and may be best used as cover material in a sanitary land fill operation.

The main problem associated with the use of dredged material is in hauling and placing. It is at present transported by bottom dump barges into the lake and dumped in line with the planned extension of the Outer Harbour headland. This equipment requires a minimum of 10 feet depth of water to operate properly. To use in a normal land fill operation close to shore, specially prepared areas would be required to dump the barges and "stock pile" the material. It would then have to be handled a second time by either suction dredging and pumping into place or by dewatering the stockpile area and handling by clam and trucks. The majority of the material is silty and cannot be readily dewatered. More detailed studies on methods of handling and placing will be required if this material is to be used. It is, however, a continuing source of a relatively large volume of fill that should be considered.

#### (v) Digested Sewage Sludge

This material is an inoffensive by-product of the sewage treatment process and is a digested dewatered organic humus compound. It has sufficient nitrogen content to be classified as a soil conditioner and some is sold commercially as such. The material is well suited for a top dressing on a land fill scheme where grassed areas are desired, and it is anticipated that it would be used as such.

It is not a suitable material to be used as straight fill for any depth. Its best use is mixed with clean fill to provide the final cover material over fill areas.

#### c. Quantities of Fill

The rate at which land may be created along the Metropolitan Toronto Waterfront will depend entirely on the availability of fill material and particularly the availability of clean fill. The basic hypothesis indicated three major areas for land filling operations, the Etobicoke Sector, the Central Sector, and the Scarborough Sector.

In estimating the quantities of the various types of material, the study area has been divided into three sections to facilitate the application of this information as follows.

- Western Section: The area west of the Humber River including the Borough of Etobicoke and Town of Mississauga.
- Central Section: The area between the Humber River and Victoria Park Avenue including the City of Toronto, and the Boroughs of York, North York and East York.
- Eastern Section: Consisting of the Borough of Scarborough and Pickering Township where applicable.

To interpret the quantities of material given in this section of the report, the following approximate yardsticks will be found useful:

- An acre of land filled one foot deep (1 acre-foot) requires 1600 cubic yards of material.
  - One acre of land created in the lake raising the level 6-10 feet above lake level will require:
    - Within 500 feet of shore approximately 25,000 cubic yards/acre.
    - Within 1600 feet of shore approximately 50,000-55,000 cubic yards/acre.
- A general overall figure for approximating would be 50,000 cubic yards/acre.

The quantities of all materials estimated to become available for the next 20 years are shown in the following table, in 5 year increments for the east and west sections. Filling in the central section is expected to rely chiefly on material dredged from the lake bottom.

**(i) Clean Fill**

The availability of clean fill from public sources has been forecast by the various municipal authorities based upon future capital works projects and past experience, but there is little information available concerning the quantity of clean fill that is generated by private development. On the basis of the quantity of material arriving at the Toronto Harbour Commissioners fill site at the foot of Leslie Street, and the estimated quantity being delivered by the City of Toronto and contractors performing work for the Toronto Transportation Commission, an estimate has been made of the quantity of fill generated by private development in the three sections. The quantities estimated for private development are based on results of a T.H.C. 1963 survey which appear to be in agreement with previous surveys. The 1964 quantities received by the T.H.C. have increased about 400 percent to date and are not considered an average representative quantity.

This increase in the quantity of clean fill material arriving at the Leslie Street land fill site demonstrates the fluctuation in the quantity available at any site from time to time. This fluctuation is not always predictable as it depends on many variable conditions such as in the road network, the condition of the land fill sites, and the delivery cost to the respective areas. Longer hauls for fill disposal are becoming prevalent, particularly in the City sector. It is possible, therefore, for fill material which is generated in one geographical area of Metropolitan Toronto to be delivered to another area if control measures are established and maintained to direct this material where it is required.

The quantities shown in the table as being available during the coming years will be influenced by many indeterminate factors such as the nature and rate of de-

POTENTIAL LAND FILL MATERIAL									
ESTIMATED YEARLY VOLUME - CUBIC YARDS									
AREA	TYPE	1963-1964		1965-1970		1970-1975		1975-1985	
EAST	Clean Fill	459,057	29.9%	651,340	32.6%	397,800	20.3%	416,600	17.4%
	Dredged Material	-	-	-	-	-	-	-	-
	Hydro Ash	90,000	5.9%	60,000	3.0%	60,000	3.1%	90,000	3.7%
	Refuse	969,608	63.2%	1,268,500	63.5%	1,492,000	76.1%	1,864,500	77.8%
	Sewage Sludge	15,070	1.0%	16,875	0.9%	20,460	1.0%	26,540	1.1%
<b>TOTAL EAST</b>		<b>1,533,753</b>	<b>100.0%</b>	<b>1,996,715</b>	<b>100.0%</b>	<b>1,970,260</b>	<b>100.0%</b>	<b>2,397,640</b>	<b>100.0%</b>
WEST	Clean Fill	567,025	32.0%	1,133,560	38.3%	1,022,500	34.3%	1,135,700	33.1%
	Dredged Material	166,000	9.4%	545,000	18.3%	440,000	14.7%	365,000	10.6%
	Hydro Ash	155,000	8.8%	290,000	9.8%	295,000	9.9%	470,000	13.7%
	Refuse	859,098	48.5%	970,000	32.7%	1,197,000	40.0%	1,423,500	41.4%
	Sewage Sludge	23,890	1.3%	26,615	0.9%	32,040	1.1%	41,290	1.2%
<b>TOTAL WEST</b>		<b>1,771,013</b>	<b>100.0%</b>	<b>2,967,175</b>	<b>100.0%</b>	<b>2,986,540</b>	<b>100.0%</b>	<b>3,435,490</b>	<b>100.0%</b>
Total:						<b>2,180</b>			

Total Fill Potential at Eastern Waterfront (in 20 year period) = 43,800,000 cu.yds. = 880 acres (based on 50,000 cu.yds./acre)  
 Total Fill Potential at Western Waterfront (in 20 year period) = 64,000,000 cu.yds. = 1,300 acres (based on 50,000 cu.yds./acre)

velopment, changing economic situations and to a major degree on the extent of control maintained on the disposition of clean material.

Based on the figure of 50,000 cubic yards of material required per acre, the total available clean fill indicated would create:

21 Acres in 1964	21
36 Acres per year in 1965 - 70	180
28 Acres per year in 1970 - 75	140
31 Acres per year in 1975 - 85	310
<b>TOTAL:</b>	<b>651 Acres</b>

By utilizing this same amount of clean fill in conjunction with the other fill materials available between 2 and 4 times as much land could be created.

**(ii) Refuse**

Because of the very large and continuing quantities of refuse that must be disposed of, there is a constant problem of locating new and adequate sanitary land fill sites. Most available sites within the Metropolitan area either have been or are nearly filled. Sanitary land fill sites are still available in the northern and outlying sections of the Metropolitan Region but as years progress the sites will be at longer haul distances. Land fill sites along the waterfront would appreciably shorten the haul distance for a high percentage of the material, thus making disposal more economical.

Provision of sanitary land fill sites as part of the lakefront development plan would alleviate the site problem for many years, provide shorter hauls to disposal areas, and provide the mass fill requirements for a lakefront development.



Approximately 1,350,000 tons of solid waste were produced in Metropolitan Toronto in 1966 with only about 450,000 tons being disposed of by incinerators or other methods. There remained approximately 900,000 tons or 1,800,000 cubic yards of compacted refuse to be disposed of by the sanitary land fill method.

Since the central sector fill areas will be extensively used for buildings where load bearing ground is required, limited use for sanitary land fill is anticipated there. Accordingly in estimating the quantities of materials likely to be available, refuse has been assigned chiefly to the eastern and western sectors.

Using the projected population growth of the Metropolitan area as a guide, it is predicted that there will be over 3 million cubic yards of sanitary refuse to be disposed of in 1980.

If this material is considered for use in a land fill scheme along the waterfront, then clean fill material will be required as a cover material and to create dikes to contain the refuse. 30% to 50% of total material required must be clean fill depending on the rate of filling and the size and shape of the area.

### (iii) Hydro Ash

The quantity of hydro ash will increase during the proceeding years as the Hearn and Lakeview generating plants are extended to meet the ever increasing peak electric demands. This supply of ash may be decreased to some extent as the new Pickering Nuclear Generating Station is placed in service to supplement the two existing peak load plants between 1970 and 1975. The decrease in production of ash will very likely be for only a few years until the demand for electricity overtakes the increase in supply provided by the new plant.

### Hydro Ash Estimated Yearly Volumes - Cu. Yds.

Location	1964	1965-1970	1970-1975	1975-1985
West Lakeview Generating Plant	155,000	290,000	295,000	470,000
Centre Hearn Generating Plant	90,000	60,000	60,000	90,000

The amount of hydro ash as shown above at the present time constitutes approximately 7% of the total amount of fill available. These figures include fly ash and bottom ash, the latter being about 20% of the total. This percentage will increase as the plants are expanded until it will amount to approximately 10% after 1975. In the western section, it will be the largest source of fill available other than refuse.

### (iv) Dredged Material

Dredging of the Don River and the Toronto Harbour is performed by the Toronto Harbour Commissioners and the Federal Department of Public Works. This operation may be divided into two major categories - maintenance dredging and capital works dredging.

Capital works dredging was increased in 1957 due to the construction of the St. Lawrence Seaway to provide additional water depth for the larger ships using the harbour. This phase of the work produced approximately 4,000,000 cubic yards of rock and other types of material between the years of 1957 and 1962. Although capital dredging is still necessary, it will quite likely continue at a greatly reduced rate to provide additional docking facilities and other works when required.

The Don River, which has a drainage area of 140 square miles, deposits about 220,000 cubic yards of material yearly into the Keating Channel and the harbour. This material, as well as that which is deposited by various storm sewers, requires a yearly maintenance program by the Harbour Commissioners and the Federal Department

of Works producing approximately 284,000 cubic yards of material annually. With the construction of the Outer Harbour headland, silting of the Eastern Channel has been arrested.

At present, all dredged material from the harbour is deposited in line with the planned extension of the headland - a haul distance of about two miles from the mouth of the Keating Channel. The cost of this dredging varies from \$0.60 to \$1.10 per cubic yard. Comparable distances to major fill areas are:

Humber River	6-1/4 miles
Foot of Royal York Road	7-3/8 miles
Foot of Victoria Park Avenue	5-3/4 miles

The additional transportation cost of \$0.18 to \$0.25 per cubic yard would establish an effective cost for this material delivered to the site in the order of \$0.60 to \$1.20 per cubic yard.

The dredged material from the harbour area may be transported by barges and placed inside a diked area directly from the barges providing there is a least a 10 foot depth of water for this operation. Alternatively, this material may be dumped from the barges on to the land-fill site and used as a cover material.

The Humber River has a drainage area of 248 square miles which is more than twice the size of the Don River drainage area. The lower section of the river appears to have silted in and reached a state of equilibrium. The bottom of this river below the Lakeshore Road appears to fluctuate with the level of the water in Lake Ontario to maintain a uniform depth of water.

The Mimico Creek has a drainage area of 32 square miles which is less than one quarter of the size of the Don River drainage area. The mouth of this creek is almost completely silted in and is only deepened during a storm.

It may be desirable to have the mouths of these rivers dredged to provide a water depth adequate for small boat navigation. This project, however, would have to be a yearly maintenance program and would produce ap-

proximately 35,000 cubic yards of material annually. The cost of this dredging operation would be relatively inexpensive if the material could be suction dredged and deposited on a proposed landfill site adjacent to the river. The cost for suction dredging of this type varies between \$0.30 per cubic yard and \$0.70 per cubic yard depending upon the quantity of material to be dredged and the distance from the source that the material has to be transported.

The estimated quantities of dredged material constitute between 5 and 10 percent of the total volume of fill material available over the next 20 years. Its use is questionable because of the difficulty of handling and placing and the cost of transporting it to the site. However, if economical arrangements can be made to obtain this material, the quantities involved warrant its use.

**(v) Digested Sewage Sludge**

The total volume of sewage sludge constitutes only 1% of the total fill available. As such it is not an important source of fill except as a top dressing and soil conditioner on completed land fill areas, and there appears to be an adequate quantity of sewage sludge for this purpose.

**d. Methods of Placement**

The quantities of fill materials available as outlined in the previous section indicate that land fill projects along the waterfront of considerable magnitude are possible. However, because of the nature of some of the materials, special methods will be required to use them. As a guide for evaluating the various types of material and the effect of various types of development that may be considered in planning the waterfront, a number of typical cross-sections have been prepared. The lake bottom shown is an average section interpolated from the survey information received from the Metropolitan Works Department on the Etobicoke Sector. This will vary along the length of the waterfront and thus is intended to serve as a guide only.

Scheme I consists of creating a diked area directly from the existing shoreline into the lake. This method is the most economical on the basis of the minimum percentage of clean fill required. It is also the easiest and quickest method to develop. Storm sewer outlets to the lake in such areas would have to be intercepted along the shore or extended to the new shoreline. As the shoreline is extended further into the lake, more material is required per acre created but conversely a smaller percentage of clean fill is required as shown in the following figures:

Distance from Shore	Cubic Yards per Acre Created	% of Clean Fill Required
500 ft.	25,000	46
800 ft.	33,000	42
1,200 ft.	43,000	37
1,600 ft.	51,000	34

Scheme II consists of creating a diked island away from the present shoreline leaving a 550 ft. waterway adjacent to the shore. An earth causeway would be required for access during construction. It is anticipated that this causeway would be eventually removed and replaced with a bridge to maintain a continuous waterway. A larger percentage of clean fill is required for this method. Storm sewers could discharge directly to the inland waterway at present locations. This section would require the following approximate quantities of material:

Width of Island Inside Dikes	Cubic Yards Material Per Acre Created	% of Clean Fill Required
600 ft.	52,000	51
1,000 ft.	56,000	44

Scheme III consists of extending the existing shoreline approximately 300 feet, leaving a 300 ft. waterway, and then creating a diked island 1,000 ft. wide. Again a causeway would be required to the island during construction. This method would require approximately 54,000 cubic yards per acre of land created, 45% of which would be clean fill.

Scheme IV is similar to Scheme III except the island is only 500 ft. wide. This example is given primarily to indicate the effect on the proportions of various materials than can be used. 40,000 cubic yards of material would be required per acre, 58% being clean fill.

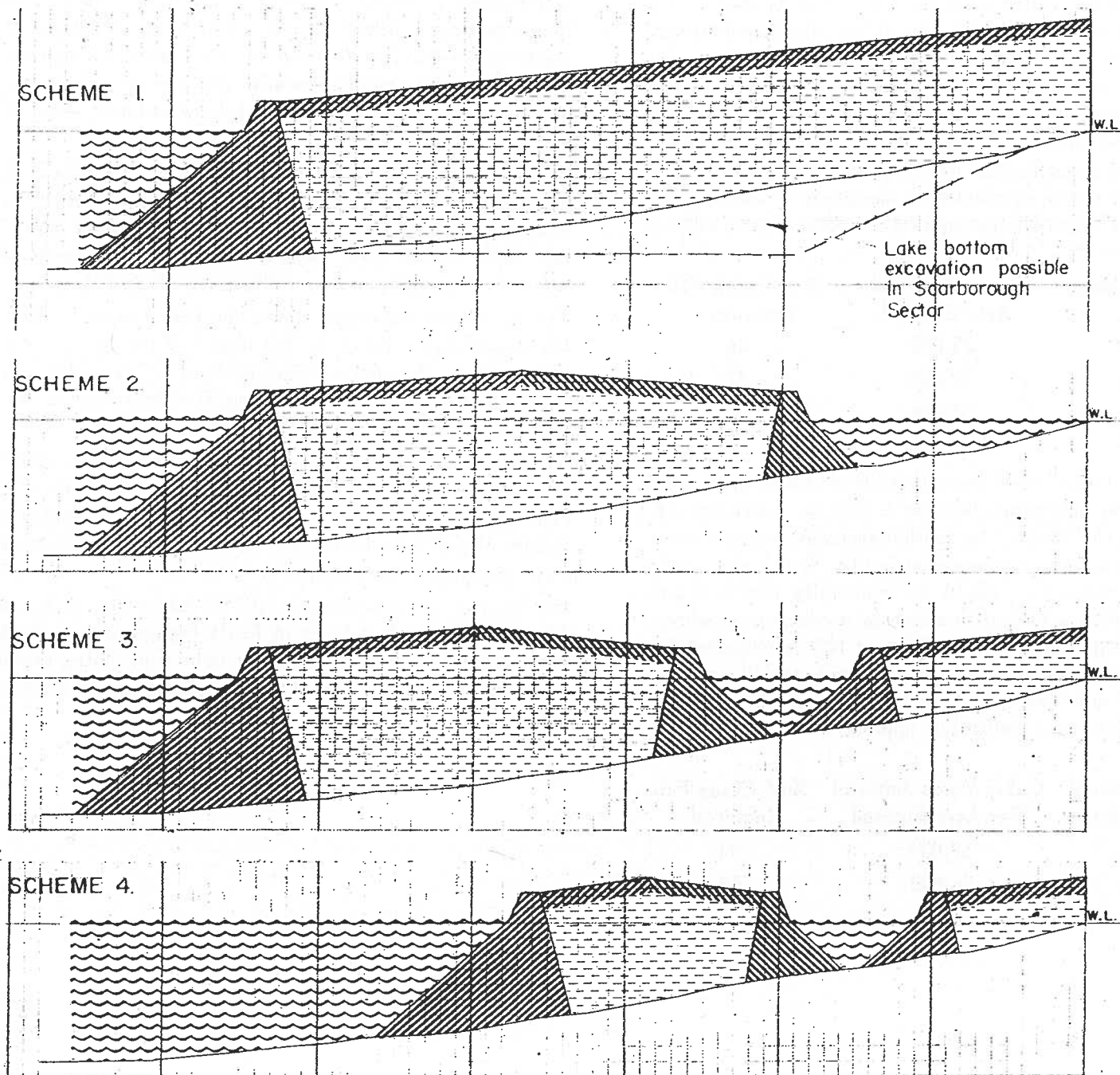
The accompanying graph shows the percentage of clean fill required in relation to the length of the fill section constructed. This percentage of clean fill includes material for dikes, daily cover material required for a sanitary land fill operation and 3 ft. of final cover.

All sections are based on construction dikes 6 ft. above lake level and filling behind the dikes with a one percent gradient for surface drainage. This is a minimum height above lake level and can be increased to suit final planning requirements.

For ease of construction, it will be necessary to begin with islands or shorelines of fairly regular shape. It is expected that additions will have to be made using clean fill to provide the irregularity necessary for aesthetic effects.



## ALTERNATIVE LAND FILL SCHEMES



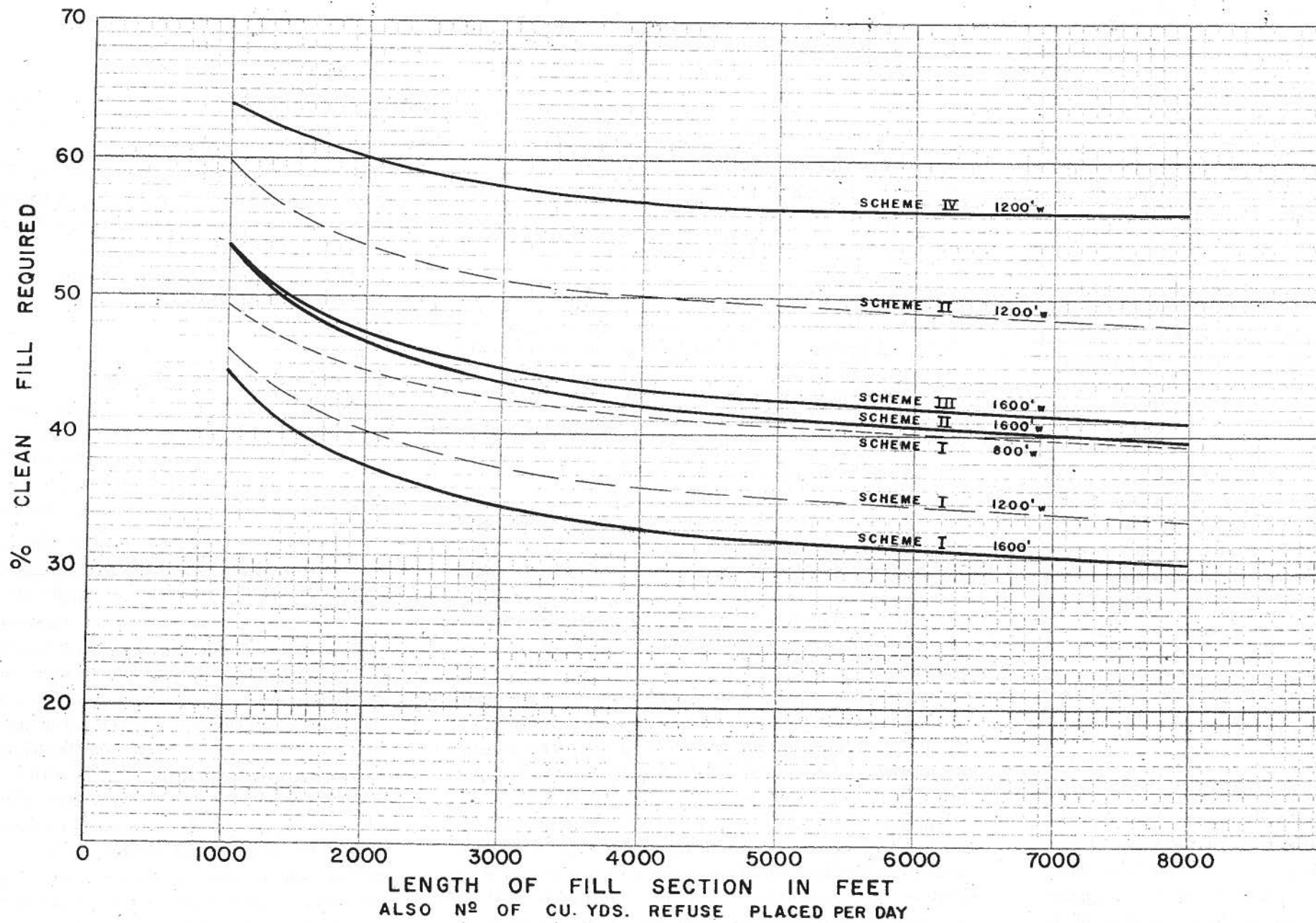
There are many factors which will vary the theoretical quantities shown such as:

- Plus Factors:
- In the Scarborough Sector the bottom of the lake can be deepened within the diked area to increase the volume of refuse that can be placed and provide a large portion of the clean material required as indicated in Scheme I.
  - In the easternmost parts of the Scarborough Sector, clean material may be obtained from the Bluffs which reduces the amount of clean fill that must be imported.
  - Raising the final level of the fill site increases the volume of refuse that may be placed and reduces the total percentage of clean fill required.

- Minus Factors:
- Clean fill should be placed in areas where roads, utilities and structures are proposed and where trees are to be planted thus increasing the percentage of clean fill required.

Irregularities in the shoreline to provide aesthetic interest will tend to increase the clean fill requirements.

Shoreline protection will be required both temporarily and permanently to prevent erosion. Heavy construction debris may be used for temporary protection during the construction period. Permanent protection should be designed to suit the final use of the shoreline.





## APPENDIX 'D'

### TECHNICAL SUPPLEMENT ON HYDRAULICS

Professor W. Douglas Baines, Ph. D., P.Eng., of the University of Toronto was retained by Proctor, Redfern, Bousfield and Bacon to advise on certain aspects of the hydraulics of the Lakeshore Municipalities Sector. Following in full are his preliminary report on the sector and a further discussion of the hydraulics of river mouths by Mr. J.B. Nuttall, P. Eng. (Alta), of the University of Toronto. Also included is a more detailed report by Professor Baines, "Wave Problems in the Metropolitan Toronto Waterfront Plan".

#### I. PRELIMINARY REPORT ON METROPOLITAN TORONTO WATERFRONT PLAN: ETOBICOKE SECTION

##### a. Introduction

This report presents general comments on facets of the plan discussed between J.R. Bousfield, G.U. Proctor and the writer. There has not been sufficient time to make detailed analyses of some items but the need for analyses has been determined. This is noted below and future reports will be prepared on individual subjects.

All comments refer to Plate No. 14a, which is the Physical Design Concept for the Etobicoke Sector.

##### (i) Mouths of Rivers

In this sector there are three rivers emptying into Lake Ontario. Each is of different size, capacity and regime. Therefore comprehensive statements cannot be made as to the treatment at the mouths.

– Humber River – The only hydraulic problems conceivable at the mouth of the Humber are flooding and excessive local sedimentation. Extension of the river mouth beyond the present end is unlikely to produce a change in the flood characteristics on the lower reaches of the river. This is because the control exists at the C.N.R.,

Gardiner Expressway and Lakeshore Road bridges. Upstream water levels are determined by the flow through the bridges. There is evidence that the Humber carries an appreciable sediment load during the flood season. This will be reduced considerably after the construction of the Conservation Authority dams, since reservoirs will act as settling basins. Nevertheless, the configuration at the mouth should be arranged to leave a clear navigation channel and induce deposition in non-critical areas. The treatment proposed on Plate 14a provides an appropriate configuration. An hydraulic model of this area does not seem justified because the flow patterns are relatively simple.

– Etobicoke Creek – This stream has a steep gradient and small flows except during storms. It should not produce a problem on flooding due to extension of the river mouth alone, but there may be a secondary problem caused by formation of ice jams. The original mouth of the creek was in Marie Curtis Park and through geological and man-made accumulation of material the lower section has been converted to a straight channel of very small slope. Therefore there is a break in its slope about 1000 feet north of the shoreline. Conditions could exist during the spring where an ice cover forms along the flat channel and a sudden increase in discharge leads to an ice jam at the point where the slope changes. This could lead to extensive flooding in the park. It is therefore suggested that the park and extensions to it be built at such a level that such flooding could be accommodated. That is, the water could flow over the park and directly into the lake. Any construction in the park should be able to accept these conditions. The amount of sediment transported by Etobicoke Creek has not been determined but the evidence is that it is negligible.

– Mimico Creek – This is a relatively small stream depending entirely for flow and drainage from the developed area. Some flooding could occur due to ice jam formation north of the Lakeshore Road, but the levels will be smaller than that found in Etobicoke Creek. There is no evidence of sediment depositions. It is therefore con-

cluded that the alignment and size shown could be adequate.

The question was posed as to whether all creek mouths should have a constant width or flared plan. The length of extension involved does not appear to affect the hydraulic regime of the river. However, waves cause much less trouble to a narrow mouth than to a wider one. There are two effects; waves entering a funnel-like inlet with vertical walls reflect from the walls and cause intense agitation. This should therefore be avoided. Secondly, littoral drift tends to accumulate across the end of flared mouths and to seal them off. This is easily noted in other creeks in the Toronto area.

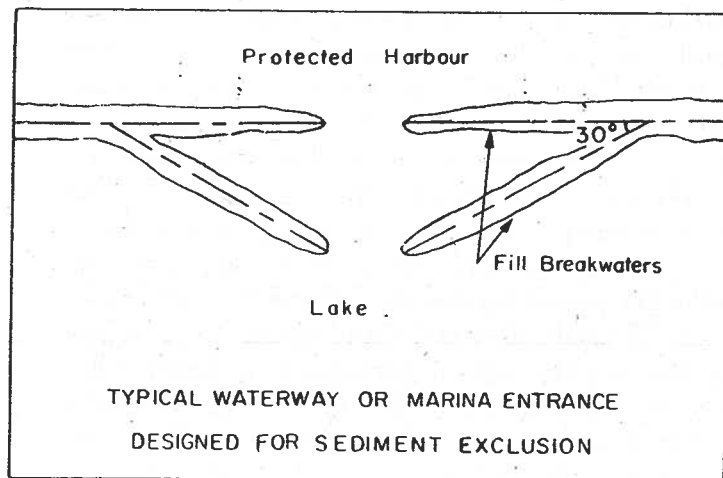
A more detailed report of these river mouths will be prepared if requested.

##### (ii) Design of Waterway Entrances

From a standpoint of wave agitation these should be made as narrow as possible. Thus the width through which vessels can operate should be determined and the entrance designed on this basis. It is therefore suggested that an expression of opinion from yachtsmen be obtained.

The design need not involve any special lateral walls. Wave defraction should be adequate at the width suggested above to make a simple design workable.

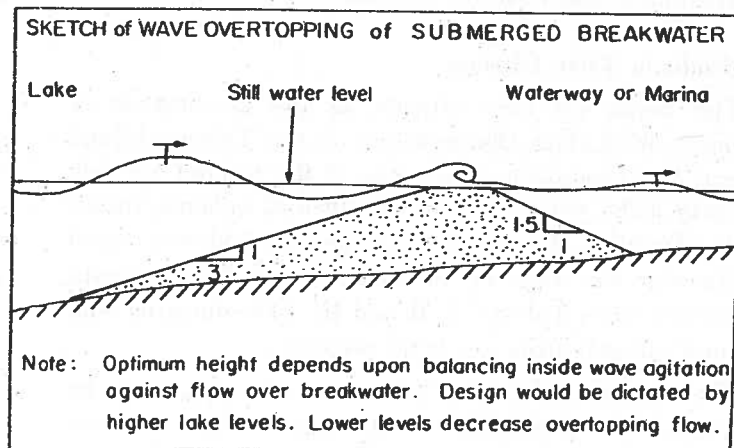
It is possible to design an entrance for maximum sedimentation exclusion. A scheme has been developed by the N.R.C. Hydraulic Laboratory which could be built into some of the entrances. This is sketched on the accompanying figure. Since all of the sedimentation from this sector originates from the Humber River, the amount moving as littoral drift which could enter a waterway might be small. Therefore, this complication may not be justified. The wave climate for this area should be studied and further analyses made of wave motion at the entrances. A report will be prepared giving the optimum orientation of the entrances and the size of waves expected inside the waterway.



(ii) Water Movement in the Waterways

There will be flow through the waterways only during storms. Since the entrances will be designed to minimize wave agitation this flow will necessarily be very small. Pumps could be installed to induce more movement but this is an expensive procedure.

The writer suggests that an investigation be made into the use of submerged breakwaters to produce flow into the waterway during a storm. This would have the general form shown on the accompanying figure in which



waves break at the top of the breakwater and a plunging jet is pushed into the waterway. A report will be prepared giving possible flows and designs when more wave data is available. Model tests will definitely be required of any given design before construction. These submerged breakwater sections would require that some change in plan be made to the waterways.

(iv) Marina Basins

In general it could be said that a marina should be constructed with small entrances and as much beach area included inside as possible. However for any given situation it is not possible to calculate the length of beach necessary. It is recommended that a hydraulic model of the basin be constructed. This would be used to determine the best entrance design as mentioned above and the extent of placement of beaches. It could also be used to simulate traffic patterns and assist in the design of the mooring docks. The model could probably be constructed undistorted to a 1:30 scale. This would give the basin about 30 by 60 ft. The cost would be about \$7000 for construction and \$3000 for operation for a total of \$10,000. The Hydraulic Laboratory of the National Research Council in Ottawa is the only laboratory in Canada fully equipped to make such investigation. Other laboratories exist but do not have the experience.

(v) Shore Protection Works

There has not been sufficient time to make an extensive study of the types or efficiency of these works. However, if a beach is to be constructed and maintained, material must be coarse enough to resist the wave action. Experience has shown that a slope of 1 to 20 requires a sand size of 0.3 mm. If the material is coarser than this, the beach will stand a steeper slope; if it is finer the slope is flatter. All material less than about 0.1 mm. goes into suspension under the action of waves, and thus is completely removed from the beach. Therefore, any earth dikes constructed must utilize relatively coarse material on the lake side.

Further analyses and more information on the size and frequency of the waves is required; thus a study must be made of the wave climate. Analyses should also be made of the refraction of waves along the shoreline shape. A report will be prepared when this information has been obtained. In the meantime, discussion should be held to consider what types of material are convenient and available for the lake-side slope of the constructed areas.

2. HYDRAULICS OF RIVER MOUTHS

The Humber River and Etobicoke and Mimico Creeks are incised over most of their lengths so that considerable erosion of river banks occurs during floods. The volumes of sediment being carried on the bed and as suspended load cannot be estimated with any precision; however some erosion was observed to be taking place on Etobicoke and Mimico creeks during a very small "flood" in December 1965. The Humber undoubtedly carries a bedload of sand and small gravel also, but because of the flat slope near the lake significant bedload movement in this reach is likely to occur only during moderate and high floods.

Channels extending through the proposed lake shore fill can be expected to accumulate appreciable amounts of river sand and gravel within a few years of construction. The depths which the channels ultimately adopt depend upon the width to which they are restricted, a narrow channel being deeper than a wide one.

Flood flows having a probability of occurrence of 0.01 in any one year are as follows (one percent values):

Humber River	44,400 c.f.s.
Etobicoke Creek	15,500 c.f.s.
Mimico Creek	14,000 c.f.s.

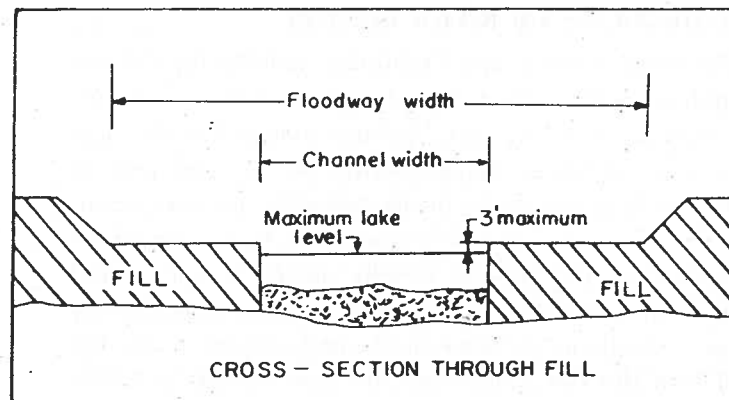
The maximum probable floods, based on estimates of maximum possible rainfall, are approximately three times the above figures.

Any attempt to confine the river mouths to narrow channels during floods of the size listed above would



require high and expensive walls. For example, if Etobicoke Creek was confined to a 150 foot wide channel, a flow of 15,500 c.f.s. could cause a water level between 5 and 10 feet higher than the lake surface to exist at the present center of Marie Curtis Park.

A compromise between the narrow channel required to provide reasonable depth for small boat operation and the wide channel necessary to accommodate large floods is shown in the accompanying figure.



The channel width at Etobicoke Creek should be taken as that of the opening between the two existing concrete piers at the present creek mouth, and the floodway should be at least 500 feet wide and extend from the present shore line to the edge of the fill.

Mimico Creek, between the present Lakeshore Road and the proposed bridge shown on Plate No. 14a requires a channel 50 feet wide and a floodway at least 150 feet wide with sides at least 10 feet above maximum lake level. It is suggested that the floodway bottom and sides be protected with grass and maintained as part of the park. Between the proposed bridge and the edge of the fill a channel 50 feet wide and a floodway varying in width from 150 feet at the proposed bridge to 400 feet at the lake shore would be adequate. At present the Mimico Creek channel contains a sharp bend just upstream of the Lakeshore Road bridge. During high floods this could endanger the road and proposed buildings on

the south side. This reach of creek should be aligned with the existing bridge and the proposed floodway south of the bridge.

The channel width at the Humber River should be equal to that of the bridge on Lakeshore Road and the floodway width should vary from that of the channel at the road to about two channel widths at the edge of the fill.

If the low water channel is to be curved at any of the river mouths, a radius of at least 5 times the width is desirable. A total change in direction of more than about 45 degrees would probably result in excessive bank erosion. Curvature causes increased depth on the outside of the curve and so a slight curvature would be of advantage in deepening the waterway for small craft. Since the floodways provide for large flood flows, their boundaries should be kept straight.

Ice jams occurring at the point where the river slopes decrease suddenly may accompany early spring floods. Since these flows are generally less than summer and autumn flood flows, the provision of floodways can be expected to provide adequate protection on this account.

It is important that trees and buildings be kept out of the floodways. The buildings existing near the present mouth of Etobicoke Creek would almost certainly be damaged if a flood of the proportions of Hurricane Hazel occurred after construction of the fill. While removal of these may not be justified, any further construction in low lying areas should be prevented.

### 3. WAVE PROBLEMS IN THE METROPOLITAN TORONTO WATERFRONT PLAN

#### a. Introduction

The development of filled islands along the Toronto shoreline depends in many ways on the forces exerted by waves coming from Lake Ontario. In a previous paper a few general comments were made upon these waves. However, detailed analyses were not made because all of them depend upon a knowledge of the wave

climate in the Toronto area. By this is meant the height, duration, period, direction and frequency of surface wave motion. For example, the structural strength of any construction must be designed to resist the highest and longest period of waves expected. The rate of sediment along the shore, i.e. littoral drift, is a function of the long shore energy. The inlets to the waterways should be oriented to provide minimum agitation; thus knowledge of the height, period and direction of waves is necessary. The wave climate over the entire Great Lakes is now being measured by federal government agencies, but it will be several years before this program is extended to Lake Ontario. The only scheme now available for determination of the wave climate is the hindcasting from measured wind data. A sufficient number of measurements of ocean waves are available that waves in limited areas can be predicted to reasonable accuracy. It is realized that this accuracy is about 50% in any individual situation, but the average over the longer period is considerably better.

In this note the climate of larger waves is presented for the year May 1st, 1965 to April 30, 1966. It is assumed that any wave less than 2 feet high will not cause appreciable littoral drift or agitation within the basins. This effectively means that all winds less than 11 mph were neglected in the analysis. The results obtained are applied to some of the problems which have arisen in discussions of the Waterfront Plan.

#### b. Hindcast Wave Climate

The basis for this climate is the Department of Transport Wind Data Observations at the Toronto Island Airport. An examination was made of the printed records of hourly mean winds and the analytical scheme known as the Sverdrup-Munk-Bretschneider method was used to determine the wave height and period. These results are presented on Tables I, II and III. The duration was obtained directly from the wind records.

The significance of a single year's data can be questioned. This period is not long enough that the

biggest events are likely to be the maximum which may occur. In analyzing these maxima one must interpret the biggest observation accordingly. In dealing with the total energy contained in the waves, the results are sure to be more close to the average since one is dealing with the average of a number of events. It should be realized that in all calculations dealing with waves the formulas are neither rigorously derived nor well verified. Thus approximate data is all that the formulas allow one to use.

The second column in Tables I, II and III gives a wave height  $H_{\frac{1}{2}}$  which is the vertical measurement from crest to trough of the significant wave. This is the average of the highest one-third of the waves and has been found to be the size of wave most apparent to an observer. This is the height in deep water and thus corrections must be made for shoaling conditions. The wave period  $T$  is the time between successive wave crests for observation at a fixed point. This does not change as the wave approaches the shoreline. The wave length in deep water is given by the equation

$$L_0 = 5.12 T^2$$

For a few storms the wave steepness  $H_{\frac{1}{2}}/L_0$  has been calculated. This is significant in calculations of littoral drift. The effort has not been made to make a complete analysis of this factor because the values are always approximately 3%. It is concluded that since the waves are far from the breaking limit of 14% that breaking will occur close to the shore. The duration of a storm  $t$ , i.e. the length of time the wind blows, has been separated into two parts. The first is the time during which the wave energy steadily increases which is a function of the fetch or the distance over which the wind blows. After this initial period the wave energy remains constant. The duration of the fetch-governed waves is given by the second figure in the duration column. The data given in Tables I, II and III are based on the fetches measured for New Toronto. For Scarborough, the fetch

from the east is smaller, and those from the south-east and south, larger. This difference results in wave energy at Scarborough being about 5% less than the figures quoted.

During the year analysed an exceptionally large storm occurred. On April 27 and 28, 1966 the wind blew from the east at 35 mph for 36 hours. The writer observed effects of the storm on a beach at Lorne Park. The wave period was close to that calculated, indicating that this method is reasonable. There were reports in the press of extensive shoreline erosion due to this storm, and the subsequent calculations of littoral drift indicated that this indeed should have occurred. The examination of all of the records has not been possible but the writer has not found a storm which exceeded this one in strength. Thus this storm should provide a good design limit for all structures.

A few comments should be made about the relationships between the significant waves given in the tables and other wave characteristics needed in design problems. Most structural designs are based on the maximum wave  $H_{1/100}$  defined as the average of the highest 1% of the waves. Wave energy on the other hand is related to the average wave height  $H_m$ . Measurements of ocean waves give the following average relationships:

$$H_{1/100} = 1.6 H_{\frac{1}{2}}$$

$$H_{\frac{1}{2}} = 1.6 H_m$$

and also indicate that the period of the maximum wave is the same as the period of the significant wave. The period of the mean wave is 0.90 the period of the significant wave.

### c. Applications of Wave Climate

#### (i) Shoreline Protection

Of the many possible designs for lake side shore protection there are basically three types. The following

paragraphs describe the wave effects on each one.

#### Granular Material

The most desirable form of shore protection is a beach built up of granular material. It is flexible, the easiest type to keep clean, and the safest for the general public. It can also be argued that it is the most aesthetic and natural appearing shoreline. The problem of the beach is that waves move the material by littoral transport.

There are several schemes for calculating the rate of littoral drift from the wave climate and the results are considerably in variance. The scheme which appears to have received the greatest support is that proposed by Savage\*. It is of doubtful accuracy so that larger variations in drift rate may be observed. Table IV presents the results of such a calculation based on the wave climate. The scheme consists of the multiplication of three factors. The first is proportional to the total wave energy. If based on the significant waves this factor is

$$3.19 H_{\frac{1}{2}}^2 T t \text{ cu.yds.}$$

The second factor  $\sin \alpha \cos \alpha$  depends on the orientation of the beach relative to the wind direction. Since most of the drift occurs in the surf zone, it is based on the angle between the contour line and wave crests at breaking. If the waves move perpendicular to the beach there is no alongshore drift. The third factor is the refraction coefficient which expresses the change in wave energy as the waves are bent moving shoreward from deep water. These three factors are listed in Table IV and the final answer is the product of the three.

\*U.S. Army, Corps of Engineers, Technical Report No. 4, 1962.



The faults with this particular analytical scheme are that neither the slope of the beach nor the grain size are included. It was derived for natural beaches which are close to being stable. All natural beaches appear to have an average slope dependent on the grain size and the wave climate. Since many natural beaches have a medium grain size about 0.3 mm., it is assumed that the results presented in Table IV describe such a sand. Table V presents an attempt to express the variation of drift rate with grain size as given by some other equations. The rate of drift decreases with increasing grain size and thus is probably negligible for gravel beaches. Included in this table as well are stable beach slopes for a given grain size. These figures should also be regarded as approximate.

The calculated drift for the central region is slightly lower than that found for the drift along the Scarborough bluffs. Orientation of the two beach areas is about the same and thus the drift would be expected to be comparable.

The one factor which the Savage scheme included accurately is the orientation of the beach. The two parts of Table IV present the calculations for the central section of the Etobicoke Sector which is oriented generally northeast, and the western section in front of Long Branch which is oriented generally east. All analyses for drift are predicated on the assumed parallel straight underwater contours. Thus the eastern section near the Humber River cannot be analysed. Furthermore, this section is partially sheltered from eastern waves by the Toronto Islands. The wave energy listed on Table I therefore, would have been partially dissipated; hence the drift tendency would be reduced at least to a half of the value given for the adjoining region.

In considering the variation of drift rate with orientation of the beach both the second and third factors have to be considered. These combine to give the result that the drift is zero for waves moving normal to the beach and as the angle is changed the drift increases slowly, reaching a maximum when the angle between

the wave crest and the contours in deep water is about  $40^\circ$  and  $60^\circ$  and then drops to zero again for waves approaching parallel to the beach. The wave climate above shows that the bulk of the energy comes from the east, so the orientation relative to the east determines the drift rate. Beaches oriented either north-south or east-west should not be subject to appreciable drift. This conclusion is substantiated by the stable sand beach found in front of Lakeshore Park in Mississauga. It is oriented north-south and is subject to the wave climate of Toronto. A stable beach could then be designed for this sector if the western end were oriented south, the eastern end oriented east and a cove produced in between. The length would need to be at least 2000 feet and the fore-shore slope carried from the high waterline to 25 foot depth. These dimensions are approximated and are based on the need to provide sufficient area for wave refraction.

Plate 14a includes a cove-shaped shoreline of sufficient size in the eastern region. A stable beach could be constructed here by dumping granular material at the shoreline and allowing wave action to distribute it along the shore and offshore to depths up to 30 feet. The bottom slope is about 1:60 so that stable slopes of sand or gravel could be maintained. Use of 0.3 mm. sand would require about 1000 cu. yds. per yd. of beach with maintenance of about 2000 cu. yds. required at the eastern end every year. Quantities for a gravel beach would be about one-quarter of these.

#### - Armour Stone or Prefabricated Units

The usual method of constructing breakwaters in the water depths encountered here is the placing of quarried stone or precast concrete geometrical shapes on the lakeward face. These will stand at a comparatively steep slope and resist moving under wave action by their weight and interlocking characteristic. The design of such a construction is usually studied in model form in a wave flume because the design formulae are not accurate and substantial economies can be effected

from a testing program. It is recommended that such a study be made if this method of construction is adopted.

From the wave climate the maximum wave which any structure should resist is 15 feet in height with a 7.6 second period in deep water. These figures can be used to design a crude form of armour protection. If a slope of 1:2 were chosen and the shoreline built up from gravel and quarry-run rock the armour would need to be either 16 ton stones or 5 ton Tetrapods laid in a double layer. For shallower slopes the elements would be correspondingly lighter. Using a very shallow slope in deeper water would also enable the elements to be lighter. The design wave would break in 17 feet deep water and a steep slope placed shoreward of this depth would be subject only to secondary breaking of remaining surge.

#### - Continuous Sea Wall

A seawall constructed of vertical or nearly vertical concrete units cast in place would occupy the smallest area of lake bottom. It would allow small boats to approach and tie-up with no danger in good weather. The faults of such a structure are numerous, and unless the construction were considerably cheaper than any other form it should not be considered. The problems are specifically:

- The lake in front of the wall will be choppy and confused in any type of bad weather. Reflection of waves from solid walls results in up to twice the size of waves in the open lake.
- Any person falling from the wall will find it difficult to get out.
- The top of the wall will need to be 15 feet above the highest lake level in order that it will not be overtopped and damage result to the land behind.

#### (ii) Entrances to Inlets

The preponderance of storms from the east indicates that entrances facing east should be avoided whenever possible. The more southerly the entrance orientation the less will be the average wave agitation in a storm.

Actual magnitude of wave agitation depends on the shape as well as orientation of the inlet, and this can be determined from analysis of wave diffraction, refraction and reflection. These effects can be determined with relatively good accuracy from available theory. When a specific design has been determined this analysis is a relatively short job.

### (iii) Circulation Inducing Structures

In a previous note it was suggested that water circulation through the inlets could be accomplished by constructing parts of the lakeside walls as submerged breakwaters. It was pointed out that a considerable flow could be produced but the frequency of occurrence was in doubt. From Tables I, II and III it is evident that if these structures face the east there will be storms of effective magnitude about once a week. Therefore, the use of wave energy to produce circulation appears favorable.

### (iv) Recommendation

This report should be considered as a definitive presentation of the wave climate for the Toronto area but not as a complete discussion of design details. After designs have been devised, specific analyses can be made of the forces and efficiencies of them.

Table I  
Hindcast Wave Climate  
Toronto Island Airport

Wind Direction — East; Effective Fetch = 74 mi.

Date 1965	H <sub>1/3</sub> ft.	T sec.	t hr.	Wave Energy Function	H <sub>1/3</sub> /L <sub>0</sub>	Date 1966	H <sub>1/3</sub> ft.	T sec.	t hr.	Wave Energy Function	H <sub>1/3</sub> /L <sub>0</sub>
2/5	3.5	5.3	10 + 11	1040	0.024	2/1	8	7.2	7 + 9	5750	0.030
5/5	2.5	4.6	12 + 2	230		13/1	5.5	6.2	9 + 9	2511	
6/5	2.1	4.5	11	111		22/1	6	6.4	8 + 10	3220	
7/5	2.8	4.8	11 + 7	469	0.024	23/1	3.8	4.8	4	134	
8/5	2.0	4.0	8	64		7/2	3.4	5.2	10 + 2	413	
14/5	2.2	4.4	12 + 3	190	0.022	8/2	4.5	5.7	9 + 4	969	0.027
15/5	2.2	4.4	12 + 3	190		9/2	2	3.5	3	21	
21/5	2.8	4.8	11 + 6	430		9/2	2	4.3	13	112	
24/5	3.5	5.2	10 + 5	640	0.025	28/2	4.5	5.3	5	27	
1/6	2.6	4.2	5	72		11/3	5.5	6.2	8 + 23	5100	0.028
15/6	3.5	5.2	10 + 9	896		15/3	2.6	4.4	8	119	
16/6	3.5	5.2	10 + 3	512		16/3	2.5	4.6	12 + 9	431	
26/6	2.2	4.4	12 + 3	191		21/3	2.0	3.5	3	21	
7/7	1.8	3.5	4	22		21/3	3.3	4.6	4	100	
17/7	2.4	4.3	8	100	0.025	22/3	2.8	4.2	3	49	
31/7	2.3	4.5	12	143		23/3	4.3	5.4	7	350	
26/8	2.7	4.6	9	151		23/3	1.9	3.3	2	12	0.029
3/9	2.4	4.6	12	160	0.022	18/4	2.7	4.3	7	109	
4/9	2.0	4.3	14	120		18/4	3.4	5.2	10 + 1	358	
13/9	1.8	3.8	3	18		19/4	2	3.5	3	21	0.032
18/9	2.4	4	5	58	0.029	20/4	2.3	4.5	12 + 12	414	
27/9	2.4	4.6	12 + 2	213		23/4	3.0	4.5	5	100	
28/9	3.1	4.9	10 + 3	376		27-28/4	9.3	7.6	7 + 25	18785	0.031
30/9	4.2	5.4	10	475		30/4	3.0	4.5	5	100	
7/10	2	3.5	3	21						Sum 50,025	
7/10	4	5.2	6	249	0.029						
14/10	2.6	4.7	10	160							
17/10	2	3.7	5	37							
5/11	2	3.8	6	45							
12/11	2.7	4.5	9	148							
15/11	3.6	5	8	260							
22/11	1.9	4	9	68							
23/11	3.9	5.4	9 + 2	533							
26/11	5.3	6.2	8 + 7	1903	0.027						
11/12	3	4.5	5	100							
11/12	3	4.5	5	100							
12/12	1.9	3.5	4	26							
12/12	3.3	5.1	10	278							



**Table II**  
Hindcast Wave Climate  
Toronto Island Airport

Wind Direction — Southeast; Effective Fetch = 32 mi.

Date	H <sub>1/3</sub> ft.	T sec.	t hr.	Wave Energy Function	H <sub>1/3</sub> /L <sub>0</sub>
13/9	4.4	5.3	5 + 7	972	0.031
13/9	2.4	4.2	6 + 5	104	
15/9	2.7	4.3	7 + 9	387	
16/9	3.3	4.8	6 + 2	312	
28/9	1.9	3.8	7	47	
7/10	2.0	3.5	3	21	0.032
27/12	2.8	4.5	7	122	0.027
<b>1966</b>					
9/1	2.3	3.9	5	51	
7/2	1.8	3.5	5	28	
				Sum 2,181	

**Table III**  
Hindcast Wave Climate  
Toronto Island Airport

Wind Direction — South; Effective Fetch = 28 mi.

Date	H <sub>1/3</sub> ft.	T sec.	t hr.	Wave Energy Function	H <sub>1/3</sub> /L <sub>0</sub>
26/5	1.9	3.5	4	25	0.028
7/6	2.5	4.2	6	792	
11/6	2.0	3.8	6	45	
20/6	2.0	3.5	3	21	
9/7	2.3	3.8	4	237	
13/7	1.9	3.5	4	25	0.031
6/8	2.0	3.7	5	37	
9/8	2.3	4.1	6 + 2	107	0.029
12/8	2.2	3.7	3	27	
24/8	3.0	4.5	6 + 6	369	
27/8	3.0	4.5	6 + 1	160	
1/9	1.9	3.5	4	25	
2/9	2.5	4.3	6 + 3	160	0.030
20/9	2.5	4.3	6 + 3	160	
21/9	2.5	4.3	6 + 10	345	
22/9	2.0	3.8	6	46	
23/9	2.1	3.9	6 + 3	103	
25/9	2.9	4.4	5	93	0.036
25/9	2.3	4.1	6 + 2	106	
1/10	2.3	4.1	6	64	
2/10	3.0	4.6	6 + 5	328	
6/10	1.9	3.5	4	25	
8/10	2.5	4.3	6 + 19	585	0.027
9/10	2.3	4.1	6 + 2	107	
13/11	3.0	4.4	4	80	
25/11	1.9	3.5	4	25	
1/12	4.3	4.8	3	127	
13/12	1.9	3.8	3	20	0.029
22/12	1.9	3.8	3	20	
31/12	2	3.3	2	13	
<b>1966</b>					
9/1	2.7	4.0	3	11	
15/2	1.9	3.9	8	56	0.033
6/3	3.2	4.3	3	66	
14/3	2.0	3.9	7	55	
18/3	2.0	3.6	4	29	
19/3	3.5	4.8	5 + 8	620	
19/3	2.3	3.5	2	19	.027
23/3	2.8	4.1	3	48	
6/4	2.3	4.1	6 + 12	32	
7/4	3.0	4.5	6 + 3	243	
				Sum 5,456	

**Table IV**  
Littoral Drift — Lakeshore Municipalities Sector,  
Savage Analytical Method

Central Area — shoreline direction = 040

Wind Direction	Energy Factor	Approach Angle	Angle at Breaking $\alpha$	$\sin \alpha \cos \alpha$	Refraction Coefficient	Drift cu.yds./yr.
E	159,000	45°	165°	0.270	0.800	34,400
SE	7,000	5°	-2°	0.035	0.999	-250
S	17,500	-50°	-19.5°	0.312	0.683	-3740
Total Westward drift						30,400

Western Area — shoreline direction = 076

Wind Direction	Approach Angle	Angle at Breaking	$\sin \alpha \cos \alpha$	Refraction Coefficient	Drift cu.yds./yr.
E	76°	20.5°	0.327	0.258	13,400
SE	71°	13°	0.217	0.882	1,340
S	-14°	-4.8°	0.085	0.980	-1,460
Total Westward drift					13,300

**Table V**  
Probable Effect of Material Size on Littoral Drift

Particle Size	Stable Beach Slope	Drift Rate Factor
0.1 mm	1:100	2
0.3 mm	1:25	1
1.0 mm	1:10	0.54
10 mm	1:5	0.17

## APPENDIX 'E'

### LEGAL ASPECTS OF PROPERTY ACQUISITION

Implementation of the Waterfront Plan will involve the acquisition of private property and waterfront lots, and the attendant question of ownership of riparian rights. A.E. LePage Ltd. were therefore retained to investigate legal problems of waterfront lands acquisition, using the Etobicoke Sector, the most complex from this point of view, as a typical area. The following sets out their resulting recommendations as to an approach to value. The terms used are defined and a legal case history relating to rights connected with waterlots and riparian rights is included.

#### 1. APPROACH TO VALUE

##### a. Effect of the Waterfront Plan:

The lakeshore under consideration is now improved with a few boat-houses and summer cottages, single-family dwellings, apartment buildings, motels and a few other commercial uses. There is no doubt that the existence of some of the improvements can be entirely attributed to the lake, or is at least due in part to the amenities associated with the lakeshore, while to others it makes no difference.

The proposed land fill, public works and other improvements on land now covered with water will deprive the owners of lakeshore property of their riparian rights and ownership of water lots. This will result in the loss of the values associated with these property rights, the extent of which varies in accordance with the respective land uses. With respect to the motels, it is reasonable to expect that the proposed new scenic drive will be of some benefit.

##### b. Principles of Valuation:

Basically a "Before" and "After" valuation was

made in each instance; i.e. an attempt was made to ascertain the difference between a property's market value before the proposed taking of riparian rights and water lots, and after the taking. In many instances, however, it was possible to estimate the difference between the "before" and "after" valuation without actually ascertaining the actual "before" and "after" values.

With regard to shoreline improvements such as retaining walls and boat-houses, the estimate of loss in value was based on construction costs less depreciation, or on comparable sales data.

The market data or comparable sales approach was applied in connection with single-family dwellings, while the income approach, i.e. capitalized rental loss, forms the basis of estimating loss of value in connection with income-producing properties.

The major considerations concerning the predominant land use categories are outlined as follows:

Most of the single-family dwellings have been built in such a way as to take advantage of the lakeshore. The amenities to be considered are access to the water, unobstructed view, absence of neighbours and guaranteed privacy, fresh air and some similarity to resort living. By "removing" the lake, these amenities are lost, and the basic question is what would these dwellings sell for "before" and "after".

With respect to those dwellings which have a "before" value of say, in excess of \$30,000, it is indicated that the loss in value is particularly severe. For example, the row of this type of residence in Mimico is situated in the middle of a sea of inexpensive homes, and the sole justification for their being in this type of a neighbourhood is given by the presence of the lake. It follows that the loss of the lake front amenities removes the one reason which supports values ranging up to \$100,000.

With respect to apartment buildings, the estimate of loss in value was based on the premise that the value

of these properties is largely determined by their income-producing capacity.

This investigation revealed that the apartment buildings on the lake front enjoy additional value because tenants are prepared to pay extra for the unobstructed view over the lake, guaranteed privacy and fresh air. In consequence, the rental loss due to the loss of lake front amenities was capitalized into value.

The basic principle found relevant in connection with apartment buildings would also apply to the motels at the Etobicoke lake front. It was discovered, however, that none were built to take advantage of the lake, and that the income-producing capacity was in no way affected. In fact, most motel owners "moved" the lake farther away by land fill operations, and thus may well have deprived themselves of their riparian rights. However, it is indicated that value is attached to the newly created land, as is estimated and explained in more detail later in this report.

##### c. General Market Indications:

The investigation of the real estate market activity during the last ten years revealed no purchase or sale of any water lot with the exception of one assignment for a nominal amount. Instances were discovered where properties were sold with a water lot and re-sold without the water lot at the same price. In other instances it appears that water lots in front of land lots were forgotten by vendor and purchaser alike. In these cases the transfer was seemingly made without the parties being aware of the water lot. This appears to be the reason why there are now a few water lots separately owned. Some of their original owners have died, and it would now be difficult to ascertain the current owners.

Considering that water lots are subject to riparian rights, and cannot be legally used for any private building purposes except for such shoreline improvements as retaining walls, etc., and with a view to the market conditions mentioned, it is concluded that per se they have no value that can be stated in dollars and cents.



The indication that water lots, as such, appear to have no value seems to be contradicted in the Etobicoke section by the fact that water lots have been partly filled. Owners in this section apparently anticipate some future value, although the legality of their action is very much in doubt.

At the present time however, there is, with few and minor exceptions, no evidence that the filled lands have any utility.

Also in apparent contradiction of the above statement that water lots have little or no measurable value, is the fact that some are assessed for tax purposes. Only a few such assessments can be found in the Mimico area, which are in the amount of \$1,000 to \$2,500 per acre. In the old Etobicoke section however, all water lots have been assessed at the rate of \$1,000 per acre for the unfilled portions and \$5,000 or \$6,000 per acre for the filled portions.

Enquiries were made, but it was not possible to obtain a rational explanation for the inconsistent assessments. Basically it seems that this is an historical fact inherited by the Metropolitan Assessment Department. It appears, however, that the original assessments were largely levied against those water lots which had partly been filled.

## 2. DEFINITIONS

### a. Market Value:

The highest price in terms of money which the property would bring if exposed for sale in the open market by a willing seller, allowing a reasonable time to find a willing buyer, neither buyer nor seller acting under compulsion, both having a full knowledge of all the uses and purposes to which the property is adapted and for which it is capable of being used and both exercising intelligent judgement.

### b. Injurious Affection:

A claim for injurious affection must be based on damage to the land itself and not a personal injury or an

injury to trade or business. What then constitutes injury to the land itself? It is sufficient if:

“There is a physical interference with any right, public or private, which the owners or occupiers of property are by law entitled to make use of in connection with such property, and which right gives an additional market value to such property, apart from the uses to which any particular owner or occupier might put it, if by reason of such interference the property, as property, is lessened in value”.

Cairns L.J. in Metropolitan Board vs. McCarthy 1874-75), 7 H.L. 243, at page 253.

### c. Land:

Dry land as opposed to water or land under water; in this report it is usually referred to as a land lot. It means land owned in fee simple and may be a lot on a registered plan or part of an original township lot. Deviating from the normal land lot are those portions of lots on registered plans which have been subject to erosion and become submerged.

Eroded land that is not definitely defined by dimensions shown on a registered plan simply must be regarded as part of the publicly owned lake bed.

### d. Riparian Rights:

The word “riparian” stems from the Latin word “ripa” for bank, and refers to the rights associated with an owner of land abutting a bed of water.

Included is the right to make use of the water area for structures moored to his land, such as piers and boat-houses, and for fishing, boating, navigation, and the right of access for such purposes.

The riparian owner also has the right to accretion, which is defined as being an increase of land by the gradual or imperceptible action of natural forces as washing up of sand or soil. The land thus added by accretion is called alluvion.

The rights of the riparian owner are limited by the

public right of navigation and the rights of other riparian owners. He enjoys no rights as to the bed of the body of water and cannot extend his land lot by filling.

Generally speaking, riparian rights may be summarized as follows:

- i) The right of access to the body of water
- ii) The right to erect structures on the shore line
- iii) The rights relating to the manner in which the water flows (in connection with a river)
- iv) Rights relating to the use of water
- v) The right to accretion.

It is to be noted that the right to accretion varies and is difficult to define under certain circumstances. Reference is made to the section headed “Legal Case History” where accretion is discussed in more detail.

### e. Water Lot:

A water lot is a given area of water and lake bed underneath patented by the Crown and owned in fee subject to riparian rights, and to the limitations set out in the typical grant as follows:

“Grant in fee simple, saving, excepting and reserving nevertheless unto Us, Our Heirs and Successors, the free use, passage and enjoyment of, in, over and upon all navigable waters which shall or may hereinafter be found on or under, or be flowing through or upon any part of the said Parcel or Tract of land covered with water hereby granted as aforesaid, and reserving also the right of access to the shores of all rivers, streams and lakes, for all vessels, boats and persons.”

A water lot is of little practical utility except in connection with shoreline improvements protruding into the water.

Any land that has been created by fill (legally or otherwise) or by lowering of the water level within the boundaries of a water lot can be used for landscaping or recreational purposes but not for building. It is also subject to local zoning by-laws.

#### f. Licence of Occupation:

Water lots have not been granted by the Crown since 1924. In their place a licence of occupation is issued and administered by the Department of Lands and Forests of Ontario. It may be obtained for a specific need, such as the erection of a breakwater, and runs from year to year. A small annual fee is charged representing 6% of the appraised value. The Minister can cancel a licence of occupation at any time, as set out in the following typical limiting conditions:

“Reserving also all gold, silver, and other minerals which are on or shall be hereafter found in, on or under the said land.

Subject to the payment to the Treasurer of the Province of Ontario of the sum of \$5.00 of lawful money of Canada yearly and every year so long as this license shall remain in force, the first of such payments to be made on or before the sealing and delivery hereof and each succeeding payment in advance on or before the 1st day of May, in each and every year hereafter. License to commence 1st May, 1948.

Provided that this license shall be void upon default for one month in any annual payment as aforementioned, and further may be revoked or cancelled at any time by the Minister of Lands and Forests for the Province of Ontario when it shall by him be deemed in the public interest so to do.

Provided that all buildings erected and all works constructed on said lands shall be made to the satisfaction of the Minister of Lands and Forests, and shall be kept in a clean and sanitary condition and that the licensee shall exercise all reasonable care and precaution against the outbreak of fire.

Provided that this license is granted upon the condition that the land described herein shall be used for the purpose only as hereinbefore described.

Provided that this license shall not be assigned or transferred without the consent thereto in wri-

ting of the Minister of Lands and Forests and upon payment to the Provincial Treasurer of a transfer fee of the sum of \$5.00”.

#### 3. LEGAL CASE HISTORY:

For the purpose of defining the rights connected with water lots and riparian rights, a number of reported cases were considered. It was felt that the following excerpts would assist in identifying legal implications.

Defining riparian rights in general, Ferguson J.A. states the following as reported in *Snow vs. City of Toronto*, O.L.R. 1924, p.p. 105 and 106:

“It is well-established:-

- (a) That riparian owners' rights are not founded on the ownership of the bed of the lake or river, but right of access to the water: *Coulson and Forbes's Law of Waters*, 3rd ed., p.p. 109-128 and 136; *Lyon vs. Fishmongers' Co.*, 1 App. Cas. 662;
- (b) That Lake Ontario is a navigable water;
- (c) That a grant of land to the water carries with it to the grantee the right of access to and from the water from any spot on their own lands: *Marshall vs. Ulleswater Steam Navigation Co.* (1871), L.R. 7 Q.B. 166, at p.172; *Attorney-General for the Straits Settlement vs. Wemyss* (1888), 13 App. Cas. 192; *North Shore Railway Co. vs. Pion* (1889), 14 App. Cas. 612; *Pion vs. North Shore Railway Co.* (1887), 14 Can. S.C.R. 677; *Coulson and Forbes*, p.p. 53, 54, 111, 114, 172, 507;
- (d) That any grantee of the Crown must take subject to the right of navigation: *Mayor of Colchester vs. Brooke* (1845), 7 Q.B. 339, at p. 374; *Coulson and Forbes*, p. 52;
- (e) That the riparian owner has a right to the natural flow and quality of the water, subject to the same rights as his riparian neighbours: *Coulson and Forbes*, p.p. 134, 142, 182, 219,

497, 714, 718;

- (f) That the riparian owner is entitled to accretions: *Coulson and Forbes*, p.p. 39, 41, 85, 92, 219;
- (g) That the riparian owner and the public have the right of navigation in navigable waters: *Coulson and Forbes*, p. 129; and
- (h) That the right of navigation is a public right, but that it may be connected with a right to the exclusive access to particular land on the bank, and that this latter right is a private one, invasion of which may form a ground of action for damages: *Lyon vs. Fishmongers' Co.* (supra).

In the *Pion* case (supra) the Privy Council held that 'there is no distinction in principle between riparian rights on the banks of navigable or tidal and on those of non-navigable rivers. In the former case, however, there must be no interference with the public right of navigation and in order to give rise to riparian rights the land must be in actual daily contact with the stream laterally or vertically' ”.

Accretion of land was defined in *Clark vs. City of Edmonton*, S.C.R. 1929, p. 146:

“Where the increase is imperceptible in its progress, that increase becomes the property of the owner to whose land it attaches as it is formed; it is vested in him *de die in diem* and no additional increase resulting from flood conditions can deprive the owner of the increase which had already vested in him.”

The following case concerns itself with the right to land formed by alluvion or gained by the recession of water and, conversely, land encroached upon by navigable waters.

It appears that land thus gained belongs to the owner of the contiguous land to which the addition was made and that on the other hand such an owner would lose



land encroached upon by navigable waters on the principle that one who derives an advantage should also bear the burden. However, when the boundary of a land lot on the shore is clearly fixed by deed, survey or otherwise, this principle does not apply. Where the boundaries of a land lot are rigidly defined, the owner thereof cannot gain by alluvion or recession and cannot lose by encroachment.

In support of this theory Falconbridge C.J. quotes several authorities which are in part recited as follows:

“Volcanic Oil and Gas Co. vs. Chaplin, Ontario. Falconbridge C.J., - H.C.J. 1912.p.p. 287 and 289

In Gould on Waters, 3rd ed., para. 155, p.p. 306 to 310, inclusive, after stating the general rule that ‘land formed by alluvion, or the gradual and imperceptible accretion from the water, and land gained by reliction, or the gradual and imperceptible recession of the water, belong to the owner of the contiguous land to which the addition is made,’ and that ‘conversely land gradually encroached upon by navigable waters ceases to belong to the former owner,’ quoting the maxim *Qui sentit onus debet sentire commodum*, the author proceeds (p. 309) : ‘But when the line along the shore is clearly and rigidly fixed by a deed or survey, it will not, it seems, afterwards be changed because of accretions, although, as a general rule, the right to alluvion passes as a riparian right.’

In Chapman vs. Hoskins (1851), 2 Md. Ch. 485, the general rule is stated as follows (para. 2. head-note): ‘Owners of lands bordering upon navigable waters are, as riparian proprietors, entitled to any increase of the soil which may result from the gradual recession of the waters from the shore, or from accretion by alluvion, or from any other cause; and this is regarded as the equivalent for the loss they may sustain from the breaking in, or encroachment of the waters upon their lands.’

Now, in the case in hand, the plaintiffs say that

they could gain nothing by accretion, by alluvion, or other cause; and, consequently, they should not lose by encroachment of the water upon their land, to which fixed termini were assigned by the grant from the Crown. This doctrine seems to be well supported by decisions of Courts which are not binding upon me, but which command my respect, and which seem to be accurately founded upon basic principles.

I do not think that there is any case in which it has been expressly held that a person in the position of this individual plaintiff loses his property because of the gradual encroachment of the water past the land in front of the road, past the road, and past the fixed boundary of the plaintiffs’ land. He could not have gained an inch of land by accretion even if the lake had receded for a mile; and, therefore, it seems that the fundamental doctrine of mutuality, formulated in the civil law and adopted into the jurisprudence of many countries, cannot apply to him.”

In summary, the above indicates that a riparian owner does not enjoy the right to accretion of any form where his land lot has clearly fixed boundaries.

In instances where the owner of a land lot is in possession of all of his riparian rights - boundaries not definitely fixed - it is indicated that he can claim ownership of land gained by accretion although this has occurred within the boundaries of a water lot. This premise was outlined in Snow vs. City of Toronto as well (a water lot expropriation) but it was not spelled out that the land lot in question had rigidly defined boundaries. Ferguson J.A. makes the following statements on page 106:

“Riparian rights in respect of the waters covering the lots had, I think, attached to the original grant of the land-lot, with the result that the Crown could not grant the water-lots free from these riparian rights until it had again acquired them or had terminated them by appropriate legislation.”

The same reasoning continues on page 109 as follows:

“Neither the rights of navigation nor riparian rights were taken away, limited, or changed by the grant of the water-lot and consequently that the right to accretions and to hinder access or navigation will not pass to the city corporation by reason of its expropriation of that part of the water-lot which is still covered by water, and that the proper basis of compensation for that part of the water-lot which is still covered by water is that enunciated in *Rex vs. Wilson* (supra).

I am also of opinion that the part of the lands not now covered by water and which may be permanent accretions should be considered as being part of Mrs. Snow’s land-lot and valued as such. To the sums allowed for the accretions as part of the land-lot and on the principle of *Rex vs. Wilson*, for the water-lot there should be added any sum by which Mrs. Snow’s land-lot may be depreciated by reason of her losing her water-front and therewith her riparian rights.”

Concerning himself with valuation of a water lot, Ferguson J.A. makes the following comments on page 108:

“In *Rex vs. Wilson* (supra), decided by Sir Walter Cassels, it was held:-

‘That the market value of the water-lot is the proper basis for assessment of compensation, but, while that value may be enhanced by the hope or expectation of obtaining authority to erect structures on the lot, where there is no evidence of market value to guide it the Court will not assess compensation on a hope or expectation which cannot be regarded as a right of property in the defendant.’

In the course of his judgement, Sir Walter Cassels said (p. 288) :-

‘To make the property fully available, there must be an approval ; and the title to erect on the water-lot would not be complete until such assent had

been procured. At the time of the expropriation such assent was wanting, and therefore the owners of these water-lots could not convey to any purchaser a right to erect structures.'

The reasoning of the judgment of Sir Walter Cassels appears to establish that, if the market value has been enhanced by a hope or expectation, the claimant is entitled to the market value, but that the hope, expectation or chance of obtaining from the Crown, in the right of the Province, power to fill in the water-lots or to interfere with the rights of riparian owners or of obtaining from the Dominion of Canada authority to obstruct navigation by the filling in and building upon the water-lots is not an element of value that the arbitrator may take into consideration."

The following case is also concerned with the expropriation of a water lot in Toronto, and Latchford C.J. makes reference to the above cited case re: Snow vs. Toronto, but his decision and his interpretation of the Snow case appears to be pointed in the opposite direction. It appears that Larchford C.J. considers land created by the lowering of the lake level is not a true accretion to land. He simply says that such land is still part of the water lot and he concludes that value due to the creation of dry land would accrue to the owner of the water lot. This is expressed in the following quotation re: Maille vs. Toronto, O.R. 1932, page' 382:

"It may be defined I think as a gradual alluvial addition to a riparian owner's property.

In point of fact the formation of the beach was not an accretion to the claimant's water lot; it did not add one square inch to the area of the lot as defined in the grant. What happened was merely that the northerly part of the lot, which was under water in 1886, as it may have been also in 1906, had by the lowering of the lake level become dry land in 1931. The arbitrator was undoubtedly wrong in finding that an accretion in the legal sense of the term had arisen and that it belonged to the owner

of the private right-of-way to the north."

Masten J.A. agrees with Latchford C.J. in the same case, and also affirms the fact that definitely described boundaries of a water lot do not shift in accordance with the rise and fall of the lake level.

"I agree with the view expressed by Latchford, C.J., that the boundaries of the lot in question are fixed and definite, and that its northern boundary does not shift northerly or southerly in accordance with the rise and fall of the level of Lake Ontario nor in consequence of accretion to the shore.

It seems clear to me that this water-lot, with a depth at its northern end of 100 feet of dry land and only 560 feet covered with water, is worth more than 660 feet entirely covered with water."

In summary, the above excerpts seem to permit the conclusion that water lots are always subject to riparian rights which in turn are subject to the public rights of navigation.

A riparian owner has, amongst others, the right to accretion, but where a land lot has definitely fixed boundaries it seems that the right to accretion may pass to the owner of the water lot. Furthermore, it was held in the last case quoted that the lowering of the lake level does not represent an accretion in the legal sense.



## APPENDIX 'F'

### EXISTING PUBLIC AGENCIES INVOLVED ON THE WATERFRONT

AGENCY	FUNCTION	AREA OF FUNCTION OR JURISDICTION	PERTINENT LEGISLATION
<b>1. International</b>			
a. International Joint Commission	control of water levels	all boundary waters	
b. International Great Lakes Levels Board	study of problems resulting from water level fluctuations	Great Lakes	
<b>2. Federal</b>			
a. Department of Transport	<ul style="list-style-type: none"> <li>— controls navigation</li> <li>— direct control of some harbours</li> <li>— represented on independent Harbour Commissions</li> <li>— operates research vessel C.C.G.S. Porte Dauphine (Marine Services Division)</li> <li>— co-operates in study programs (Met. Branch)</li> </ul>	<ul style="list-style-type: none"> <li>all waters</li> <li>Pt. Credit</li> <li>Toronto Harbour</li> <li>Great Lakes</li> <li>all waters</li> </ul>	Navigable Waters' Protection Act; Pt. II
b. Dept. of Mines & Technical Surveys	<ul style="list-style-type: none"> <li>— takes water levels and other statistical surveys for I.J.C.</li> </ul>	boundary waters	
c. Dept. of Public Works	<ul style="list-style-type: none"> <li>— controls structures built in and around navigable waters, including fill</li> <li>— constructs and maintains harbour and navigational works and channels</li> </ul>	all waters	Navigable Waters' Protection Act
d. R.C.M.P.	<ul style="list-style-type: none"> <li>— enforces all federal law on land and water (eg. Customs and Immigration Act, Shipping Act, Small Vessels Regulations etc.)</li> <li>— operates P.B. "Shaunavon" for search and rescue work as well as law enforcement</li> </ul>	<ul style="list-style-type: none"> <li>all waters</li> <li>Lake Ontario</li> </ul>	
<b>3. Provincial</b>			
a. Dept. of Lands & Forests	<ul style="list-style-type: none"> <li>— administers the provincially owned lake bottom (except federal harbours and patented waterlots)</li> <li>— issues licences of occupation, water management agreements</li> </ul>	all Ontario navigable waters	Beds of Navigable Waters Act 1911
b. Department of Mines	<ul style="list-style-type: none"> <li>— controls removal of sand, gravel or stone from beds, banks, beaches or shores of waterways</li> </ul>	all Ontario waterways	Beach Protection Act 1920
c. Dept. of Municipal Affairs	<ul style="list-style-type: none"> <li>— exercises zoning and subdivision control on lands where Sections 26 and 30 have not been used by municipalities</li> </ul>	Ontario	Planning Act Section 27
d. Ontario Water Resources Commission	<ul style="list-style-type: none"> <li>— approves sewage treatment, water supply and storm drainage works</li> <li>— investigates complaints re pollution</li> <li>— studies and reports on water quality</li> </ul>	Ontario	O.W.R.C. Act 1956
e. H.E.P.C. Ontario	<ul style="list-style-type: none"> <li>— generates power at R.L. Hearn and Dixie Generating Stations</li> <li>— operates coal dock at Dixie Generating Station</li> <li>— disposes of fly ash from both</li> <li>— nuclear generating station under construction — Pickering</li> <li>— owns a site at Clarkson for a second nuclear station</li> </ul>	4 sites	

AGENCY	FUNCTION	AREA OF FUNCTION OR JURISDICTION	PERTINENT LEGISLATION	AGENCY	FUNCTION	AREA OF FUNCTION OR JURISDICTION	PERTINENT LEGISLATION
4. Toronto Harbour Commissioners	<ul style="list-style-type: none"> <li>- controls shipping and port facilities</li> <li>- operates the port and sets tolls and rates</li> <li>- operates the island airport</li> <li>- constructs and maintains some port facilities including channels, buildings, and transportation equipment</li> <li>- acts as local agency through which various federal agencies are requested to carry out harbour, navigational and channel works</li> <li>- undertakes various works for municipalities on a work order basis</li> <li>- develops land for industrial and other purposes</li> <li>- polices the harbour</li> <li>- regulates small craft</li> <li>- maintains life guard service for city beaches</li> <li>- prepares plans for harbour extension and port development, including The Central Sector Plan</li> </ul>	all water one mile south of the city, and all dock, waterfront property and waterlots within city limits	Toronto Harbour Commissioners Act 1911		<ul style="list-style-type: none"> <li>- constructs and operates recreational (including historic) areas</li> <li>- conducts surface water conservation program</li> <li>- regulates filling in river valleys, but not in Lake Ontario</li> <li>- makes available land for construction and operation of recreational facilities by municipalities</li> <li>- advisory to the province on various land use applications, and participates in various planning groups including Waterfront Committee</li> <li>- co-ordinates water quality objectives with recreational works in river valleys</li> </ul>		
				6. Credit River Conservation Authority	- same as M.T.R.C.A. but on a much limited scale	watershed of the Credit River	Conservation Authorities Act
				7. Metropolitan Toronto a. Planning Board	<ul style="list-style-type: none"> <li>- responsible for preparation of Waterfront Plan. Staff directly engaged on two sector plans</li> <li>- advisory to Metro Council on land use and subdivision applications in local municipalities</li> </ul>	within Metro Planning Area	
5. Metropolitan Toronto and Region Conservation Authority	<ul style="list-style-type: none"> <li>- acquires land by purchase or expropriation and undertakes conservation and flood control works</li> </ul>	watersheds of rivers from Etobicoke Creek to Carruthers Creek - believed that jurisdiction ceases at the lakefront.	Conservation Authorities Act				



AGENCY	FUNCTION	AREA OF FUNCTION OR JURISDICTION	PERTINENT LEGISLATION	AGENCY	FUNCTION	AREA OF FUNCTION OR JURISDICTION	PERTINENT LEGISLATION
	<ul style="list-style-type: none"> <li>- advisory to Metro Council with respect to various Metro projects (especially roads and property acquisitions) along waterfront</li> </ul>			c. Parks Department	<ul style="list-style-type: none"> <li>- constructs and maintains various waterfront parks:- Toronto Island, Marie Curtis, Scarborough Bluffs and Scarborough Bluffs East</li> </ul>	Metropolitan Toronto	Metropolitan Toronto Act
b. Works Department	<ul style="list-style-type: none"> <li>- constructs and operates trunk sanitary sewage collection works and treatment plants (one jointly with Toronto Township) including outfalls</li> <li>- checks storm sewer outfalls for pollution</li> <li>- constructs and operates water filtration plants including intakes, trunk distribution and storage works</li> <li>- constructs and maintains some public works through its Marine Division</li> <li>- enforces air pollution control bylaw</li> <li>- is responsible for refuse disposal</li> <li>- undertakes surveys for Waterfront Plan</li> <li>- supervises some lake filling operations, (eg. Parklawn Road)</li> </ul>	within Metropolitan Toronto (generally)	Metropolitan Toronto Act		<ul style="list-style-type: none"> <li>- owns and operates ferry terminal and 5 ferry boats to Island</li> <li>- jointly responsible with T.H.C. for Central Sector Plan</li> </ul>		
				8. Peel County Health Unit	<ul style="list-style-type: none"> <li>- tests water quality in bathing areas</li> <li>- checks storm sewer outfalls for pollution upon receipt of complaint</li> </ul>	Mississauga and Pt. Credit	
				9. Ontario County Health Unit	<ul style="list-style-type: none"> <li>- same as Peel County Health Unit</li> </ul>	Pickering Township and Ajax	
				10. City of Toronto			
				a. Parks	<ul style="list-style-type: none"> <li>- constructs and maintains Gzowski, Sunnyside, Woodbine and Balmy Beach waterfront parks</li> <li>- operates Sunnyside and Summerville pools and city beaches</li> <li>- maintains C.N.E. grounds</li> </ul>	City of Toronto	Municipal Act
				b. Works Department	<ul style="list-style-type: none"> <li>- constructs and maintains storm sewer outfalls</li> <li>- conducts pollution tests</li> <li>- undertakes some shore protection works</li> </ul>	City of Toronto	Municipal Act
				c. Health Department	<ul style="list-style-type: none"> <li>- conducts pollution tests on city beaches</li> </ul>		
				d. Fire Department	<ul style="list-style-type: none"> <li>- operates and maintains W. L. MacKenzie fireboat</li> </ul>		

AGENCY	FUNCTION	AREA OF FUNCTION OR JURISDICTION	PERTINENT LEGISLATION
e. Planning Board	<ul style="list-style-type: none"> <li>- advisory to Council on land use applications</li> <li>- directly responsible for Western &amp; Eastern Beaches Sector Plans</li> <li>- prepares long range development plans for sections of the city along the waterfront</li> </ul>		Planning Act
11. Other Municipalities	<ul style="list-style-type: none"> <li>- all, municipalities exercise powers under the Planning Act</li> <li>- all construct and maintain some storm drainage outfalls</li> <li>- those outside Metro construct and operate water filtration and sewage treatment works</li> <li>- most maintain one or more waterfront parks of neighbourhood size and function. Mississauga and Etobicoke operate municipal beaches</li> <li>- Pt. Credit operates a police patrol boat</li> </ul>	Mississauga Pt. Credit, Etobicoke, Scarborough, Pickering Township, Ajax	Municipal Act, Planning Act
12. C.N.E.	<ul style="list-style-type: none"> <li>- operates the Exhibition and buildings for various other annual fairs and shows</li> </ul>		
13. Great Lakes Institute, University of Toronto	<ul style="list-style-type: none"> <li>- conducts research and publishes reports on lake conditions (ice, temperature gradients, littoral drifts, currents etc.) in co-operation with Marine Services Division, Federal Department of Transport</li> </ul>	Great Lakes	



APPENDIX 'G'

PORT ACTIVITY

The following tables and graphs prepared by the Toronto Harbour Commissioners will serve to indicate the growth of the Port of Toronto over the past four decades.

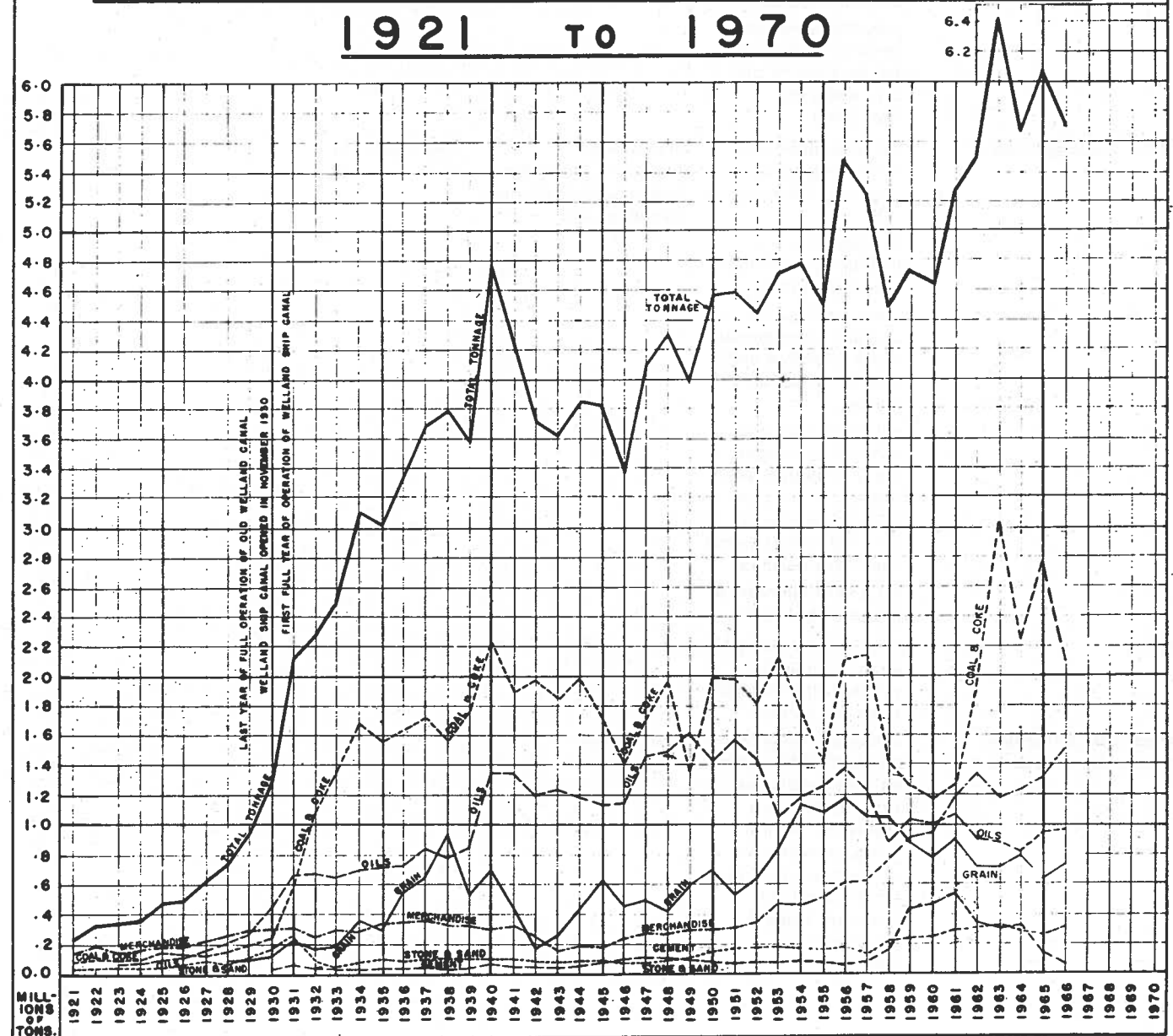
Figure G-1 shows the steady growth in total cargo tonnage and Figure G-2 reveals the dramatic increase in overseas tonnage since the first full year of operation of the St. Lawrence Seaway in 1959. It is the long term growth of overseas trade which requires the provision of more harbour space. The following table shows the increase in overseas shipping.

DIRECT OVERSEAS SHIPPING

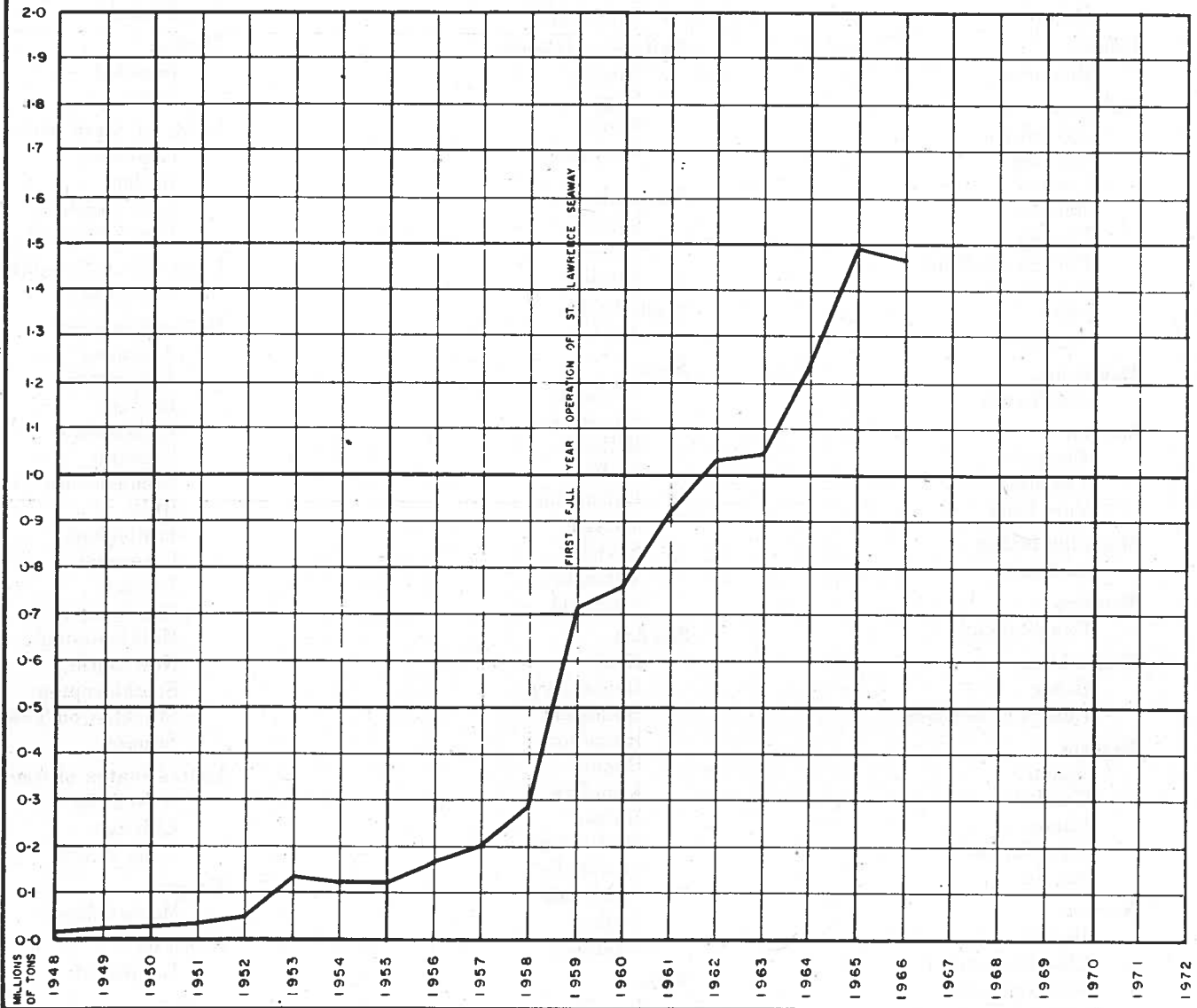
Year	Number of Regular Liner Services Serving the Port	Total Number of Arrivals and Departures of Ships	Total Cargo Tonnage
1952	7	360	50,222
1953	12	572	135,199
1954	14	702	122,319
1955	20	792	120,239
1956	20	910	164,929
1957	24	1,046	200,395
1958	28	1,317	287,768
1959	40	1,724	* 713,186
1960	42	1,708	762,282
1961	43	1,628	920,696
1962	47	2,008	1,031,885
1963	48	1,988	1,045,262
1964	53	2,157	1,232,349
1965	55	2,276	1,489,022
1966	56	2,288	1,462,245

\* (First year St. Lawrence Seaway)

FIGURE No. G-1  
THE TORONTO HARBOUR COMMISSIONERS  
CARGO TONNAGE OF TORONTO HARBOUR  
1921 to 1970



**FIGURE No. G-2**  
**THE TORONTO HARBOUR COMMISSIONERS**  
**OVERSEAS CARGO TONNAGE OF TORONTO HARBOUR**  
**1948 TO 1972**



The following tables list the ports and countries of origin and destination for import and export cargo through the Port of Toronto in 1966.

**PORT OF TORONTO**  
**IMPORT CARGO**

**COUNTRIES AND PORTS OF ORIGIN 1966**

- |                |                     |
|----------------|---------------------|
| Algeria        | British Guiana      |
| Oran           | Georgetown          |
| Angola         | British Honduras    |
| Lobito         | Belize              |
| Luanda         | Stan Creek          |
| Argentina      | British West Indies |
| Buenos Aires   | Bowden              |
| Australia      | Kingston            |
| Adelaide       | Nassau              |
| Brisbane       | Pointe - a - Pierre |
| Cairns         | Port of Spain       |
| Geelong        | Salt River          |
| Launceston     | Savanna la Mar      |
| Mackay         | St. Kitts           |
| Melbourne      | Ceylon              |
| Newcastle      | Colombo             |
| Port Kembla    | Trincomalee         |
| Portland       | Chile               |
| Sydney         | Valparaiso          |
| Belgium        | Colombia            |
| Antwerp        | Barranquilla        |
| Zeebrugge      | Bueneventura        |
| Brazil         | Congo Republic      |
| Cabedelo       | Matadi              |
| Fortaleza      | Cuba                |
| Maceio         | Havana              |
| Manaos         | Cyprus              |
| Niteroi        | Famagusta           |
| Paranagua      | Limassol            |
| Port Alegre    |                     |
| Recife         |                     |
| Rio de Janeiro |                     |
| Salvador       |                     |
| Santos         |                     |



<b>Denmark</b>	<b>Haiti</b>	Nagoya	Oslo	<b>Taiwan</b>
Aalborg	Forte Liberte	Osaka	Porsgrunn	Kaohsiung
Aarhus	<b>Hawaii</b>	Shikama	Sarpsborg	Keelung
Copenhagen	Hawaii	Shimizu	Stavanger	Taipei
Esbjerg	<b>Holland</b>	Tokyo	Trondheim	<b>Tanzania</b>
<b>Dominican Republic</b>	Delfzijl	Yokohama	<b>Panama Republic</b>	Dar-es-Salaam
Andres	Rotterdam	<b>Kenya</b>	Colon	<b>Thailand</b>
<b>Dutch West Indies</b>	<b>Hong Kong</b>	Mombasa	<b>Poland</b>	Bangkok
Aruba	Hong Kong	<b>Lebanon</b>	Gdynia	Kohsichang
Curacao	<b>Iceland</b>	Beirut	Szczecin	Phuket
<b>Eire</b>	Siglufjordhur	<b>Liberia</b>	<b>Philippine Islands</b>	<b>Turkey</b>
Cobh	<b>Indian Union</b>	Monrovia	Bislio	Istanbul
Dublin	Cochin	<b>Malaysia</b>	Bugo	Izmir
Waterford	Tuticorin	Jesselton	Manila	<b>Union of South Africa</b>
<b>Finland</b>	<b>Indonesia</b>	Kuching	Mangagoy	Capetown
Abo (Turku)	Belawan Deli	Labuan	<b>Portugal</b>	Durban
Hamina	Djambi	Malacca	Leixoes	East London
Hanko	Medan	Penang	Lisbon	Port Elizabeth
Helsinki	Padang	Port Swettenham	Setubal	<b>United Arab Republic</b>
Kotka	Palembang	Sarikei	<b>Saudi Arabia</b>	Port Said
Mantyluoto	Pandjang	Sibu	Jedda	<b>United Kingdom</b>
<b>France</b>	Tandjung	Singapore	<b>Spain</b>	Aberdeen
Bordeaux	<b>Israel</b>	<b>Mauritius</b>	Alicante	Avonmouth
Caen	Haifa	Port Louis	Barcelona	Belfast
Dunkirk	Tel-Aviv	<b>Mexico</b>	Bilbao	Birkenhead
Le Havre	<b>Italy</b>	Progreso	Cadiz	Glasgow
Marseilles	Carrara	Tampico	Cartagena	Grangemouth
Port Vendres	Genoa	Vera Cruz	Malaga	Hull
Rouen	La Spezia	<b>Miquelon Island</b>	Seville	Immingham
Sete	Leghorn	St. Pierre	Tarragona	Liverpool
<b>French Somaliland</b>	Messina	<b>Morocco</b>	Valencia	London
Djibouti	Milazzo	Casablanca	<b>Sweden</b>	Manchester
<b>French West Indies</b>	Naples	<b>Mozambique</b>	Gefle	Middlesbrough
Pointe-a-Pitre	Palermo	Beira	Gothenburg	Newcastle
(Guadeloupe)	Taranto	Lourenco Marques	Holmsund	Southampton
<b>Ghana</b>	Trieste	<b>Nigeria</b>	Hornborg	Stockton on Tees
Takoradi	Venice	Apapa	Husum	Swansea
Tema	<b>Ivory Coast</b>	Calabar	Kramfors	<b>United States of America</b>
<b>Germany</b>	Abidjan	Lagos	Malmo	Ashtabula
Bremen	Sassandra	Port Harcourt	Skelleftham	Chicago
Bremerhaven	<b>Japan</b>	Sapele	Stockholm	Long Beach
Brunsbittelkoog	Kawasaki	<b>Norway</b>	Sundsvall	<b>Uruguay</b>
Emden	Kobe	Bergen	Vallvik	Montevideo
Hamburg	Kushiro	Christiansand	Vasteras	<b>U.S.S.R.</b>
Husum	Moji	Christiansund	<b>Syria</b>	Leningrad
<b>Greece</b>	Muroran	Larvik	Latakia	
Piraeus				

Venezuela  
 Amuay Bay  
 El Palito  
 La Guiara  
 Puerto Cubello  
 Puerto La Cruz  
 Punta Cardon

Yugoslavia  
 Koper  
 Rijeka

Germany  
 Bremen  
 Bremerhaven  
 Hamburg  
 Mannheim

Osaka  
 Tokyo  
 Yokohama

Norway  
 Bergen  
 Christiansand  
 Oslo  
 Stavanger  
 Trondheim

**PORT OF TORONTO  
 EXPORT CARGO**

**COUNTRIES AND PORTS OF DESTINATION 1966**

Aden Protectorate  
 Aden

Algeria  
 Algiers

Angola  
 Lobito

Australia  
 Adelaide  
 Brisbane  
 Fremantle  
 Geelong  
 Hobart  
 Launceston  
 Melbourne  
 Sydney

Belgium  
 Antwerp

British West Indies  
 Bridgetown  
 Kingston  
 Montserrat  
 Nassau  
 Port of Spain  
 Pointe - a - Pierre  
 Hamilton

Brunei  
 Brunei

Burma  
 Rangoon

Ceylon  
 Colombo  
 Colombia  
 Barranquilla

Congo Republic  
 Matadi

Cyprus  
 Famagusta  
 Limassol

Denmark  
 Aalborg  
 Aarhus  
 Copenhagen

Dominican Republic  
 Santo Domingo

Eire  
 Cobh  
 Dublin

Fiji Islands  
 Lautoka

Finland  
 Abo (Turku)  
 Helsinki  
 Mantyluoto

France  
 Bordeaux  
 Dunkirk  
 Le Havre  
 Marseilles  
 Rouen

Ghana  
 Takoradi  
 Tema

Greece  
 Piraeus

Guatemala  
 Puerto Barrios

Haiti  
 Port au Prince

Holland  
 Amsterdam  
 Rotterdam

Hong Kong  
 Hong Kong

Indian Union  
 Bombay  
 Calcutta  
 Cochin  
 Kandla  
 Madras

Indonesia  
 Djakarta

Iran  
 Bandar Shapour  
 Khorramshahr

Israel  
 Haifa  
 Tel - Aviv

Italy  
 Genoa  
 Leghorn  
 Messina  
 Naples  
 Palermo  
 Trieste  
 Venice

Japan  
 Kobe  
 Moji  
 Nagoya

Jordan  
 Aquaba

Kenya  
 Mombasa

Korea  
 Inchon  
 Kunsan  
 Masan  
 Pusan  
 Yosu

Lebanon  
 Beirut

Liberia  
 Monrovia

Malaysia  
 Jesselton  
 Kuching  
 Labuan  
 Penang  
 Port Swettenham  
 Sandakan  
 Sibul  
 Singapore

Malta  
 Valetta

Mauritius  
 Port Louis

Mexico  
 Vera Cruz

Morocco  
 Casablanca

Mozambique  
 Beira  
 Lourenco Marques

New Guinea  
 Lae  
 Madang

Nigeria  
 Apapa  
 Lagos  
 Port Harcourt

Okinawa  
 Naha

Pakistan  
 Karachi

Phillippine Islands  
 Cebu  
 Manila

Poland  
 Gdynia

Portugal  
 Leixoes  
 Lisbon

Senegal  
 Dakar

Sierra Leone  
 Freetown

Spain  
 Alicante  
 Barcelona  
 Bilbao  
 Cadiz  
 Seville  
 Tarragona  
 Valencia

Sweden  
 Gothenburg  
 Helsingborg  
 Malmo  
 Norrkopping  
 Stockholm  
 Vasteras

Syria  
 Latakia

Taiwan  
 Kaohsiung  
 Keelung

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