CIVIC AFFAIRS

"Should the Island be an Airport?"

NOVEMBER 1977

Bureau of Municipal Research
Better Government through Research

"Should The Island Be An Airport?"

INTRODUCTION

Whether a nearly forty year use of the Toronto Island Airport site shall be replaced by some other use has been the basic issue in a lengthy study by a task force of technicians from every level of government. What we deal with in this *Civic Affairs* is how this question became an issue, what means have been adopted to resolve it, what evidence is available to support each of the proposed uses.

A member of the Bureau staff attended all Intergovernmental Staff Forum meetings and all workshops and public meetings held in the public participation program. We have reviewed all of the 17 volumes of the published Intergovernmental Staff Forum's "Toronto Island Airport Study Program". We have also reviewed many earlier reports on various aspects of aviation development, airport capacity and the Toronto Island Airport.

Various sources for the historical data regarding the islands, the airport and the jurisdictional matters involved have been used.

There are marked differences of both official and public opinion on the appropriate use of the airport site. The governmental bodies involved have co-operated in completing a massive, many-faceted study to establish a factual basis on which to resolve or at least compromise their differences.

What we present here is necessarily selective but we believe gives a reasonably comprehensive overview of the background and of the options put forward.

From our study, we have drawn some conclusions that seem to us supported by the established facts. We do not anticipate unanimous agreement because those holding firm beliefs about a particular use will undoubtedly interpret the factual information with different emphasis. Nonetheless, we hope that this *Civic Affairs* will be a useful tool for those seeking to make an informed decision.

TABLE OF CONTENTS

Use of the Island Airport Site

THIS CIVIC AFFAIRS IN BRIEF

This Civic Affairs reviews and analyses the various proposed uses for the Toronto Island Airport site. A detailed study was undertaken in 1974-75 by the four levels of government: Federal, Provincial, Metropolitan Toronto, the City of Toronto, and the Toronto Harbour Commissioners to determine the most feasible of the three options deemed possible for use of the Island Airport site. They were (1) Retain the site as a general aviation facility (2) Introduce short-take-off and landing scheduled services (3) Phase out all aviation activity. In order that option (3) not be considered in a vacuum the terms of reference provided for presentation of viable non-aviation alternatives to the aviation uses. This resulted in seven separate proposals, three aviation and four non-aviation uses presented in the form of scenarios.

The four non-aviation uses proposed: two different housing communities, one simple parkland, and one marine life performance complex with added swimming, camping and sports facilities, are all related to basic needs of a growing metropolitan population, and are imaginatively and attractively presented. But the immediate need to utilize this unique 215 acre site for any of them is not clearly established and each is subject to some objections as to timing of financial burden, complications of lakefront traffic, heavy building concentration on a now essentially open area, and in the case of housing, the necessity to provide new city infrastructure and services including schools when empty classrooms are already a problem in the Central City area. The alternative course for the provision of Central City housing: remodelling, reconstruction and infilling to provide more suitable population densities in areas of the City already provided with infrastructure, schools and services, will have to be resorted to in any event if the city if to reach its housing objective by 1985. At best the island would provide only a fraction of the total sites needed, while preempting this unique bit of land for housing use.

Further, we believe that there is a strong case for the retention of the Island Airport, resting on a number of factors:

- *(a) The importance of general aviation in Canada's air service;*
- *(b) The importance of the Toronto Island Airport in the general aviation facilities of the Toronto Region;*
- *(c) The unique advantages of the Island Airport's location, including its largely over-water approaches, its closeness to downtown, and its seaplane service;*
- *(d) The difficulty and expense of providing substitute accommodation in the event of closing the airport and the near impossibility of providing a substitute with the advantages of the Island site;*
- *(e) The airport's potential for serving a larger role in aviation activity with its capacity to accommodate the new Dash 7 craft from a location suitable to gain maximum advantage of paired-city service;*
- *(f) The possibilities offered by extended use of the site in the relief of Malton as that airport reaches its maximum capacity for passenger accommodation;*
- *(g) The possibilities offered by extended use, of making the Island Airport a self-sustaining facility.*

In evaluating the expressed fears and concerns about possible deleterious effects of air use of the Island site we carefully examined the extensive studies made in connection with the Airport Study Program and reached the following conclusions:

In our view the studies established that even with proposed extended air-use of the site (1) the airport would be an insignificant contributor to pollution in the Metropolitan area, that maximum emissions would fall on the site itself and Island Airport emission densities would remain substantially lower than urban averages (2) noise exposures would be largely confined to the site and surrounding water and in no case would be higher than compatible readings reach to populated areas (3) that air-use is entirely compatible with the preservation of Island ecology (4) that while increased use will necessarily increase traffic on Bathurst Quay there will be less conflict with Harbourfront activities than would result from any of the non-aviation proposed uses because air induced traffic would peak on week-days at non-entertainment hours.

We do not believe that the Island Airport, given its present physical limitations, could become a large commercial airport. It is too small, its runways are too short and its overall runway capacity too limited to permit burgeoning growth. It has the capacity to become a busier, a more useful, and possibly a self-supporting airport but not a really big one.

Of the seven alternatives offered, it seems to us that retention of the Island Airport and the addition of Extended STOL services on a user-pay principle fulfills a real need, with good chance to recover costs and without incurring undesirable environmental or social effects and is the most logical and desirable choice.

I BACKGROUND

HISTORY OF THE ISLANDS

At issue in 1977 is the use of 215 acres of the main island lying southeast of the Toronto mainland at the foot of Bathurst Street.

Once part of a peninsula created by natural accretions of sand from Scarborough Bluffs and the outflow of the Don River, this land was originally perceived by Colonel Simcoe in 1791 as a splendid outpost for the defence of the harbour and the lake. He built a blockhouse and storage structures at Gibraltar Point in 1794 which lasted until 1818.

The peninsula was soon utilized by Torontonians for a resort hotel, "The Peninsula", for a soap factory and wharves. There was road access and in the 1820's there was also steamboat service from the city to the hotel.

A severe storm in 1852 breached the narrows with a 150 foot opening. Repair work in the breach was destroyed by another bad storm in 1858 which also carried away the hotel and the wharves and left a 1500 foot channel. Some ships began to use this shallow channel to enter to harbour. By 1882 the gap had grown to nearly a mile in width.

Contracts were let by the Harbour Commissioners for breakwaters in the eastern end of the harbour and a dyke from the western side of the eastern gap to control further erosion and protect the western shore.

In 1892 the Western Gap was reduced to 400 feet and cribbed. In 1906, three bad shipwrecks at the Gap, attributed to the shallowness of the channel and its rock bottom, resulted in the creation of a new deeper channel 1300 feet to the south which was opened to navigation in 1911.

By the process of dredging and filling, the area of the islands has steadily increased. In 1879, they covered an area of 360 acres; by 1912 this had been increased to 563 acres. The total is now 820 acres. In 1916, the size of Ward's Island was doubled. Algonquin Island did not exist in 1879 and was completely created by landfill.

The two main spits of land that comprise the basis of the islands, Hanlan's Point and West Island Sand Bar, continued to grow. About 1850, they began to serve an increasing variety of uses, largely of a resort nature. On Hanlan's Point there were eventually three large resort hotels. Summer cottages were built. This was accelerated after control was passed in 1867 from the Crown to the City. The City drew up sub-division plans and by 1890 there were about 40 cottages in "Paradise Village". On the West Island Sand Bar, Turner's Baths had been built before 1890 and strung out along West Island Drive, some 50 cottages had been constructed. The lagoon between the two points was in regular use as the "Hanlan Memorial Regatta Course", the site of Dominion Day celebrations.

Extensive landfill on the northern tip of Hanlan's Point in 1894 provided space for an amusement park that later included a baseball stadium and a huge roller coaster. The amusement park was run by the Toronto Ferry Company. It was so profitable that it was immediately rebuilt after a disastrous fire in 1910.

In 1926 the ferry and amusement park franchise was taken over by the Toronto Transit Commission. The new Maple Leaf Baseball Stadium on the mainland proved potent competition and during the depression, the amusement park deteriorated rapidly, eventually to be abandoned.

Title to the Islands Park was acquired by the Toronto Metropolitan Government in 1956 and operation of the park integrated with the Metro parks system under the Metropolitan Parks Department. There was no direct compensation to the City but Metro assumed City debentures of $434,000 on the land.

Hotels and the Lakeshore Home for Sick Children have disappeared. Houses are gone from the Centre Island area although some 250 yet remain at Ward's and Algonquin. Metro recently ordered eviction of residents and appropriated some $2

million to arrange for the destruction of the houses and conversion of the land to park use.[1]

With the exception of the airport opened in 1938, and the areas still occupied by housing, the islands are now basically devoted to park, nature and recreational activities. One school and some churches are still open but there is talk of closing the school. The Island Nature School and a water filtration plant are located near the old lighthouse. A Wildlife Sanctuary between the Parks Department Works Yard and the CKFH radio towers is somewhat threatened by increased island use but Muggs Island is still a predominantly natural area. Several yacht clubs are accommodated in appropriate Island harbours.

In 1967 and in 1970 two proposals were made to utilize the airport site plus additional landfill to build large residence communities: "Bold Concept", by the Harbour Commissioners in 1967 proposed housing for 50,000 people and required 200 acres of new landfill, much of it on the bay side; "Harbour City", proposed by the Province in 1970 called for housing 60,000 and required 510 acres of new landfill, much of it on the lake side. Neither project was formally rejected but both were shelved, partly because of the formidable costs of implementation but partly because of concern for effects on the harbour and the contiguous island areas.

Some of the landfill not only around the islands but also along the mainland foreshore has drastically reduced the water acreage of the inner harbour; at the same time there has been a large increase in boating activity.[2] The Bay area which was 2150 acres in 1834 had been reduced by 1969 to 1210 acres. Additional land accretion for the islands, at least on the landward side, is now viewed with concern for preservation of the Bay. A chief reason for objection to the "Bold Concept" proposal was its considerable encroachment on the water area of the inner harbour. Land accretions on the open lake side, harder to build and to stabilize, are subject to the objection that they have the effect of further removing the city centre from the lake. This was an objection to "Harbour City".

There are now frequent cautions about overuse threatening the fragile island environment. The Health Department has some concern about the inadequacies of the sanitary facilities to serve the large number of visitors on weekends or special celebrations, especially in periods of high lake levels. A proposal to build an island sewer system connected to the mainland sewer system to replace the present septic tanks and tile fields at a cost of $3.4 million was postponed last June as too expensive for a period of financial constraint, but it is now underway.

From the founding of the city to the present this unique formation of land at Toronto's front door-step has been held in special regard. Use of it, while it has been put to many, has always been thought of as fulfilling some special function in enhancing Toronto's life-style. Preserving it has become almost an article of faith. Its history is the history of changing public priorities supported by official policy.

This accounts for the intensity of public interest, the high degree of personal concern when any change in its use is suggested.

1. In the interest of saving housing units the City has adopted a policy of opposing the evictions and the destruction of the housing.

2. In 1964, 1,350 boats had berths along Metropolitan Toronto Waterfront. This had risen to 3,760 boats by 1974. The Harbour Commission estimates that with the use of launching ramps the number of boats in active use in 1976 was 5,000. Future forecasts are for many more if facilities are made available. Alternate Channel Study — Harbour Commission March 1977 page 28.

HISTORY OF THE ISLAND AIRPORT

Forty years ago, in 1937, Toronto did not have a municipal airport. But 68 years ago, Toronto was making air history centred around Toronto Harbour. In September 1909, Charles Willard staged the first barnstorming flight in North America on Toronto's beaches, landing in the harbour. In 1911, J.A.D. McCurdy made the first dry-landing on Toronto Island to win Canada's first cross-country air race from Hamilton to Toronto. In 1915, McCurdy opened the Curtis Aviation School and established Canada's first two officially recognized air bases: a land-base at Long Branch and a water-base at Hanlan's Point on Toronto Island. Toward the end of World War I, fighter aircraft were being built at Polsen's Ironworks at the foot of Sherbourne Street which were tested from the ice in Toronto Bay.

The war intensified interest in the use of aircraft and at the close of the war centred on their possibilities in cargo and passenger transportation. Various individuals and groups built and operated landing fields in several parts of the city patronized by private airplane owners, flying clubs and commercial companies. Some of these groups petitioned City Council to have their airfields designated as the official Toronto Municipal Airport. This the Council resisted, apparently with the feeling that an official airport should be city-owned and city-operated. In this, they were following a North American trend. Many cities were building airports and these were considered preferable to privately controlled ones.

On October 4, 1928[1], the City Board of Control voted "That the Harbour Board be asked to report on developing the West Island Sand Bar for a seaplane, flying boat and amphibian airplane base."[2] In the summer of 1929, the Harbour Commissioners responded with the recommendation that an up-to-date airport with facilities for seaplane and amphibious aircraft be constructed on West Island next to the Western Channel. Stage 1 of the development was to be a small seaplane base on the northeast corner of the site.

In making their report to the Board of Control, the Harbour Commissioners called attention to Order-in-Council 1426 of June 10, 1913, in which the Federal Government agreed to construct a bridge over the Western Channel and stated that they believed that the Federal Government would now honour this obligation incurred at the time of the joint undertakings of water-front improvements by the City of Toronto, the Harbour Commissioners and the Federal Government.

On June 19, 1929, the Council approved the first stage of construction, as recommended by the Board of Control, and authorized $100,000 capital outlay to be paid to the Harbour Commission. (The City Parks Commissioner at the time recommended against construction of anything more than Stage 1 saying the rest of the area should be preserved for parks and the utilization of the fine beach.) The Harbour Commission designated the Phase I site but no work was carried out because the depression arrived before it could get underway.

The airport issue was kept alive during the depression years by the appointment by Council in June 1931 of an "Advisory Committee on Airport Facilities for the City of Toronto". This committee reported on the need for a municipal airport, and quickly, to take advantage of the Federal interest in establishing a string of airfields across Canada with lighted runways to facilitate airmail service and with the idea of passenger service to follow. They recommended continuation of the plan to establish an airport on the island but "because of the construction time required to ready this site" they recommended acquisition in addition of a land site which could be prepared more rapidly. The committee studied the feasibility of 15 different properties offered for sale and finally recommended that "immediate steps be taken by the city to acquire a suitable property northwest of the city for airport purposes". There were further studies and conferences with the province but no action was taken.

For the next five years variations of the committee discussed, reviewed and reported. In February 1935 the Federal government accepted a "make-work" proposal by the Harbour Commissioners to finance a tunnel under the Western Gap as a substitute for its 1913 commitment to build a bridge to the island. The city made the necessary formal conveyance of land to the Harbour Commissioners for the tunnel site and work was started. In October, upon the election of the McKenzie King government, the agreement was cancelled and work had to be stopped. The Harbour Commissioners reconveyed the site back to the City.

November 18, 1936, Council resolved to appoint a new "Special Committee Re Airport Matters". This committee with some new faces added to several who had served on previous committees appointed a Sub-Committee of three.

The Sub-Committee asked the Controller of Civil Aviation for the consultation services of Colonel D. G. Joy, who had participated in previous studies, to assist them and the request was granted.

In March 1937, the Federal Government issued a set of specifications for municipal airports. At a General Committee meeting on March 25, the Sub-Committee reported to Council that reconnaissance surveys had been completed on all sites that seemed *reasonable as to cost and compliance with the new Federal guidelines*. On six sites, they were prepared to do detailed study.

In the end, the Sub-Committee made detailed studies and cost estimates for 8 separate sites and complete plans and estimates were sent to Ottawa for comment. Ottawa was prepared to favour the Western Channel site, the Wilson Avenue, Sheppard, Dufferin, Bathurst site, and the Malton site provided costs could be pared down. Revised plans and estimates were submitted.

On May 31st, the Sub-Committee made its final recommendations to the Board of Control:

"(1) That: development of the Island site be proceeded with at the earliest practicable date.

(2) That: as the selection of either the Wilson Avenue or Malton sites (both of which have the approval of the Federal Government) is purely a matter of policy and cost, decision on this matter be left to the Board of Control and City Council."

The Board of Control decided to recommend to Council that:

"(1) Municipal Airports be established.

(2) The combination aeroplane and seaplane base south of Western Channel be proceeded with.

(3) The other airport be located at Malton." (This site gained favour because of the construction of Highway 27 by the Province which promised rapid access to the proposed location.)

On July 9, 1937, Council approved the recommendations without amendment. Thus in about 7 months, the decision to act that had been nearly 9 years in the making was reached: a major airport on Toronto Island and an auxiliary one at Malton both to be Municipal Airports.

An agreement was made between the Federal Department of Transport and the City of Toronto in November 1937 to set aside the Toronto Island Airport site and the site near Malton for establishing permanent public airports in Toronto.

This time the Harbour Commissioners wasted no time in getting site preparation underway. The regatta course was filled. Algonquin Island (then Sunfish Island) was prepared as a site for a cottage community and the cottagers on the West Sandbar were given first choice of sites. Their cottages were then floated to the new sites and established.

Preparation of field and runways and construction of buildings progressed rapidly.

The airport was opened for business in September 1938 while construction of the Terminal Building and Hangar No. 1 were getting underway. The major construction projects were completed in 1940. Since then, there have been additional hangars and service buildings constructed as needed but little change in the basic arrangements.

In February 1957 a new agreement was made between the City of Toronto and the Federal Department of Transport under the terms of which the Malton site was turned over to the Federal Government. In exchange the Federal Government agreed to pay for certain improvements at the Toronto Island site. Some improvements were constructed in 1961 and consisted of a major landfill extension east and west that permitted building a longer (4,000 ft.) runway to supplement the original two 3,000 ft. ones. Lighting was added as well as a new twin-bay hangar.

In 1962, the Harbour Commissioners who had managed both airports as agents for the City, took over management of the Island Airport as principal through an agreement with the City under which the Commissioners are required to "control, maintain, manage and operate the Island Airport property as a permanent public airport consistent with the original agreement with the Federal Government." This meant that the Harbour Commissioners were responsible for making good airport deficits. When the Commissioners announced that they felt they could no longer justify funding the deficits, a re-study of the use of the site began.

With the failure of the Federal Government to build either a bridge or tunnel access, the make-shift means of a ferry had been adopted. A cable ferry served from 1939 to 1964. In 1964, the refurbished "Maple City" ferry boat was put into service. In every Harbour Commission Annual report since the early 1950's reference is made to the unsatisfactory access arrangement and the limitations on airport use it represents. Besides being at times an unsatisfactory and unreliable means of access, the "Maple City" also has proved to be very expensive. In recent years it has been operated at about a $140,000 annual loss.

The use of the Island Airport[3] peaked in 1967 with just over 240,000 air movements. Thereafter until 1975 use declined although it was still the 10th busiest airport in Canada until 1973. In 1975 an upswing started which continued in 1976 when air movements were up 10% in the first 6 months, though not reaching the 1967 level.

Three reasons are given for the decline in use:

(1) The economic recession of the late 60's affected general aviation growth so that some decreased use of the site was to be expected.

(2) The Harbour Commission's 1967-68 proposal of "Bold Concept" created uncertainty about the future of the airport, causing some related air business services to seek new locations which contributed to the failure of some operators. This tended to reduce service at the airport.

(3) Final disillusionment about prospects for improved access, the hopes for which had been a factor in the establishment of several service firms at the Island Airport. Poor access had led a growing number of business planes to find other bases. It also inhibited development of auxiliary services which would have attracted tourists and sightseers, provided supplementary revenue, and maintained the vitality of the scene at its 1967-68 level.

Surveys conducted at the airport from 1971 to 1974 provide some interesting information on the purposes of itinerant flights.[4]

YEAR	Business Purposes	Pleasure	Total Itinerant Flights
1971	61%	39%	65,382
1972	62%	38%	60,219
1973	55%	45%	55,812
1974	62%	38%	46,942

In 1937 when the decision was taken to establish two municipal airports, the main one at Toronto Island and an auxiliary one at Malton, few foresaw the rapid growth of commercial aviation.

The decision proved fortunate for Toronto. When the two airports were built any plane in use, except seaplanes, could have landed at either airport. The rapid introduction of larger and larger craft and eventually the introduction of jets demanded runways of lengths not possible on the island and terminal facilities of a size and complexity not suitable for the downtown site. Malton could be expanded to meet the demand.

The Island Airport continued to serve the only class of planes for which it is suitable, namely planes with short take-off and landing capacity. Until recently, this meant comparatively light-weight general aviation craft. The airport has remained an important link[5] in the chain of now 900 Canadian airports of which less than 8% are served by scheduled airlines, the rest depending on general aviation activity. It continues to be the most important seaplane base in the Toronto Region and offers the only service for conversion of seaplanes to landplanes and vice-versa.

A new possibility is now introduced by the development of a 50-passenger plane with short take-off and landing capacity.

These planes are suitable for short-haul (up to 500 miles) scheduled service; they would be capable of using the Island Airport.

As the governmental bodies involved assess the alternatives for use of the Island Airport site, account must now be taken of its potential to serve a larger role in the air service of the region. The options open are:

(1) To phase out aviation activity in favour of some other use for the site.
(2) To continue in its present use for general aviation alone.
(3) To permit the introduction of scheduled use of the new short take-off and landing planes to serve some of the short-haul needs of the air system.

1. For these and subsequent details of the long process of reaching the decision to establish the Island Airport see: "The Island Airport: Port George VI — The Locational Decision Process for a Waterfront Airport: Toronto", Linda Swaine, Department of Geography, University of Toronto, 1971.

2. On October 10, 1928, the Toronto Bureau of Municipal Research published White Paper No. 131 "Toronto as an Airport" reviewing the need for a Municipal Airport and recommending choice of the Island as the proper site.

3. A colorful bit of Toronto history is associated with the use during World War II of the Island Airport in the Commonwealth Air Training Plan. Military barracks were built behind the Maple Leaf Ballpark for the accommodation of Norwegians who escaped from their homeland and came to Canada for training as fighter pilots in the Norwegian Air Force. They were given use of the Island Airport as a training base. After the war some of the pilots returned as Canadian immigrants.

4. Annual Reports: Toronto Harbour Commissioners, 1971-1974.

5. Third busiest of the 16 major G.A. Airports in the Toronto Region.

THE JURISDICTIONAL SITUATION

From the figures below, we can see that the Harbour Commissioners control over three times as much airport land as the City and that the Federal holding is minimal.

Who legally controls the airport site?

		Land	Water
Harbour Commission	2 parcels	162.1 acres	167.66 acres
City of Toronto	2 parcels	47.5 acres	15.66 acres
Federal Government	2 parcels	5.40 acres	Western Gap to Harbour to east

TOTAL — 215.0 acres

Adjacent parklands are owned by Metro Toronto.

Unfilled areas west of the site beyond areas controlled by the City and the Harbour Commissioners belong to the Provincial Government.

With the appointment of the new Harbour Commissioners in 1911 and their proposed long-range plan in 1912-13 there has been a commitment to co-operation by the Federal Government, the Commission, and the City which encouraged rehabilitation of the harbour and the waterfront along with the development of the port. The process of co-operation and consultation that has developed over 65 years shows that the fact that the site is divided between three different airport owners is not a major obstacle to resolution of differences of opinion on the use of the airport site.

In 1929, it was recognized by the City upon advice of its Solicitor that the Harbour Commission had the legal authority to establish an airport on the Island. In 1967-68, it was similarly recognized by the City Solicitor that the Harbour Commission had the legal authority to build "Bold Concept" by turning the airport site into a residential community for 50,000, to relocate the airport and to realign some of the recreational facilities of the islands.

In neither case did the Commissioners proceed. According to a senior staff member of the Harbour Commissioners, the "Bold Concept" proposal was not a spontaneous, independent proposal by the Harbour Commissioners. It was made in response to a request by the Waterfront Technical Committee, on which it had a member, for some imaginative, comprehensive alternative suggestions on how the waterfront could be developed.

The overall plan which included the "Bold Concept" was approved by the Waterfront Technical Committee and adopted in principle by Metro and all member municipalities. Objections by some members of Toronto City Council were sufficient to shelve the whole project.

With the Provincial establishment of Regional Conservation Authorities and the takeover of the operation of the Islands Park by the Metro Parks Department the direct interest of the Province and Metro in decisions on harbour land use cannot be overlooked.

How did this jurisdictional pattern come about?

British North America Act

The British North America Act of 1867 assigned to the Federal Crown all properties within public harbours. The right to ungranted waterlots outside of public harbours was left with Provincial Governments.

Federal Grants of Crown Lands

Almost immediately began a series of grants by the Federal Government of the Crown lands reserved to them in the B.N.A. Act.

— In 1867 Toronto Island was granted to the City.
— In 1896 a foreshore grant was made by the Federal Government to the City covering water-lots north of Toronto Islands.
— In 1918, the Harbour Commission was granted water-lots south of Western Gap.
— In 1937, the Harbour Commission was granted 133.52 acres of land at the airport site. (Increased in 1961 to 162.1 acres by the landfill to permit construction of the 4000 ft. runway.)

Definition of the Toronto Harbour

Unfortunately for the sake of clarity, "Toronto Harbour" was not defined in connection with the B.N.A. Act. The Act setting up the new Harbour Commission in 1911-12 did define the Harbour and authorized the Commission to erect landmarks to show the definition.

This did not preclude controversy over what constituted Toronto harbour at Confederation.

The Province at that time was committed to the thesis that the harbour at Confederation was the limit of Federal jurisdiction. The creation of much new filled-land by the Harbour Commissioners in the intervening years has complicated the definition problem.

The Ontario Harbours' Agreement Act

Fianlly, in 1962-63, an attempt was made in the Ontario Harbours' Agreement Act to resolve the matter, but did not succeed in settling all the points at issue.

Harbour City Proposal

Ontario produced elaborate plans in 1970 for "Harbour City" utilizing the airport site. This was originally hailed as a breakthrough in innovative urban design, and an improvement on "Bold Concept".[1] However, sober second thoughts soon replaced euphoria. Danger of pollution in the proposed canals and waterways, danger of over-use of other island areas by such proximity of a large resident population, formidable access and intra-site transportation problems, the high costs of construction under the restrictive island circumstances including the provision of community facilities and services all surfaced as practical implementation problems.

Both "Bold Concept" and "Harbour City" were shelved without really resolving the jurisdictional issue which is not easy to resolve and is too complicated to be conveyed in a brief review. The Navigable Waters Protection Act alone makes consultation with the Federal Government and its agents mandatory when considering any projects for landfill, headlands, breakwaters, bridges, channels or tunnels no matter who has jurisdiction over the basic land involved. Toronto Harbour is a national harbour not just a city or a provincial lake. The maintenance of water circulation and water quality as well as clear shipping lanes and access to land transshipment facilities are responsibilities of the Harbour Commission under the jurisdiction of the Ministry of Transport's Canadian Marine Transportation Commission to assure that such responsibilities are implemented to protect the harbour. When Federal decisions will impinge on local proposals there must be discussion and compromise.

Consultation

The Toronto Harbour is a place where city, provincial and federal interests converge and overlap. There are obviously differences of opinion over how to make the unique resource of the harbour best serve the interests of the city, the province and the nation. Each level of government naturally presses for the priority of its preferences and resists invasion of its prerogatives to make decisions. While there is little hope that jurisdictional differences can be solved in toto, a process of consultation between governments on a particular issue in a context of search for the relevant facts can perhaps provide a basis for a satisfactory decision.

1. Although "Harbour City" provided for 60,000 rather than 50,000 population and increased the required landfill to 510 from 200 acres, it did not entail as much encroachment on inner harbour water because much of the fill was placed to the west on the lake side.

II CURRENT CONSIDERATION OF THE ISSUE

AN INTERGOVERNMENTAL POLICY STEERING GROUP ON USE OF THE TORONTO ISLAND AIRPORT

A major effort to implement a consultation process began in early 1974 with the convening of *"The Joint Committee — Toronto Island Airport"*.

Triggered by the Harbour Commissioners' announcement that they were no longer prepared to fund the deficits incurred by airport operation, the question of a future course of action and disposition of the site became an active matter of concern in all levels of government, and throughout the community. As a result of informal discussion by senior officials a "Joint Committee - Toronto Island Airport" was formed in March 1974. It included representatives of the Federal Ministry of Transport, the Ontario Ministry of Transportation and Communications, Metropolitan Toronto, City of Toronto, Toronto Harbour Commissioners, Central Waterfront Planning Committee, Ontario Aviation Council and the Metropolitan Toronto Board of Trade. Its task was to identify viable options for use of the airport site and the consequences of adopting each.

This committee identified three options:—

(1) Retain as a general aviation facility.
(2) Introduce short take-off and landing scheduled services.
(3) Phase out all aviation activity.

In order not to prejudice the outcome of the proposed study of these options by a premature closing of the airport, the two senior levels of government agreed to interim financing arrangements to cover anticipated deficits and to keep the airport open until conclusion of the study and decision as to future use of the site.

After identifying the areas where the committee felt investigation and study was required to furnish pertinent information as a basis for the decision to be made, all levels of government agreed to undertake the needed program of studies.

An "Intergovernmental Policy Steering Group" was appointed to oversee the program and to receive the reports. This committee consists of:—

— The Minister of Transport
— The Minister of State for Urban Affairs
— The Minister of Transportation and Communications
— The Chairman of Metropolitan Toronto
— The Mayor of the City of Toronto
— The Chairman of the Toronto Harbour Commissioners

An "Intergovernmental Staff Forum" was created consisting of technical study managers from each appropriate governmental agency to be chaired by a member of the Harbour Commissioners' staff. There were to be eight studies, each assigned to a technical study manager:—

1. **Southern Ontario Local and Feeder Air Service Net-Work**
   Assigned to Ministry of Transportation and Communications.
2. **General Aviation Demand and Evaluation of General Aviation Facilities in the Toronto Area**
   Assigned to Ministry of Transport.
3. **Alternative Aviation Uses for Toronto Island Airport**
   Assigned to Ministry of Transport with Ministry of Transportation and Communications.
4. **Alternative Non-Aviation Uses for Toronto Island Airport Site**
   Assigned to City of Toronto with Ministry of State for Urban Affairs.

5. **Alternative Channel Arrangements for Island Airport Site**
   Assigned to Toronto Harbour Commissioners.
6. **Access Plans for Each Use of the Airport Site**
   Assigned to Metro Toronto.
7. **Regional Planning Impacts of Alternative Uses for Toronto Island Airport Site**
   Assigned to Ministry of Transport with Ministry of Transportation and through the Ministry of Transportation and Communications. (This study was not completed.)[1]
8. **Alternative Means of Inter-City Transportation**
   Assigned to Ministry of Treasury, Economics and Intergovernmental Affairs through the Ministry of Transportation and Communications. (This study was not completed.)[1]

A target deadline for completion of the studies was set as April 1976. Because of the magnitude of the task, that date was set forward more than once. The completed seven reports were issued March 22, 1977.

The Intergovernmental Staff Forum met regularly beginning in November 1975. Study managers held additional meetings. There was a conscientious effort to assure that the studies would be comparative in format and that each would have answered the questions pertinent to each proposed use of the site. Each study manager with his departmental superiors, was made responsible for the research and the content of each study. An opportunity was given for each agency to review and discuss the work of the others prior to public release of the reports. Not all of the outstanding questions were resolved because of limitations of time and some lack of technical resources but it was hoped that the entire process would yield studies that would permit comparisons of the alternatives with respect to need, costs to implement and environmental and social impacts.

The "Intergovernmental Policy Steering Group" is expected to receive the reports, study them and make the final decision. Obviously that will be much easier said than done, since subjective value judgements will inevitably be brought to bear on the decision.

The entire three-year long effort at consultation and cooperation will be a costly one. Literally thousands of staff and supervisory hours are involved. Reams of paper will have gone into interim and final reports at considerable production costs. This site could be one of the most studied and reported on 200 acres in Ontario, if not in Canada.[2] A wise and mutually satisfactory choice still could justify the process.

1. On October 16, 1975, in response to a letter from the Chairman of the I.S.F. asking for formal TEIGA approval of the Study Program, the Ministry replied that, while it agreed with the need for the study, TEIGA was unable to participate as managers of the proposed Study No. 7. A subsequent arrangement for TEIGA input through the MTC did not work out as planned so no report was made.

2. In a Joint Committee — Toronto Airport report in October 1974 in a review of existing documentation, it is stated that in nine years there were some 17 major reports about the Toronto Island Airport.

PROVISION FOR PUBLIC PARTICIPATION IN THE CONSULTATION PROCESS

As an integral part of the Intergovernmental Staff Forum activities, provision was made for a public participation program. The I.S.F. selected Earl Berger as co-ordinator.

A common cause for complaint by the public has been that in any citizen participation attempts, participation has been called for after studies and reports have been completed so that the only public role left is acceptance or objection to an already formulated policy. To obviate this criticism, the Forum decided to give the opportunity for public input into the kind and extent of information desired from the studies being undertaken.

An early series of meetings and workshops was arranged. Study Managers undertook to outline the scope of their studies and to elicit from the public the questions to which they wanted answers in the studies before they would be satisfied that the options had been fully covered and a decision on a course of action justified.

There were some misunderstandings at the early meetings, some complaints that people were not being supplied with information, and some attempts to debate the substantive issues from private points of view without benefit of Forum study information. The public was not quite prepared to handle the innovation they had seemed to be asking for — i.e. an early input of questions to be covered in completed studies.

As the participation program progressed, with 103 private and group presentations received and circulated to participants, a growing number of genuine questions did surface. In later meetings, confrontation attitudes softened somewhat and many people seemed more willing to listen to different points of view.

Some demands for information were inevitably unrealistic. The total process did make study managers aware of the need to provide information in some areas not mentioned originally. This required additional work and partially accounts for the delay in the completion deadline.

The last public meetings were three workshops April 18, 19 and 20 and a final Public Conference May 13 and 14. On March 22 completed Forum studies and summaries were mailed to public participants so that they could prepare for this last series of meetings.

The "Intergovernmental Policy Steering Group" and their senior staffs were invited to attend the Saturday morning session May 14 to hear the discussion of general issues to give them first-hand knowledge of public attitudes on the decision which they will soon be expected to make. The two Ministers who attended did respond to questions from the floor, but quite justifiably did not commit themselves on the final decision. The Chairman of the Harbour Commissioners also attended; the Minister of State for Urban Affairs and the Mayor of Toronto sent representatives.

This public participation process was long and also expensive. It is too early to fully assess its contribution to the process of intergovernmental consultation and cooperation. On this relatively small but emotionally charged issue, a real attempt was made to elicit public input to governmental decision-making.

On August 15, 1977, Earl Berger transmitted his final report as participation Coordinator of the Intergovernmental Staff Forum to Mr. E. W. Griffith, Chairman of the Intergovernmental Staff Forum.

In his letter of transmittal, Mr. Berger stated that, "My reading of the public discussion is that the continuation of general aviation at the Island Airport would be

the most acceptable option; and that a number of major questions remain unanswered about the introduction of any of the other uses".

The report itself is a concise review of the progress of the Public Participation Program calling attention to the revised and expanded technical study program and the revised and expanded participation program that resulted from the response at the first and successive cycles of the public sessions.

Mr. Berger's conclusions:

1. The public participation process and discussion were adequate for the purpose of dealing with aviation uses (with some qualifications).
   The participation process was very largely a debate on transportation policy because "public participation seeks its own agenda" and public attention was centred on alternative aviation uses.
2. Non-aviation uses were minimally discussed due to this overriding focus on aviation uses. If it is decided to abandon aviation uses on the site it will be necessary to initiate public discussion on alternative non-aviation uses.
3. A description should be provided to the public of the formal process by which a decision will be arrived at regarding the airport site.
   "The public will insist and is entitled to direct access to the decision makers or, at a minimum, to the body making recommendations to the decision makers."

In a highly organized and admirably brief summary of the public discussion, Mr. Berger summarizes the points made for and against general aviation and STOL. There was recognition of the gaps in information made available but also recognition of the fact that many had not read the information that was available.

In the summary of non-aviation uses discussion Mr. Berger noted virtually no support for two scenarios: Marine Life Park and Parkland and Major Residential Community. There were supporters for the Pedestrian Community and Parkland and for the Regional Parkland scenarios. Opposition from aviation supporters tended to concentrate on the fact that housing could be provided on smaller sites in other locations, that there is already a substantial amount of waterfront parkland in process of development, that cost estimates for non-aviation uses are too low and that no pressing need has been established for non-aviation use whereas the site is the only place in Metro where aviation is possible.

In a "Coordinators Critique", Mr. Berger has contributed some valuable comments on the public participation process which should, if noted and followed, make another large undertaking in this area more productive.

III RESULTS OF THE STUDY ON NON-AVIATION USES

Non-Aviation Use Proposals

Choice of Alternatives

In preparation for the choice of alternatives for presentation as proposed non-aviation uses in the Toronto Island Study Program, Study Team 4, composed of members from the City Planning Board staff and the Ministry of State for Urban Affairs, issued a comprehensive Background Report in February 1976. In this report, they included descriptions of the site, its ecological and climatic features, its present buildings and current uses, its history and past plans, and a discussion of the governmental jurisdictions involved. They also described adjacent land uses. They presented the results of an extensive study of possible activities for the site including past and present proposals and a broad spectrum of other uses. In an Evaluation Matrix they listed six recreational uses, five institutional uses, six commercial uses and three housing alternatives. They chose ten criteria[1] for evaluating the uses and rated each activity as acceptable, poor, or unacceptable under each criteria. Six uses survived as worthy of further study — three recreational and three housing alternatives as major users of the site with the acceptance of some other uses in a supporting role to the major use.

In later study, the amusement theme park and the market-oriented housing community were eliminated as alternatives for presentation in the Toronto Island Airport Study Program and the final choice was:

A. Regional Parkland
B. Marine Life Park and Parkland
C. Major Residential Community of Mixed Income
D. Pedestrian Residential Community and Parkland

The housing and recreational options had obvious appeal given the needs of a growing metropolitan population. Such uses are easy to justify for any large, open area, centrally located, with proximity to a body of water and well serviced by a public transportation system, particularly when the site is publicly owned. The report of Study Team 4 consists of the presentation of a plan for development for each of the alternative uses. They call these alternative schemes "Scenarios" and number them A B C D.

The Continuation of public ownership is anticipated for all scenarios:

For A **Regional Parkland** — Direct purchase of the site (at a negotiated price) by Metro through the Metro Parks capital budget is anticipated. This would require resolution of the outstanding issues of ownership and those connected with various agreements and transfers.

Once transfer of ownership to Metro was accomplished the 215 acres would become an addition to the 7800 acres of parkland already administered by the Metro Parks Department and this site development would take its place in the regular budget of the department. If the airport site or part of it got a high priority rating there might be reasonably quick beginning of development. There would be no assurance that actual development would resemble the Scenario A as presented in the report and the time table would depend on the budget restraints of the Metro Parks Department.

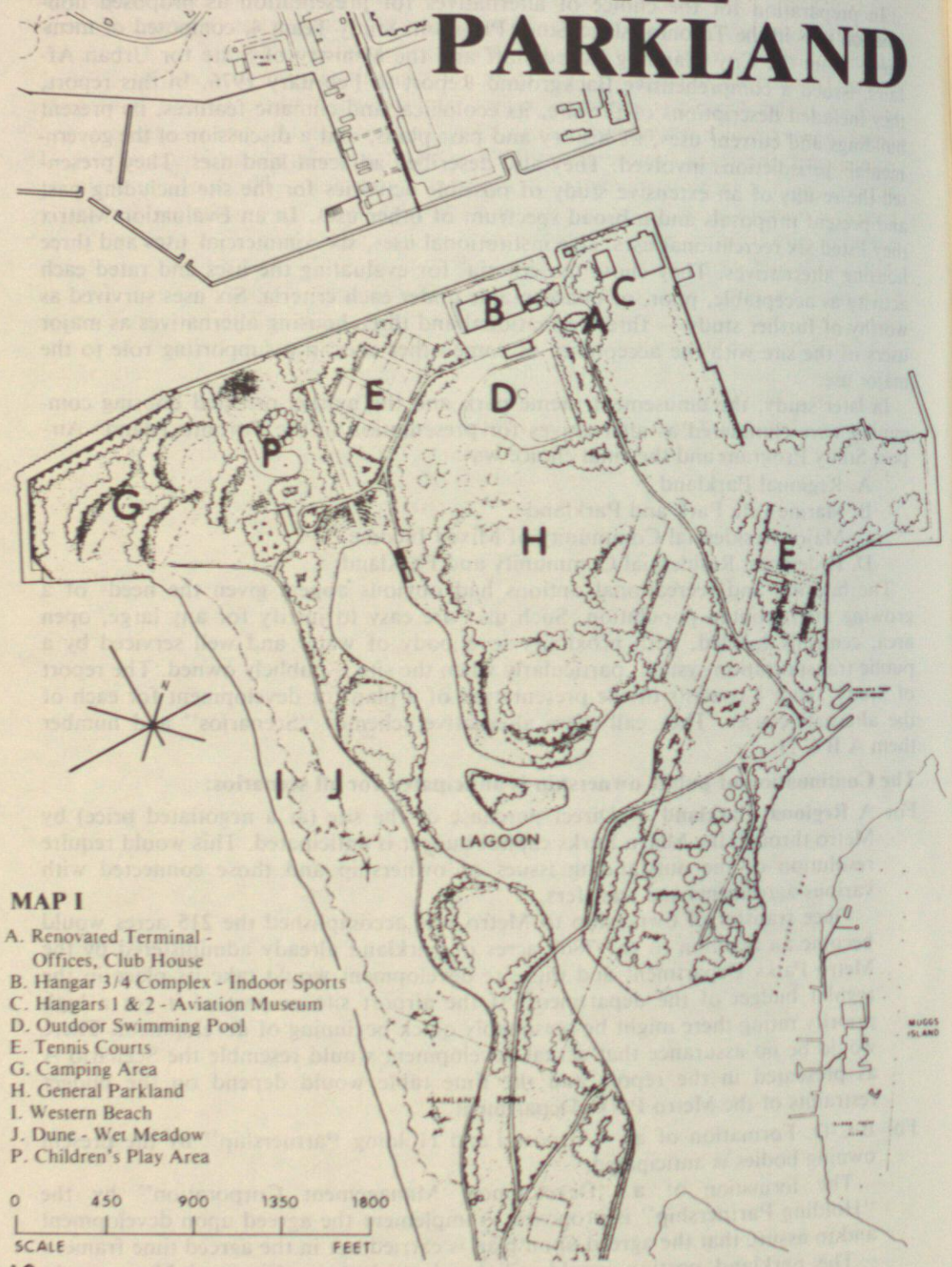
For B-C-D. Formation of an "Airport Land Holding Partnership" by the present owning bodies is anticipated.

The formation of a "Development Management Corporation" by the "Holding Partnership" is proposed to implement the agreed upon development and to assure that the agreed upon plan is carried out in the agreed time frame.

The parkland portion would still be dependent on City and Metro parks departments' cooperation as to plan and time frame. Perhaps prior agreements could be made.

1. A reproduction of the Evaluation Matrix will be found in Appendix B1, page 112.

A REGIONAL PARKLAND



MAP I

A. Renovated Terminal - Offices, Club House
B. Hangar 3/4 Complex - Indoor Sports
C. Hangars 1 & 2 - Aviation Museum
D. Outdoor Swimming Pool
E. Tennis Courts
G. Camping Area
H. General Parkland
I. Western Beach
J. Dune - Wet Meadow
P. Children's Play Area

0 450 900 1350 1800
SCALE FEET

10

From "Toronto Island Airport Study Program" Summary Report Series - 4 Page 10

Development

Geographically suitable as the site is for park use it would require considerable site development to make it suitable for parkland use. It is now flat, windswept and subject to flooding in some low areas. As the site is, playing fields, tennis and squash courts might be accommodated but little else outside of indoor sports facilities to be arranged for in present airport buildings. To make it into more suitable parkland Study Team 4 has proposed that the surface of the island be raised with fill made available from dredging a 25.6 acre lagoon in the centre of the site. This would make possible the creation of berms or raised areas on which to plant trees and other vegetation of a kind impossible to grow where the water-table is so close to the surface and would result in sheltered areas for children's playgrounds, picnic sites and a more varied topography. The lagoon would furnish protection for the dunes and wet-meadow areas, besides providing boating opportunities. (See Map I)

Phased Development

The Study Team proposes a phased development to spread costs over 10 to 15 years.

Phase I would concentrate on laying out the site with connecting roads and construction of sanitary sewers (as part of an Island sewer system). In addition expenditure could be concentrated on renovating the airport buildings for indoor sports, clubhouse and service facilities, and developing courts and playing fields on the contiguous land area. This would provide recreational facilities and begin to furnish some revenue from pay-as-you-play. The cost for this stage would be $1,580,000 (not including sewer costs) of which $148,000 could be chargeable to a proposed private aviation museum project and other concessions. This phase would concentrate activity in a relatively small area of the most accessible land and provide beach accessibility. Some protective measures for the sensitive dunes and wet meadow areas of the south west shore would need to be taken.

Phase II would be the expensive lagoon and centre site development. It would include access improvement through ferry and dock renovation and provision of additional parking on Bathurst, extensive grading and tree planting. The central portion of the site would be unusable for a minimum of one complete season. The cost of this phase would be $5,835,000 and of necessity would have to be completed in a limited time span.

Phase III would be required to finish implementing the plan as outlined, including a recreational swimming pool. The cost of this phase would be $1,802,000 of which $895,000 would be at Metro's expense.

The total cost of the completed project is estimated at $9,217,000 (in 1976 dollars) of which $1,055,000 would be chargeable to leaseable facilities such as a museum, the swimming pool, sports and food concessions. Metro's development cost would be $8,162,000 (exclusive of any charges for the site). Annual revenue is estimated at $310,000. The estimated **net** annual operating cost at full development would be $299,000 (1976 dollars).

Attendance

According to estimates of Study Team 4 annual attendance at the fully developed parkland site would average from 200,000 - 300,000. On a peak summer day 4,000

visitors could be expected with 3,000 - 4,000 more when the recreational swimming pool was completed. Winter usage would be much less but peak days of over 500 could be expected if skating were offered on the swimming pool, cross-country ski-trails were developed and a full program of indoor sports were offered. On the assumption that the pattern of Island park users would hold, 60% of the users would be from the Central Urban Area[1] - 30% from the city of Toronto, East York and York.

Access

Ferries are considered sufficient access service for this scenario. It is believed, in conjunction with the Harbourfront Park development, that sufficient mainland parking could be provided on Bathurst Quay and at other locations in the Harbourfront area with provision of a shuttle bus service. Improvements in ferry service could be made perhaps by moving the mainland dock to Spadina Quay and operating on an Inner Harbour line to docks at the present seaplane base rather than the direct route across the Gap thus reducing conflict with sailing use of the Gap. The "Ongiara" would need to be renovated to carry more passengers. An improved rationalization of the ferry services to all Island points could be possible. A pedestrian tunnel under the gap is considered as a future solution in the event attendance at the park site exceeds expectations.

Advantages claimed for Regional Parkland Project by Study Team 4

1. Would contribute to needed park space for the growing population of Metro Toronto (87% increase from 1957-1971 to 2 million and expected to reach 3 million by 2001).[2]
2. Would consolidate the recreational character of the Central Waterfront from CNE, Ontario Place and Harbourfront through the present Islands park.
3. The added 215 acres to the present 7800 acres of Metro controlled parkland would add a unique water oriented parcel attractive for immediate development for increased indoor sports activities, playing fields and courts in an attractive central location.
4. Would introduce another access point to the Islands Park and attract some excess traffic from congested areas.
5. Would provide an extension of trails for cyclers, joggers and walkers from the mainland.
6. Would provide increased opportunities for biological study of unique areas.
7. Would provide for increased boating activity to meet growing demand.

Some questions about the Parkland Proposal by Critics of the Proposal

The premise that there is overriding value in consolidation for recreational purposes of all the waterfront and islands from the Exhibition Grounds to the Eastern Gap assumes that:

1. Concentration rather than wider distribution of facilities best serves the parks and recreational needs of Metro's citizens.
2. The considerable Metro parks Department expenditures for this project in this location would be deemed a fair allocation by other parts of Metro where other parks developments would undoubtedly have to be delayed if this project went ahead.
3. Bringing additional recreational traffic into the Harbourfront area would help rather than hinder the plans for development of Harbourfront Park.

The plan assumes a 10-15 year commitment of Metro Parks capital budget to a total of $8,162,000 (exclusive of acquisition costs) which means an annual debenture issuance of $545,000-$820,000 **plus whatever acquisition costs are negotiated,** ultimately to be covered by tax revenues.

The present capital works program[3] of the Metro Parks Department already commits 32.78% of its total budget (1975-1979) of $41,830,000 to the Islands Park. The additional $8,162,000 commitment, plus acquisition costs would, no matter if spread over 15 years, increase annual outlay significantly. This would probably mean expenditures in other areas of Metro would need to be postponed unless the total Metro Parks budget were greatly increased.

With the large, unsolved problem of Zoo financing a priority item on the Metro Parks plate (1975-79 capital works $55,489,000) it is legitimate to ask whether it is timely to take on a 10 to 15 year development on the Airport site.

Metro is also deeply involved in the regional Conservation Authority where Metro's share of most projects is assessed at 50%. The 1975-79 Capital Works Programme for the Metro Toronto Conservation Authority includes 5 projects related to the Waterfront development and the Eastern Headland of which Metro's share is $23,240,000.

The Regional Park Plan as outlined envisages a relatively modest first phase development. This means an under utilization of the whole site for sometime. It creates a problem of protection of the dunes and wet meadows since there would be no natural barriers to visitors until the lagoon is dredged. No new boating facilities would be added until formation of the lagoon. In fact a great deal of what makes the project attractive is dependent on the second phase of development which is also the expensive phase.

In view of Metro's already heavy commitments to Parks, Conservation Authority and Zoo it does not seem realistic to believe that there is room for early priority of the Airport site, certainly beyond Phase I. The activities planned for phase I are not water-oriented and could be provided at many other Metro sites perhaps better serving a wider range of metro citizens.

As long as no significant building complex is put on the site the option remains of making it into Regional Parkland at sometime in the future when other projects now in process are completed and more fully utilized.

1. i.e. south of Highway 401 between the Humber River and Victoria Park Avenue.

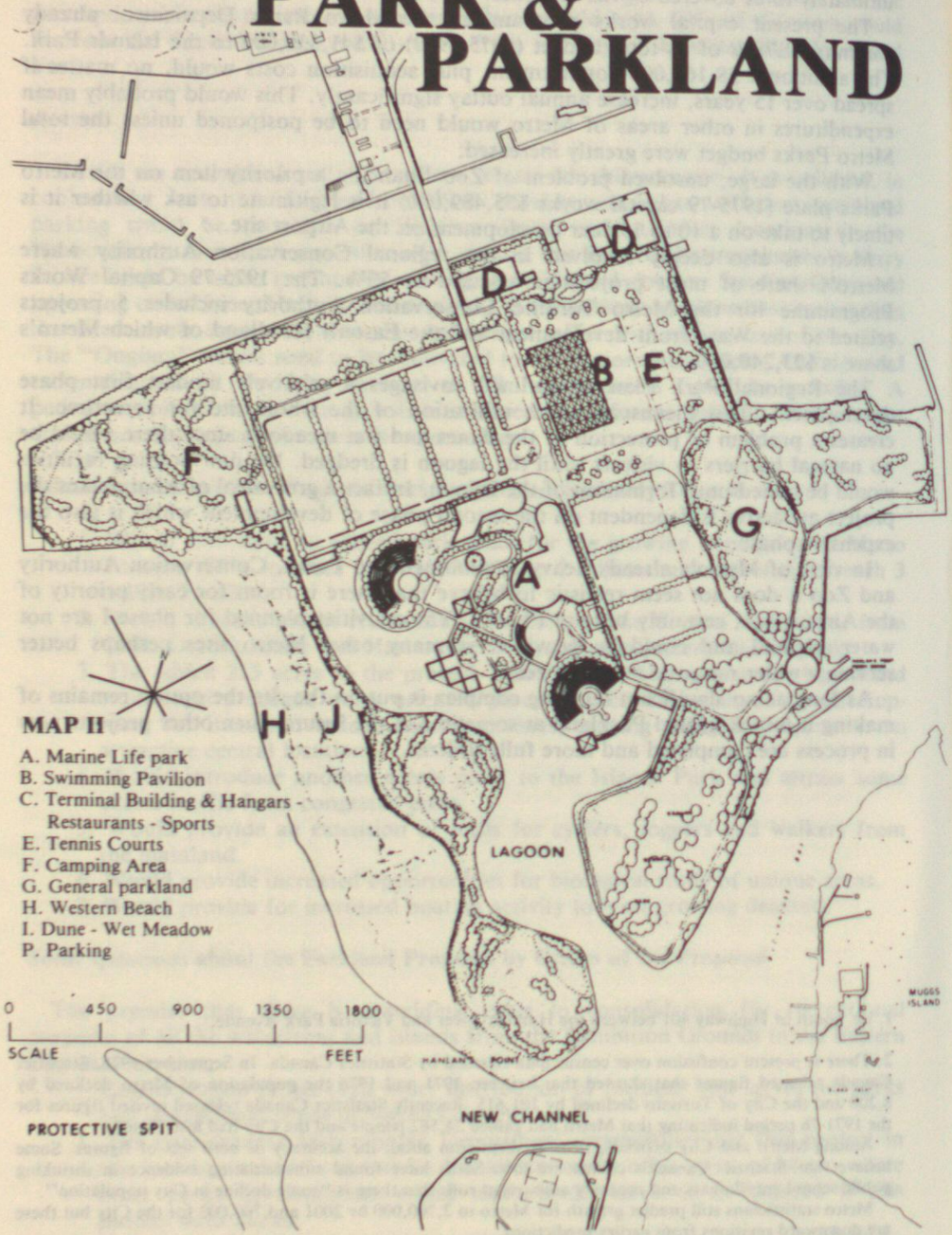
2. There is present confusion over census data released by Statistics Canada. In September 1976, Statistics Canada released figures that showed that between 1971 and 1976 the population of Metro declined by 8,208 and the City of Toronto declined by 101,615. Recently Statistics Canada released revised figures for the 1971-76 period indicating that Metro had gained 34,562 people and the City had lost 79,468.

Among Metro and City officials, there is skepticism about the accuracy of both sets of figures. Some believe that Statistics Canada's counts are low. Some have found substantiating evidence in shrinking public school enrollments and property assessment rolls that there is "some decline in City population".

Metro statisticians still predict growth for Metro to 2,700,000 by 2001 and 760,000 for the City but these are downward revisions from earlier predictions.

3. The Municipality of Metropolitan Toronto: Five Year Capital Works Program 1975

B MARINE LIFE PARK & PARKLAND



MAP II

A. Marine Life park
B. Swimming Pavilion
C. Terminal Building & Hangars - Restaurants - Sports
E. Tennis Courts
F. Camping Area
G. General parkland
H. Western Beach
I. Dune - Wet Meadow
P. Parking

From "Toronto Island Airport Study Program" Summary Report Series 4 page 12.

This scenario plans for maximum use of the island airport site by revenue producing recreational activities. (See Map II)

It requires:

1. Bridge access and on-site parking for approximately 4,200 cars.
2. Construction of a new channel to the southwest through Blockhouse Bay because the bridge would prevent clearance of many boats now using the gap.
3. Dredging of a 29 acre lagoon in centre site to provide landfill for readying the site, to furnish more boating activity space with connection to the inner harbour, and to protect the sensitive dune and wet meadow area on the south from overuse.

The primary activity would be an indoor aquarium and ampitheatre connected with outdoor arenas on the lagoon to accommodate 4 or 5 half-hour animal performances of killer whales, sea lions, walruses, seals and dolphins and to furnish exhibition space for presenting marine life environments. (25 acres performances area - 32 acres parking, 2,000 spaces paved and 1000 on grassed area on north edge.)

The secondary activity would be a recreational swimming pavilion including as well as the swimming pool, a wave pool, exercise club, restaurants and snack bars, entertainment, and perhaps canals, water sprays and vegetation. An outdoor landscaped sunbathing and sports area would be provided, accessible from the pool. (9 acres + 10 acres parking - 1200 spaces).

Tertiary activities would include a camping area at the northwest corner of the site, indoor sports housed in the hangar spaces, outdoor tennis courts and playing fields. Beach access would be from the north end only and controlled from the pavilion on the campsite.

The new channel would separate the Hanlan's Park area from the rest of Centre Island park and integrate it with the airport site instead. The lagoon entrance to Blockhouse Bay would make Hanlan's Point part of a peninsula containing the beach, the dunes and wet meadows making controlled access simpler. It would be necessary to build a protective spit off Gibraltar Point to protect the new channel from rough water and siltation. This added park space would compensate for loss due to the channel and the lagoon entrance.

The total allocation of activity areas:

Marine Life Park (including parking)	57 acres
Recreational Swimming Pavilion	9 acres
Terminal Building	2 acres
Indoor Sports in Hangars 1 & 2 and the 3/4 complex	6 acres
Tennis Courts	4 acres
Camping area	21 acres
General parkland (including 10 acres parking)	16 acres
Western Beach	8 acres
Dune/Wetland	16 acres
Lagoon	29 acres
Bridge and road allowances	3 acres
	215 acres

Development

To retain public ownership of the land it is proposed that an Airport Land Holding Partnership be formed by the present land owning public bodies (the

T.H.C., the City and the Federal Government.) This Holding Partnership would then form a Development Management Corporation which would undertake the extensive site preparation, arrange commercial leases for the two main project sites and possibly other smaller commercial ventures in the present airport buildings. (It is thought probable that the Metro Parks Department would wish to assume responsibility for the sports complex as well as the camping and the general parkland areas for administration as a Metro Park.) The Corporation would allocate shares of the site development costs to each developer. Each developer would be responsible for building his own facilities.

Phasing

Study Team 4 proposes development in two phases. The initial phase would of necessity be major and rapid to permit early returns to the owners. The new channel, the lagoon dredging, scarification of present runways, spreading of fill, and construction of the new bridge over the Western Gap, all expensive projects, would need to be completed before the park could be opened for use, although much of it would be simultaneous with the construction of some of the Marine Park facilities. Sixty-five to seventy percent of the Marine Park facility could be constructed in phase I which would accommodate approximately the same percentage of projected ultimate attendance.

In phase I most of the Indoor sports facilities, picnic areas, playing fields and tennis courts would be completed as well as restaurant, snack bar, clubhouse facilities in the Terminal Building.

In phase II the Recreational Swimming Pool would be constructed and Marine Life Park facilities completed. Preparation of the camping area, construction of boating pavilions and further site development would take place in this phase.

Total development time — minimum 5 years — maximum 8 years.

Site Organization (See Site Plan Map II)

The site plan is organized around a traffic circle from the bridge roadway at almost the centre of the site. Entrance to the northeast corner of the Marine Life complex would be at this circle on the west side and to the Swimming Pool on the east side. Parking for 3000 cars for the Marine Life Park would be to the north from the edge of the complex to the Western Gap. Parking for 1200 cars for the swimming pool and other sports activity would be to the east side along the extended roadway with turn-around loop at the edge of the Hanlan's Memorial Park area. The intensive sports use areas would be concentrated in the edges of the northeast quadrant in the present airport buildings and along the eastern edge of the site. This would leave the southeast and southwest edges for picnicing, beach and camping area. This plan serves two purposes: 1) it effectively separates the intensive use area from the less intensive activities 2) it makes easier the division of administration between the commercial activities and those of the Metro Parks Department.

The plan takes some liberties with the Metro Toronto controlled Hanlan's Memorial Park by integrating it into the plan for the Airport site though such integration is dictated by the lagoon and the new channel. It does to some extent complicate the negotiations for the set-up of the Development Management Corporation by adding a 4th owner of the land involved.

Construction Costs (Estimated in 1976 dollars)

	Public	Other	General
General Site Development (including services)			$4,391,000**
Access, Channel and Spit			7,550,000**
Marine Life Park		$13,795,000***	
Swimming Pavilion		10,030,000***	
Terminal Building		178,000*	
Indoor Sports		520,000*	
3/4 Hangars		88,000*	
1/2 Hangars			
Camping Area	$626,000		
General parkland	2,427,000		
	$3,098,000	$26,611,000	$11,941,000

Total Cost of entire project $41,650,000

*User-pay activities — could be private leases or Metro Parks Dept. leases
**To be prorated to each user on a sharing formula
***Long-time commercial developer leases

Minimum public cost $3,098,000 preparation cost
2,700,000 development and access share
$5,798,000 Total

Added public cost (If Metro Parks opted for operating the sports complex.) $ 786,000 preparation cost plus additional development and access share

For details of anticipated revenues, see Appendix B2, page 112.

Necessary Support

Undertaking a project of this magnitude would need strong public support for it would require:

1. Long term commitment to cooperation by the governmental bodies involved.
2. Prior planning approvals to enable long term lease commitments and guarantees with the major facility developers.
3. Leases of 40 years or at least 20-year leases with two ten-year options to attract reputable and highly skilled facility developers who would undertake the risks of the considerable investment.
4. Large site preparation costs before any returns would be forthcoming thus requiring guaranteed financing arrangements for an initial time period.

There would be probable delay in implementing other Metro parks developments in other places. The total cost to the Metro Parks Department would be less than that for the Regional Park alternative ($8,162,000 exclusive of acquisition costs). The minimum costs in this project would be $5,798,000 for far less acreage and in a more demanding time frame. Without strong public priority for this development on this site competing projects for Metro Parks dollars might well develop strong and effective opposition to the implementation of this project.

With the success of the C.N.E., Ontario Place, and the Science Centre there is reason for believing that a commercial recreational venture on the airport site would

be profitable. But it is worth noting that the Metro Zoo, which is another project entailing a huge investment, is in financial difficulties in spite of attracting 1.15 million visitors in 1975.

Almost 12 million dollars would have to be invested in site development, access, channel and spit before commercial leases could become effective. Proponents of this project obviously believe that profitable leases can be negotiated with experienced developer-operators who in turn must believe in the strong probabilities of a profitable operation. But the fact remains that the present site owners (all public bodies) would have to risk an initial 12 million dollars plus a Metro Parks Department commitment to another $3,098,000 on the judgement that the project would be successful.

The project as outlined probably represents the most intensive recreational use possible on the site. But it also represents a change of policy in the Islands park uses from the present open parkland, nature study and the quieter forms of recreational activity in an essentially non-commercial context. It removes the Hanlan's Memorial park from the present Islands park and attaches it to the intensive area use. Purportedly the park uses would be retained but with the improved access it would undoubtedly experience intensified use and its character would be altered.

Advantages claimed for this project by Study Team 4

1. Would consolidate and reinforce the recreational character of the Central Waterfront and enhance the entire area as a tourist attraction (C.N.E., Ontario Place, Harbourfront, C.N. Tower and the Toronto islands Park)
2. While summer use would still be greatest the new facilities would offer many winter activities and add substantial year-round activity to the whole area which now has a predominantly summer use pattern.
3. A Marine Life Park complex would serve educational and research as well as entertainment functions. It might be developed into a major Canadian aquatic research centre.
4. The new channel would
   a) Limit direct pedestrian and vehicular access to the airport site
   b) Would provide an alternative access to the inner harbour and increase the capacity for boat movements
   c) Would provide additional protected water area for boating and mooring. Would replace loss of mooring space in Blockhouse Bay with increased spaces on the lagoon edges and channel walls.
5. The protective spit
   a) Would replace park area taken from Hanlan's park by the channel
   b) Would provide new beaches to replace those reduced by the spit construction
6. Would provide access to the very desirable western beach but would permit controlled use.
7. Would effectively protect the sensitive dunes and wet meadows from overuse.
8. Would introduce camping site facilities for group activities.
9. Would provide needed playing fields and court facilities as well as indoor sports accommodation.
10. Would provide substantial public income from the use of the site.

Some questions about the Marine Life Park and Parkland Proposal by Critics

The premise that there is virtue in the consolidation for recreational purposes of

Scenario C. Major Residential Community

This project as presented by Study Team 4, proposes the maximum number of housing units deemed compatible with:

1) Reasonable density for family housing and diverse life-style.
2) The constraints on traffic imposed by the capacity of the Lakeshore-Bathurst intersection

in order:

1) to offset costs of development and access
2) to support a complete range of community services.

The proposed mix of population attempts to reproduce the typical mix of City of Toronto households and to meet city guidelines for provision of new housing namely 35 - 40% of units suitable for families with children, 50% of the units for low and moderate income households (which means 50% subsidized by AHOP, N.H.A., senior citizens, non-profit).

By clustering terraced housing family units of 3 to 5 storeys and concentrating non-family units and commercial activities in slightly higher rise (8 storey) structures in the terminal-hangar area and along the southwest side of the main street facing the southwest side of the lagoon it is possible to get high densities in the built-up areas (5,000 units on 76 acres — 65.8 units per acre). This would free acreage for the lagoon and local park areas and also retain some areas of Regional parkland: (1) the western beach (2) dune-wet meadow area to the west (3) general parkland to the south-east. The parkland area is contiguous with the Hanlan's Memorial park which would be made a part of this site by the construction of the new channel to the south. (See Map III).

Acreage allocation for proposed community:

Resident Community		**Acres**
Housing (5000 units at 65.8 per acre)		76
Schools (3 Junior, 1 Junior-Senior, no secondary)		16
Community Facilities (including 98,000 - 123,000 sq. ft. Commercial)		3
Roads		31
Bridge Ramp		1
Local parkland		22
	Total	149
Lagoon		14
Regional parkland		52
Western Beach (8 acres)		
Dune-Wet Meadow (16 acres)		
General (28 acres)		
		215 acres

Bridge, New Channel, Protective Spit

Because of the traffic generated by a community of this size Study Team 4 deems bridge access to the island necessary. Because no bridge higher than 65 feet is considered feasible (and a 45 ft. bridge is considered preferable) given the limitations of access space and weather factors, a large percentage of the pleasure boats now using the western gap would be unable to clear[1]. An alternate new channel would need to be constructed through Blockhouse Bay to provide small boat access to the

Inner Harbour. All commercial shipping would have to use the Eastern gap. The new channel would have to be protected from siltation and high waves by an amoured spit off Gibraltar Point. (See Map III). This spit would add enough parkland to compensate for the area taken from Hanlan's by the new channel, and new beach areas to replace that taken in building the spit.

Lagoon

In order to enhance the water-orientation of the community a small lagoon (14 acres) is proposed through the site parallel with the main road, Bathurst Street South. This would provide small boat access to Blockhouse Bay. The lagoon would be bridged twice to provide general site access.

The size planned for this lagoon was no doubt dictated by the need for housing space but it is in fact less than half the acreage proposed for the lagoon in Scenario B and only two-thirds the size proposed for the much smaller residence community in Scenario D. As a visual focal point to emphasize water-orientation it would serve its purpose. It would probably be less adequate in meeting the boating demands of 15,000 people with its small area and only one small marina at the southern end.

Proposed Housing Mix

According to Study Team 4, the most profitable use of the Island Airport site for housing would be in market housing.[2] In a purely market oriented project it is estimated that 3500 units could be constructed 1500 of them luxury units (maximum for the existing demand) and 2000 conventional units.

But this would generate traffic exceeding the capacity of the Bathurst-Lakeshore intersection.

Study Team 4 hoped to solve the traffic problem by adopting a mix of households similar to that characteristic of the City of Toronto and hence proposes a unit allocation as follows:

Type	Market	Assisted	Total	Percentage
Bachelor	400	350	750	15
1 Bedroom	650	600	1250	25
2 Bedroom	650	650	1300	26
3 Bedroom	600	600	1200	24
4 Bedroom	200	300	500	10
Total	2500	2500	5000	100

Because there would be fewer car owners in the assisted housing category (and hence the increased use of public transportation) the numbers of garage spaces could be reduced to 3200 which would bring expected traffic within the intersection capacity (1300 per hour).

The Metro Toronto Planning Dept. Team charged with responsibility for Technical Study 6 "Access Alternatives" in the Toronto Island Airport Study Program does not quite share the optimism of the study team for Non-Aviation Uses that this housing mix would achieve the transit modal split of 52% at high peak hours required to prevent congestion at the Bathurst-Lakeshore intersection.

While granting that transit usage would "certainly be encouraged", Study Team 6 gives the following reasons for believing that this rate will not be achieved on a regular basis:

"1. The majority of lower income residents probably would be employed in non-downtown areas and as a result, may not be inclined to use public transportation.
2. A substantial number of middle to high income residents would likely own and attempt to use autos regardless of the level of transit service to the downtown area."

In addition Study Team 6 believes that "even in the unlikely event that the required modal split is reached, congestion would still occur at the intersection since the northbound approach would be at its capacity. As a result, a peak hour transit modal split of greater than 52% must be attained to reduce congestion to a more acceptable level and to increase the efficiency of the access system to a level that should be expected for a community only 2 miles from the heart of downtown. In view of these problems, a significant effect on the marketability of units on the airport site could be expected. **From an access point of view, it would be desirable to reduce the size of the development."**

The expected population in the proposed housing mix:

type	Market Total Population	Children	Assisted Total Population	Children
Bachelor	480	—	420	—
1 Bedroom	1170	—	960	—
2 Bedroom	1870	(520)	2080	(780)
3 Bedroom	2340	(1140)	2700	(1500)
4 Bedroom	980	(580)	1800	(1200)
	6790	(2240)	7960	(3480)

Overall population 14,750 (including 5720 children)

Schools

To accommodate the anticipated child population Study Team 4 proposes:

— building 3 new junior schools for 500-600 students each (48,000 sq. ft. each).

— renovating 52,000 sq. ft. of the Hangar 3/4 complex and adding 55,000 sq. ft. of new classroom space to provide a junior/senior school for 950-1140 students. This school would also serve as a "community school" for adult classes, meetings, crafts and recreation. This school would help to reinforce the "community centre" atmosphere in conjunction with a renovated Terminal and Hangars 1 & 2 areas for commercial and community services, library, commercial offices, medical and personal services, community groups.[4] It is anticipated that day care centres would be located throughout the community close to schools and convenience stores.

Locating 2 of the 3 new schools on the edge of the dune/wetland, but sited so that some of the sensitive area is protected, would allow incorporation of nature study of the area in the school program.

Estimated cost of the 4 schools:	
Land costs (16.1 acres at $100,000)	$1,610,000
Site preparation (prorated)	280,000
Land development (prorated)	1,782,000
School construction	5,806,000
Total	$9,487,000

If one school is made a separate school this cost would be shared by Toronto Board of Education and Metro School Board (at a 3:1 ratio).

Site Preparation

As with other scenarios it is proposed to raise the land level of the airport site 3 to 4 feet to provide reasonable grade and cover for piped drainage systems. (Present elevation of site is 250.5 ft. Normal lake level is 245 ft. but a high water level of 248.2 was recorded in 1973).

In order to facilitate revenue return, the land development phase would have to be completed as quickly as possible. A likely activity list for the two suggested phases of development is as follows:

Phase I.
1. Provide construction access
2. Put in trunk services
3. Scarify runways
4. Excavate lagoon and spread land-fill
5. Start residential construction
6. Begin new channel excavation and protective spit
7. Renovate existing buildings
8. Start bridge construction

(Approximately 1 year site preparations before residence construction could start).

Phase II.
9. Finish bridge and residential construction
10. Develop Regional parkland, finish landscaping.

(Total time for entire project 5-7 years)

Public Transportation

With bridge access available regular T.T.C. service is expected to be provided. Exact routes and time schedules would have to be determined by T.T.C. as with any other extension of service to a new neighbourhood. The study team obviously laid out the site to permit easy access by residents to the main roadway down the centre of the site. (See Map C). This suggests that buses might only need to run the length of Bathurst Street South to a loop at the edge of Hanlan's Park.

Commercial facilities

Most of the stores would be located in the Terminal / Hangar area on the ground floor of apartment buildings, with 3 or 4 convenience stores located throughout the community.

The allocation of commercial space:

	Area in sq. ft.
Food (supermarket, delicatessen, bakery)	40,000-45,000
Convenience Stores (3)	9,000-12,000
Restaurant, snackbar, cafe	5,000- 8,000
Variety, hardware, household goods	15,000-15,000
Clothing/Shoes	8,000-12,000
Drugs	6,000-10,000
Services (post office, beauty, cleaner, laundromat, barber)	5,000- 8,000
Bank	5,000- 8,000
Service Station	5,000- 5,000
	98,000-123,000

This suggests a non-competitive shopping picture probably not important to those with car access who could patronize mainland stores but likely penalizing those restricted to the community for regular shopping. This of course means those without cars and senior citizens (who would be allocated only 1 garage to each 6 units). Many of these people would be less able to utilize public transportation to do competitive shopping on the mainland.

Merchants would probably be faced with some additional costs in delivery of supplies (bridge tolls, the isolation of the community) which would have to be passed on to customers. So long as any higher prices did not exceed the cost of a special public transit trip to patronize mainland stores they would no doubt be paid. But a degree of non-competitive shopping would have to be accepted by some as part of the price of living in this community.

Estimated Costs and Revenues for Scenario C

Construction costs

	Public	Other	General
Site Preparation			$ 2,936,000
Land Development (including site services)			10,964,000
Less CMHC Servicing Grant			(447,000)
Access, Channel and Spit, new dock			7,550,000
A & B housing (5000 units including 3200 parking spaces)		$105,245,000	
Community Facilities	$ 793,000		
Commercial		1,700,000	
Schools	5,806,000		
General parkland	1,422,000		
Local parks	645,000		
	$8,666,000	$106,945,000	$21,003,000

The same general framework is contemplated as for Scenario B, i.e. formation of an "Airport Landholding Partnership" by the present owners (The City, T.H.C. and the Federal Government) who would in turn form a "Development Management Corporation" which would arrange for the site development and the leasing of land to developers and leasing or sale of land to appropriate public agencies.

The costs of site preparation and land development would be prorated to users. Actual transfer of land for parkland, parks and public rights-of-way would be free but each would pay its share of the preparation costs. The Board of education, and other public agencies establishing community services would be charged for their land plus their prorated share of preparation costs, either by outright sale or lease arrangements.

The "Development Management Corporation" would be as is customary in Ontario, responsible for the capital required for trunk and local sewage services, bridges, roads, sidewalks and water supply.

Other public services would be furnished to this community as they are to any

other new community by City, Metro or Provincial departments.

Management of the housing construction would be complicated by the necessary applications for assistance for housing among the various Federal, Provincial, Metro, and City agencies responsible for providing aid. Aid to community services would have to be arranged for, such as provincial grants for community centres (up to $75,000), for day nurseries (up to 50% of new construction and 80% of renovation costs), community health services (up to 66% of approved construction costs), Wintario grants and private grants.

Building of housing would have to be phased to assure a ready market for the units built. One advantage of the development management corporation would be that with such a single management there could be a continuous, planned construction that would assure steady development of the site as rapidly as is profitable. The study team believes that 5,000 units could be built and marketed in the time frame of 5 - 7 years with schools and other public services phased in as needed. (For details of anticipated revenue, see Appendix B3, page 115).

The Case for Housing on the Airport Site, as seen by Study Team 4

The demand for housing in the Metro region over the next 10 years has been estimated by the Metro Housing Department to be 400,000 - 600,000 units. The City's recently adopted official plan calls for the construction of 40,000 units (10% of Metro's needs) by the end of 1985.

—30,000 of these units should be provided in the central area (75% of the city units).

—50% of the units should be suitable for low and moderate income households with at least 25% suitable for families with children.

—Recent experience (1974 & 1975) has demonstrated that the City cannot ensure that such housing will be created by the private sector under prevailing conditions.

The Housing Department's difficulty in finding appropriate sites for assisted housing in neighbourhoods suitable for children makes the airport site a major opportunity.

—it is publicly owned.

—it is large enough to permit a comprehensively planned complete community with a mix of housing types, that could accommodate 5000 units or more than 1 year's housing target for the whole city.

—its central location is ideal to meet the goal of added housing in the central city area.

The Airport site itself is an extremely attractive setting for housing development with its water amenities and its proximity to central area employment, entertainment and shopping.

Housing on the site would add a stabilizing influence in the long stretch of waterfront development now largely committed to recreation and entertainment.

It would add year-round use to an area presently predominantly used in summer.

Some objections to use of the airport site for housing by some critics of this proposal

It would permanently commit this unique site to a routine use and eliminate a now prized open space. As a large building complex, it would have the effect of further removing the inner city core from the lake front.

It would create an enclave community requiring a complete infrastructure and provision of a range of community services for its exclusive use while duplicating services already available in nearby mainland neighbourhoods.

A sizeable residential population would threaten contiguous island park areas with overuse or at least an overwhelming use by resident citizens to the disadvantage of visiting users.

It would create traffic problems particularly at the 8 o'clock egress and the 5 o'clock ingress when residents of some 5,000 units would converge on the single roadway and need to be integrated into already busy roadways and transit lines of the mainland. There would be heavy addition of service vehicle traffic to supply and service the community.

Despite the charm of its water-orientation it is not a particularly salubrious site for year-round housing. The site is exposed to high winds, pleasant in summer as cooling breezes but posing heat-loss and discomfort problems in winter.[5] With 50% of the housing subsidized to assist lower income residents it seems ironic to put the housing where their fuel bills may be extraordinarily high.

No matter what the planned population mix at the outset, as the community matures there are bound to be changes in the number of children and their ages which will affect the use to capacity of the school facilities provided.

Only arbitrary tenancy provisions could maintain a stable age distribution to accommodate to the facilities. With empty classrooms already a problem in many City areas, building new schools in an area highly susceptible to the same problems could be costly for the taxpayers.

It would seem especially prudent to supply assisted family housing in areas of the City where excess classroom facilities exist and where City infrastructure is already in tact. It would undoubtedly be more difficult for the City Housing Department to find and utilize the smaller sites available throughout the central City. But it should result in considerable savings in the provision of educational, social service and City facilities.

The general housing problem can be appreciated by comparing available vacant land to the 40,000 units called for in the recently adopted City official plan. Thirty thousand of these units are to be in the central area with 50% of the units for low and moderate income housing (which means they must be subsidized) with at least 25% for families with children.

In Metro in 1971 there were 27,900 acres of undeveloped land, of which 11,000 acres are designated industrial and 13,672 acres designated residential. But in Metro's Central Area Planning District,[6] a detailed breakdown of available acres indicates a highly built-up downtown area.

1971 — Central Area Planning District 1 of the Metro Planning Department.[7]

Planning District	Acres Underdeveloped Land	Acres Designated Residential
1a	16.4	1.5
1b (Midtown)	38.1	34.9
1c (Don)	39.3	9.4
1d (Spadina)	25.9	
1e (Downtown)	117.4	.6
1f (Central waterfront) West)	391.5	
1g (Central Waterfront East)	0	
1h (Island)	628.6	46.5
Total for District 1		

The plan to add to the housing stock both in residential buildings and mixed use residential and commercial buildings in downtown and midtown Toronto is part of the

plan of keeping Toronto a place for people to live, to encourage a mix of business, industry, cultural institutions and family living that will preserve a healthy environment for the support of the regional functions of the Metropolitan centre.

Metroplan[8] points to serious problems related to the provision of housing in the central areas. Creation of additional housing on land currently designated for industry could conflict with the objective of maintaining a wide variety of jobs in the central area and particularly adversely affect continuing a desired level of "blue-collar" jobs. Redevelopment and replacement by apartment buildings of older housing has tended to result in smaller units not suitable for families and diminished the already small proportion of private, low-cost housing.

But these changes have resulted from the demand generated by the change in the central area employment structure and are likely to continue to be in conflict with the City's desire to preserve family housing. The construction of low and moderate income housing under the present construction cost conditions will require public subsidy and it may be difficult to justify expenditures of this type on such expensive land where costs involved in providing support services such as schools and parks would also be high.

Infilling, remodelling and reconstruction in some older residential areas where city infrastructure is already in place and where there is presently an oversupply of school facilities could, with careful planning, provide many new units while avoiding some criticism of subsidizing some portion of the new construction.

A reassessment of existing vacant land not now zoned residential could result in provision of some additional sites without eliminating valuable industrial land that will actually be utilized for industrial purposes.

Such a process will have to be initiated if the City is to reach its housing. goals. Before committing the island site to the development of a new community which at best would meet a fraction of the stated goal, these possibilities should be explored as a more practical use of housing funds.

1. With a 65 foot high bridge — 37%. With a 45 foot high bridge — 77%.

2. i.e. non-subsidized housing built for sale to private individuals in price ranges that the market would absorb.

3. Toronto Island Study Program - Technical Study 6 - "Access Alternatives" page 90.

4. For a more complete listing of the community services that would probably be required see next section of Scenario D, Pedestrian Community and Park, page

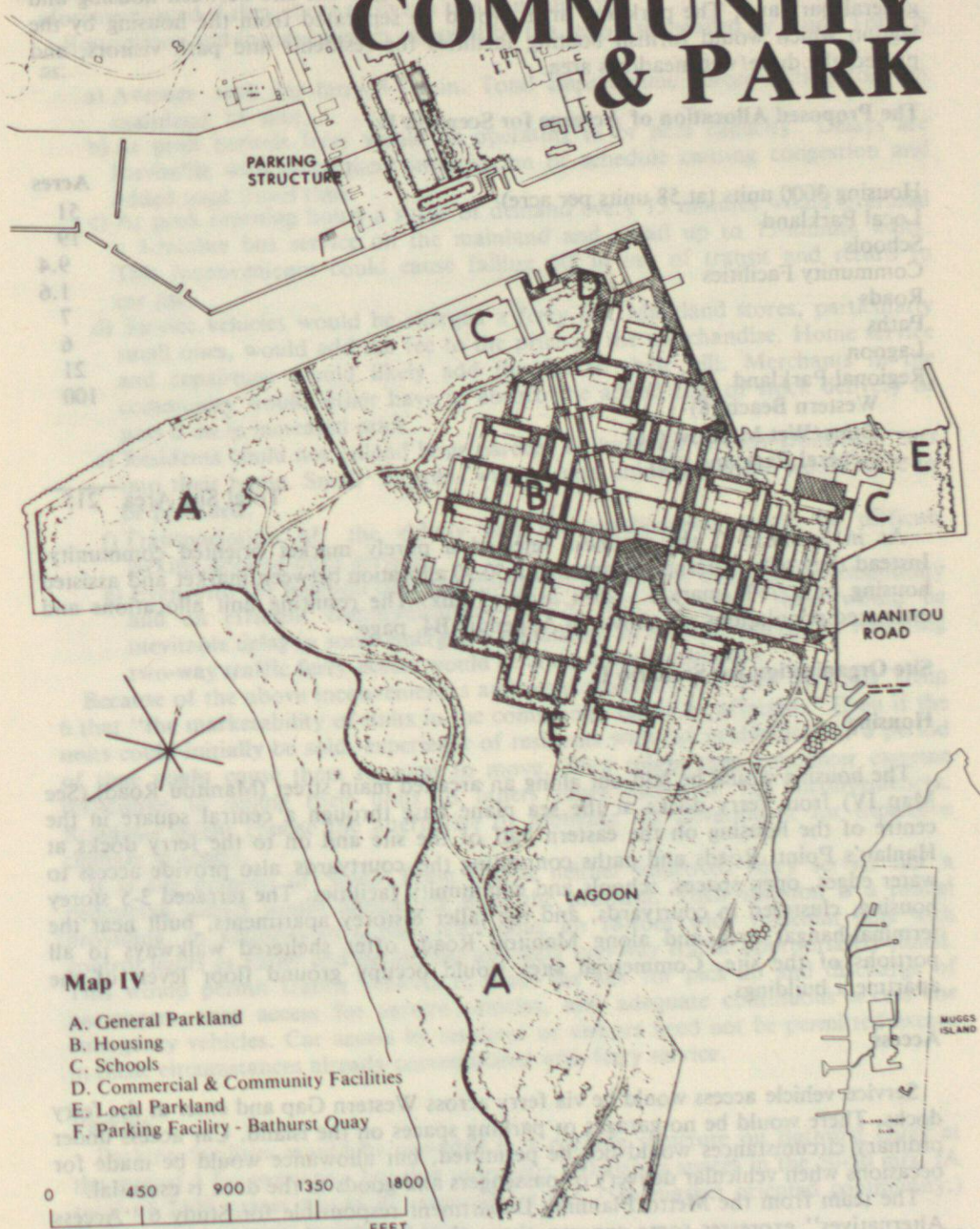
5. This is borne out by the planners who presented the proposed plans for the alternate housing uses. Streets are oriented S.W. to N.E. and housing units are arranged to provide wind shelter with planting to supplement in exposed areas. Sheltered walkways are planned between units. The main street is made an enclosed arcade in the pedestrian community plan. Strangely enough, presumably to keep down construction cost estimates, no provision is made for the extra insulation which would seem to be indicated to a fuel conservation conscious society for a site so exposed to high winds. High fuel consumption is likely to be the result.

6. Metroplan, "Projections to 2001, Population, Housing, Employment", prepared by Research Division, page 54.

7. Figures obtained from the Metro Planning Department Research Office.

8. Metroplan "The Central Area and Sub-Centres", prepared by Long Range Planning Division, pages 36-37.

D PEDESTRIAN COMMUNITY & PARK



Map IV

A. General Parkland
B. Housing
C. Schools
D. Commercial & Community Facilities
E. Local Parkland
F. Parking Facility - Bathurst Quay

From "Toronto Island Airport Study Program" Summary Report Series - 4 page 16.

Scenario D. Pedestrian Community and Parkland

This Scenario proposes an almost equal division of the site between housing and general parkland. The parkland areas would be separated from the housing by the lagoon which would furnish boating facilities for residents and park visitors, and protect the dune/wet-meadows area.

The Proposed Allocation of Acreage for Scenario D

	Acres
Housing 3000 units (at 58 units per acre)	51
Local Parkland	19
Schools	9.4
Community Facilities	1.6
Roads	7
Paths	6
Lagoon	21
Regional Parkland	100
Western Beach (8)	
— Dune/Wet Meadow (16)	
— General Parkland (76)	
Total Site Area	215

As in Scenario C the planners rejected a purely market oriented community. Instead they offer alternative mixes of a 50-50 allocation between market and assisted housing or a 75% market - 25% assisted mix. The resulting unit allocations and estimated populations are shown in Appendix B4, page

Site Organization for Scenario D

Housing

The housing would be laid out along an arcaded main street (Manitou Road) (See Map IV) from ferry docks at the sea plane base through a central square in the centre of the housing on the eastern half of the site and on to the ferry docks at Hanlan's Point. Roads and paths connecting the courtyards also provide access to water edges, open spaces, schools and community facilities. The terraced 3-5 storey housing, clustered in courtyards, and the taller 8-storey apartments, built near the terminal-hangar area and along Manitou Road, offer sheltered walkways to all portions of the site. Commercial sites would occupy ground floor levels of the apartment buildings.

Access

Service vehicle access would be via ferry across Western Gap and enter at the ferry docks. There would be no garages or parking spaces on the island. Car access under ordinary circumstances would not be permitted, but allowance would be made for occasions when vehicular delivery of passengers and goods to the door is essential.

The team from the Metro Planning Department responsible for Study 6 "Access Alternatives" expresses some concern about the viability of a residence community with such limited vehicle access as would be imposed by the ferry. It is the opinion of Study Team 6 that:

"Ordinarily, residents of communities located near the heart of downtown expect

certain services such as high quality public transportation, quick and convenient access for delivery and service vehicles and efficient and reliable emergency services. Prospective residents (of this Island community) could expect to trade off all of the aforementioned if they chose to live in this community."

Restrictions and inconveniences imposed by the ferry are detailed by Study Team 6 as:

a) Average wait for ferry 5-7 min. Total elapsed time before setting foot on mainland 15 min.
b) At peak periods ferry would be operating at or near capacity. Delays are inevitable with consequent interruption of schedule causing congestion and added total travel time.
c) At peak morning hours a surge of demand every 15 minutes would overload a 3-minute bus service on the mainland and entail up to 15-minute waits. This inconvenience could cause falling off in use of transit and return to car use.
d) Service vehicles would be charged a ferry fee. Mainland stores, particularly small ones, would add the fee to the price of the merchandise. Home service and repairmen would likely add the fee to their bill. Merchants in the community would either have to absorb the added cost of stock delivery or pass it on in increased price.
e) Residents could not unload large parcels, bulky items directly from their cars into their home. Small buggies, wagons and unloading areas would have to be provided.
f) Transportation of the elderly and the handicapped would be difficult lacking door-to-door service.
g) Even with the location of some emergency units in or close to the community and an efficient communications system with the ferry, there would be inevitable delay in some emergency situations. In a major emergency requiring two-way traffic ferry access would be completely inadequate.

Because of the above inconveniences and restrictions it is the view of Study Team 6 that "the marketability of units in the community could be affected." Even if the units could initially be sold, experience of residents with the problems over a period of time might cause them to want to move. They might then encounter extreme difficulties in selling their units to others more aware of the inconveniences. Residents might choose the alternative of lobbying the government for expensive changes in access.

It is the opinion of Study Team 6 that neither improved ferry service nor a pedestrian tunnel would adequately meet the problem. Their solution is a tunnel providing, in addition to a pedestrian lane, an 18-foot wide vehicular lane with control lights at either end permitting alternate two-way traffic appropriately timed. This would permit transit vehicles to enter the site for pick-up and discharge of passengers, easy access for service vehicles, and adequate continuous access for emergency vehicles. Car access by residents or visitors need not be permitted except in those circumstances already contemplated with ferry service.

Parking

Parking facilities would be provided in a parking structure on Bathurst Quay at the rate of 1 for every two housing units plus 100 visitor spaces in the 50-50 mix. (A total of 2100 spaces would be required for the 75% market oriented community.) Cost would be repaid in rents or sales.

For purposes of transportation of goods to the residences, shopping carts would be utilized for smaller items and a pool of battery driven pallet movers based near the docks would provide for delivery of larger items.

Schools

The anticipated child population creates some problems in school planning. According to Study Team 4, 1/5 of the school population attend separate schools. In the case of the proposed Pedestrian Community, the projected child population is too small to justify a new separate school. These students would attend off-site schools (with the possible option of some kindergarten and junior students being accommodated in rental space on the island). Three hundred 7 and 8 grade students and six hundred to seven hundred secondary students are below the limits required for new schools. Secondary students would attend school off-site.

The proposed school allocation would be:

1 junior public school (K-6) 48,000 - 55,000 sq. ft. for 600-700 students at the eastern end of the site.

1 combined junior/senior public school for 600-700 junior (K-6) students and 300 senior (7-8) students in a renovated Hangar 3/4 complex with an additional 50,000-55,000 sq. ft. of new classrooms. This school would also serve as a "community" school for adult classes, meetings, crafts and recreation. Some flexibility is provided by the existence of the Island School which is now underused for its 180 capacity. From some areas of the site access to the Island School might prove attractive.

Cost of Schools to Board of Education

Land Costs (9.4 acres at $100,000)	$ 940,000
Site Preparation (pro-rated)	108,000
Land Development (pro-rated)	851,000
Construction	3,305,000
	$5,204,000

To be covered by local taxes (67%)
To be covered by Prov. grants (33%)
paid to Board of Education

Commercial

Access to central city shopping would reduce the need for on site commercial space to 59,000 sq. ft. most of it located near the ferry docks in the high rise buildings.

Proposed allocation	sq. ft.
Food (a small super-market and 1 or 2 convenience stores)	30,000
Variety, Household goods	10,000
Restaurant, cafe, snackbar	5,000
Drugstore	6,000
Personal Services	5,000
Bank	3,000
	59,000

On site competitive shopping would thus be extremely limited.

Community Services

A study was made for the new St.Lawrence housing project which identified the community services required. Since the proposed Pedestrian Community would be approximately the same size as the St. Lawrence project, Study Team 4 quotes the

list of services which would be appropriate for the proposed community, namely:

Child Care:	—Day care and private home care —Nursery school and extended school day care	
Community Medical Centre:	—Public health —Counselling —Ambulatory emergency service	—Home health —Doctor's offices
Social Welfare	—Income maintenance —Welfare assistance —Vocational rehabilitation —Manpower counselling —Child welfare	—Personal Services Counselling (including financial) Legal Aid Interpreters Self help
Community Information Centre		
Community School:	—Adult education —Recreation —Library branch	
Community Recreation Programs	—For teen-agers —For young adults —For families with children —For senior citizens	

A renovated Terminal Building along with Hangars 1 and 2 and contiguous with the Community School would adequately provide space for these activities.

Regional Parkland

Parkland developed separately under the Metro Parks Department would become consolidated with the rest of the Islands park.

Metro would be given title to the 100 acres free of charge but Metro would pay $1,218,000 as a prorated share of development cost to the development management corporation (see Appendix B4).

Development of Housing Site

Phasing

To provide early returns on development costs by lease revenues a quick undertaking of basic site preparation is anticipated. Runway scarification, lagoon excavation and landfill-spreading would be essential first steps and this would accelerate parkland development.

The "Development Management Corporation" would probably require two years to complete the land development but it is anticipated that within one year some serviced parcels would be ready for construction.

Initial construction would be in the Terminal - Hangar area and continue south in

blocks of housing that could be serviced and sold in one year. It is anticipated that the 3000 units could be built and absorbed in the housing market in a 3 to 4 year development period.

Construction Costs	**Public**	**Other**	**General**
Site Preparation			$ 2,154,000
Land Development (including site services)			5,940,000
Less CMHC Servicing Grant			(327,000)
Parking Garage & Waiting Room (Bathurst Quay)		$ 6,752,000	
Regional Parkland (including some services)	$ 2,352,000		
Housing (3000 units)		61,098,000	
Schools (2)	3,305,000		
Community Facilities	453,000		
Commercial		1,043,000	
Local Parks	849,000		
	$6,959,000	$68,893,000	$7,775,000

For a detailed breakdown of total costs and revenues anticipated for this Pedestrian Community see Appendix B5 (pages 117-118).

The Pedestrian Community and Parkland Proposal

This "something for everyone" proposal is less straightforward than the other 3 proposals:

1. Parkland use advocates would get half-a-loaf (100 acres).
2. Opponents of vehicle access to the island would be almost satisfied — though provision is made for access of cars in emergency or special circumstances. At least there would be no bridge. Acknowledgement is made that perhaps a pedestrian tunnel might be required.
3. Proponents of housing on the site would get 60% (3,000 as compared to the 5,000 units) of the housing provided for in Scenario C.
4. Those most interested in the site as a potential experimental "model" community offering the different life-style of an essentially pedestrian-public transit-oriented community would probably be the most satisfied. Planners believe that the 3000 units could be marketed to those attracted to the life-style. A larger community might encounter the marketing difficulties foreseen by some officials of Metro for even this smaller community.
5. Ecologists and naturalists who would welcome the 100 acre addition to parkland and the protection that would be offered to sensitive areas might still be concerned that 9000 residents in such close proximity to the park area would threaten it with overuse.

6. Proponents of increased boating facilities in the inner harbour would be pleased at the extra shoreline created by the lagoon and the additional marina and boat storage accommodation.
7. Although in this proposal Hanlan's Park becomes quite integrated into the airport site, a bridge across the lagoon permits access to the rest of the Islands Park and consolidates 100 acres of the airport site into the other parks area. As it is proposed that present site owners grant this land to Metro free of charge the Metro Parks Department would acquire a sizable addition to the Islands park by payment only of a pro-rated share of site and land development costs.

Advantages claimed for this proposal by Study Team 4

1. It would meet some of the requirements for the two most pressing needs of the City and Metro: central area housing and regional parkland which have been discussed under Scenario C and Scenario A.
2. It would provide resident benefits such as those provided in Scenario C albeit for a smaller number of people.
3. By the generous acreage set aside for Regional Parkland and the site layout it would make a welcome addition to the Islands park as well as opening up a desirable beach area.
4. It would provide opportunity for a pedestrian-transit oriented life-style in ideal surroundings of space and water amenities for which planners believe there is sufficient demand to make the project viable.
5. It would promote greater public transit use.
6. It would severely limit vehicle access to the island thus protecting the island character and fragile environment.

Disadvantages of this proposal as seen by some critics

1. The same objections can be raised to housing in this proposal as are put forward under Scenario C, namely: It would eliminate prized open space by a large building complex that would have the effect of further removing the inner-city core from the lake front. It would require an expensive infrastructure and range of community services for its exclusive use. Particularly in the case of schools, it would provide new classrooms when empty classrooms are already a problem in the central City area. The site has some disadvantages for year-round housing.
2. This proposal encounters the additional objection that it would bring many of the adverse effects of housing to the island without providing housing for nearly as many people.
3. The team from the Metro Planning Department responsible for Study 6 "Access Alternatives" expresses concern about the viability of a residence community with such limited vehicle access as would be available by ferry.

IV RESULTS OF THE STUDY ON AVIATION USES

ACCOMMODATION FOR GENERAL AVIATION IN THE TORONTO REGION

Study Team 3 also presents its alternative proposals for aviation use of the Island Airport in the form of scenarios: Scenario 1 - General Aviation, Scenario 2 - Regional STOL, Scenario 3 - Extended STOL. But before reporting on these specific proposals, we believe some examination of the general issues relating to continued aviation use of the site are in order.

Before deciding to change the aviation use which has gone on for nearly forty years, we need to examine the importance of the role the airport performs, its capacity to perform a larger role and the possibilities and costs of providing substitute facilities if the present services are dislodged. Some of the studies have also provided information on general environmental and traffic impacts of air use of the site which we believe it is useful to review before presenting specific plans for alternative air uses.

Because much of the following report deals of necessity with forecast futures we have tried to indicate clearly where figures are drawn from actual experiences and where they are drawn from calculated growth projections. The accuracy of forecasts is dependent upon many factors some of which are bound to change over the life of the forecast. Forecasts are at best informed judgements by experts and are useful guides in planning if read as such.

The Role of General Aviation in Canada's Transportation System

Canada has 900 airports of which only 70 (less than 8%) accommodate scheduled air services. The remainder are served solely by the increasing general aviation fleet. In 1961, there were 3,894 General Aviation aircraft (generally under 12,500 lbs.) registered by the Ministry of Transport. In 1974, the number had grown to 12,959 and in 1976 reached 18,955. (Annual increase 9.4 - 11.1%).

The General Aviation hours flown have increased from 717,000 in 1961 to 2,000,000 hours in 1974 and to an estimated 3,000,000 in 1976. The annual increase being 8.2 - 10%. Ontario has the largest percentage of General Aviation registrations with 33.5% of the Canadian total. (For details of type, ownership and usage of G.A. planes, see Appendix A1).

Current Facilities in the Toronto Region[1] for General Aviation Accommodation

There are 120 landing areas ranging from turf or gravel strips with 1,500 ft. runways to the major air-carrier port at Malton. About 1/3 of these aerodromes are licensed and regularly attended. Fifteen of them plus Malton are major General Aviation airports (all holding public licenses): 7 of these have control towers[2], 9 do not have towers[3].

In 1975, 83.4% of local movements and 91.1% of itinerant movements[4] took place at airports with towers. Total movements (1975) at all 16 airports were 1,188,082.

1975 Ranking of Toronto Region G.A. Airports with Towers According to G.A. Movements

Length of Runways in Feet	Airport	No. of Movements 1975	% of Movements at Airports with Towers	% of Movements at 16 major G.A. Ports
2 (2,750 (2,500 (6,000	Buttonville*	221,523	23.84	19
3 (5,188 (3,100 (4,000	Hamilton**	197,529	21.26	16.6
3 (3,000 (3,000 (3,476	Toronto Island**	166,271	17.89	14
3 (2,670 (2,650	Oshawa**	106,257	11.44	8.94
2 (4,100 (3,700	Waterloo-Wellington**	105,333	11.34	8.87
(11,050 4 (10,500 (9,500 (7,200 (5,000	Malton**	71,932	7.74	6.05
3 (2,550 (2,000	St. Catharines**	60,335	6.49	5.08

* Privately owned and operated — ** Publicly owned and operated

These seven airports with 929,180 movements in 1975 accommodated 78.2% of the total movements at the 16 major G.A. ports. The three largest Buttonville, Hamilton and Toronto Island with 585,323 movements have 63% of the movements at the airports with towers.

The Toronto Island Airport is the third busiest of the G.A. ports in the Toronto Region, handling 17.89% of the movements at airports with towers and is therefore a very important link in the chain of G.A. ports available in the region and could not be eliminated without considerable disruption of G.A. Service.

Forecast of G.A. Movements Toronto Region 1975 - 2000

Tables from "Studies of Alternative Aviation Uses for Toronto Island Airport Site" (Technical Study 3A, March 1977) reproduced in Appendix A2, show the anticipated growth of General Aviation activity in the Toronto Region 1975 - 2000[5]. They underline the pressures which may be placed on airport capacity in the region over the next 25 years.

In the Summary Table of Growth Rates, it can be noted that a decline in the rate of growth is anticipated as the Aviation system matures even though the total movements continue to increase. A continued decline in the rate of growth of local movements at Malton is predicted.

By 1990 total movements at Toronto Island Airport are predicted to reach 254,000 which is very little higher than the 240,000 movements handled in 1967.

Annual growth rates for Toronto Island Airport are predicted to be:

For the years	Itinerant	Local	Total
1974 - 1980	7.4%	4.6%	5.0%
1981 - 1985	4.5%	3.7%	4.0%
1986 - 1990	4.0%	2.5%	3.0%

As shown, growth rates are expected to taper off in the future.

Total annual movements are predicted to rise from the 1974 level of 137,000 to 254,000 movements in 1990. In 1990, about 78,000 itinerant movements are anticipated with 176,000 local movements.

In general growth rates forecast are higher for the nine airports without towers than for those with towers but their total movements in 2000 are estimated to be only 24.4% of the total G.A. movements in the region. Excluding Malton, it is estimated that the six other airports with towers will handle 74% of the movements at the 15 airports.

In Technical Study 2, investigation was made of the capacities of the major G.A. airports in the region.

The dates of anticipated capacity problems:

— In all airports with towers except St. Catharines, some capacity problems are anticipated before 1990.

— Most critical situations are at Buttonville, Hamilton and Waterloo - Wellington where problems could develop between 1975-80 at Buttonville and in the other two before 1985.

— Toronto Island and Oshawa can anticipate capacity problems at peak hours between 1980 and 1985.

— For airports without towers Guelph and Brampton could experience problems in 1985 - 1990 but at the others not in the time-frame of the study.

Capacity problems begin with problems at peak hours on peak days before total runway capacity is reached. This could result in a decline in the level-of-service offered unless adjustments were made such as limiting hours for training flights but not necessarily requiring large upgrading of the airports.

Upgrading and addition of control towers in neighbouring airports could reduce the pressures on some of the presently busier airports. Because of Toronto island Airport's unique location in relation to Toronto City, the efficacy of such relief for it would be limited.

It is not surprising then that the "Joint Committee on the Toronto Island Airport" concluded in its October 1974 report that "the consequences of closing the Toronto Island Airport to aviation would be the need to develop an airport with similar facilities in another location". This report points out the difficulties of finding another location with comparable accessibility to the business district and to public transportation.

The unique advantages of the Island site lie in its largely over-water approaches, closeness to Toronto business district and downtown hospitals, accessibility to Toronto-wide public transportation, seaplane base and facilities for conversion of planes from sea to land and vice-versa.

The one great disadvantage is poor mainland access, though the proximity of some high building structures is a limiting factor which will need to be considered in the installation of instrument flight facilities.

1. Defined in footnote on page 1 of Technical Study 2 of Toronto Island Airport Study Program as 100 mile radius from Toronto.

2. Malton, Buttonville, Hamilton, Oshawa, St. Catharines, Toronto Island, Waterloo-Wellington.

3. Brampton, Brantford, Guelph, Lindsay, King City, Maple, Markham, Peterborough, Welland.

4. An aircraft movement is either a take-off or a landing. A local movement is one where the plane does not leave the zone of the control tower. An itinerant movement is one which lands at the airport from outside the zone of the control tower or which takes off and leaves the control tower zone. The control zone of the Toronto Island Tower extends in a three-mile radius and to a height of 2,000 feet above sea level. Associated with local movements are "touch-and-go" movements. Pilots in training and some recreational flyers are intent on practicing take-offs and landings. They come in for landing and continue along the runway for an immediate take-off. The whole is counted as two air movements. The process is known as touch-and-go, does not consume as much time as separate landings and take-offs, so more such movements can be handled by the tower and runways.

5. For details of the sources of information and the methodology employed to arrive at these forecasts, see the report.

PRESENT CAPACITY OF THE TORONTO ISLAND AIRPORT

Present Use and Facilities at Toronto Island Airport

As a General Aviation facility the airport caters to pilot training organizations, light charter flights, business and recreational light craft flying and Class 3 air carrier license requirements.

It is a Visual Flight Rule airport with short runways and is unsuitable for larger, high performance turbo-prop or turbo-jet General Aviation planes which operate under Instrument Flight Rule and hence must use the Toronto International Airport at Malton.

It is served by three runways, one of 4,000 ft. and two of 3,000 ft., and its buildings (clustered at the northeast corner of the site) consist of a a terminal/administration building, four hangars and various smaller buildings.

It provides change-over services to convert from wheels to floats using an access ramp S.E. of Hangar 1. It has a helicopter parking ramp adjoining the Terminal Building apron.

Utility services such as natural gas, hydro and telephone service are delivered via a utility tunnel under the Western Channel. Water is supplied from the Island Filtration Plant near Gibraltar Point through a supply main. Sewage disposal is through septic tanks and tile fields.

Access to site is provided by a diesel-powered ferry "Maple City" operating across the Western Channel from the foot of Bathurst Street. Parking is in 130 spaces provided adjacent to the landside ferry dock. Both of these services are operated by the Harbour Commissioners.

Its present tenants are 145 G.A. craft based at site[5] of which 27 are owned by Central Airways, 5 are owned by Stern Airways and the remainder are privately-owned business and recreational craft.

Aircraft movements in 1976 totalled 173,000. 124,000 were local movements (pilot training and recreational flying), 49,000 were itinerant movements including charter flights, some scheduled service, and private business and recreational flights.

See Map V for runway layout, access and service facilities (page 79).

Estimated Capacity of the Toronto Island Airport

In 1974, the Ministry of Transport studied the capacity of the Toronto Island Airport looking at 3 primary items:

(1) the historical aircraft movements at the Toronto Island Airport from 1953;
(2) estimated runway capacity of the Airport;
(3) how long the present runway configuration would be able to handle forecast traffic.

(These are made for Visual Flight Rules as at present the Island Airport is not equipped for Instrument Flight Rules.)

Using four references to studies of runway capacity for similar airports (one of which has studies for Toronto Island Airport specifically), the historical experience of the airport, and discussions with tower personnel at the airport, the Aviation Systems Planning Branch concluded that the present runway configuration is capable of handling over 200 Visual Flight Rule movements per hour and thus has an annual capacity of 409,000 Visual Flight Rule movements (assuming approximately 70% touch-and-go).

From Table 7.2 of Report: G.A.: 73-001 (Forecasts of General Aviation in the Toronto Region, Toronto Area Airports Project) the Aviation Systems Planning

Branch found the forecast of total aircraft movements for the Toronto Island Airport to be:

	1971	1980	1990
Local	139,169	191,052	257,368
Itinerant	50,757	82,556	120,292
Total	189,926	273,608	377,660

The Aviation Systems Planning Branch therefore concluded that with an annual capacity of 409,000 movements, the Island Airport will be adequate past 1990 for the forecast General Aviation activity. Some capacity problems may develop about 1985 at peak hours which would require adjustments in scheduling particularly of training activities.

Actual movements in 1971 exceeded the forecast in itinerant movements by 14,625 and the local by 281. In 1972, 1973 and 1974, there was a marked decline in local movements and some in itinerant. 1975 and 1976 have seen an upward trend in both. More recent forecasts for G.A. movements at the Island Airport are used in the current Island Airport Study Program. Since their forecasts are lower than those quoted above they do not affect the conclusion that the runway configuration is adequate through 1990.

Predicted Annual Air Movements
at Torono Island Airport
with the addition of Scheduled Service

	1980	1985	1990
Scenario 1			
G.A.	180,673	219,448	254,400
Scenario 2			
G.A. & Regional			
STOL	189,413	228,188	263,140
Scenario 3			
G.A. & Regional			
STOL &			
Extended STOL	196,893	239,418	278,110
added by			
Regional STOL	8,740	8,740	8,740
added by			
Extended STOL	7,480	11,230	14,970
	(16,220)	(17,970)	(23,710)

No growth in number of flights for Regional Stol is anticipated 1980-1990 but the Montreal-Ottawa extended STOL is predicted to double 1980-1990.

From the above figures it is clear that predicted additional aircraft movements by proposed STOL service at the Toronto Island Airport would in no case through 1990 reach 10%. Aircraft movements added by the forecasts of proposed STOL service to the General Aviation forecasts would be: 8.9% in 1980, 8.18% in 1985 and 9.32% in 1990.

In 1990 predicted G.A. movements alone would utilize only 62% of runway capacity. It is evident that runway capacity is more than adequate to accommodate proposed STOL service.

The peak hour problems to be met in the time frame under consideration are very little complicated by proposed STOL movements because the peaking hour for STOL (weekdays) is 8-9 a.m. and for G.A. 4-5 p.m. Total aviation traffic (G.A. and STOL) peaks at 4 p.m.

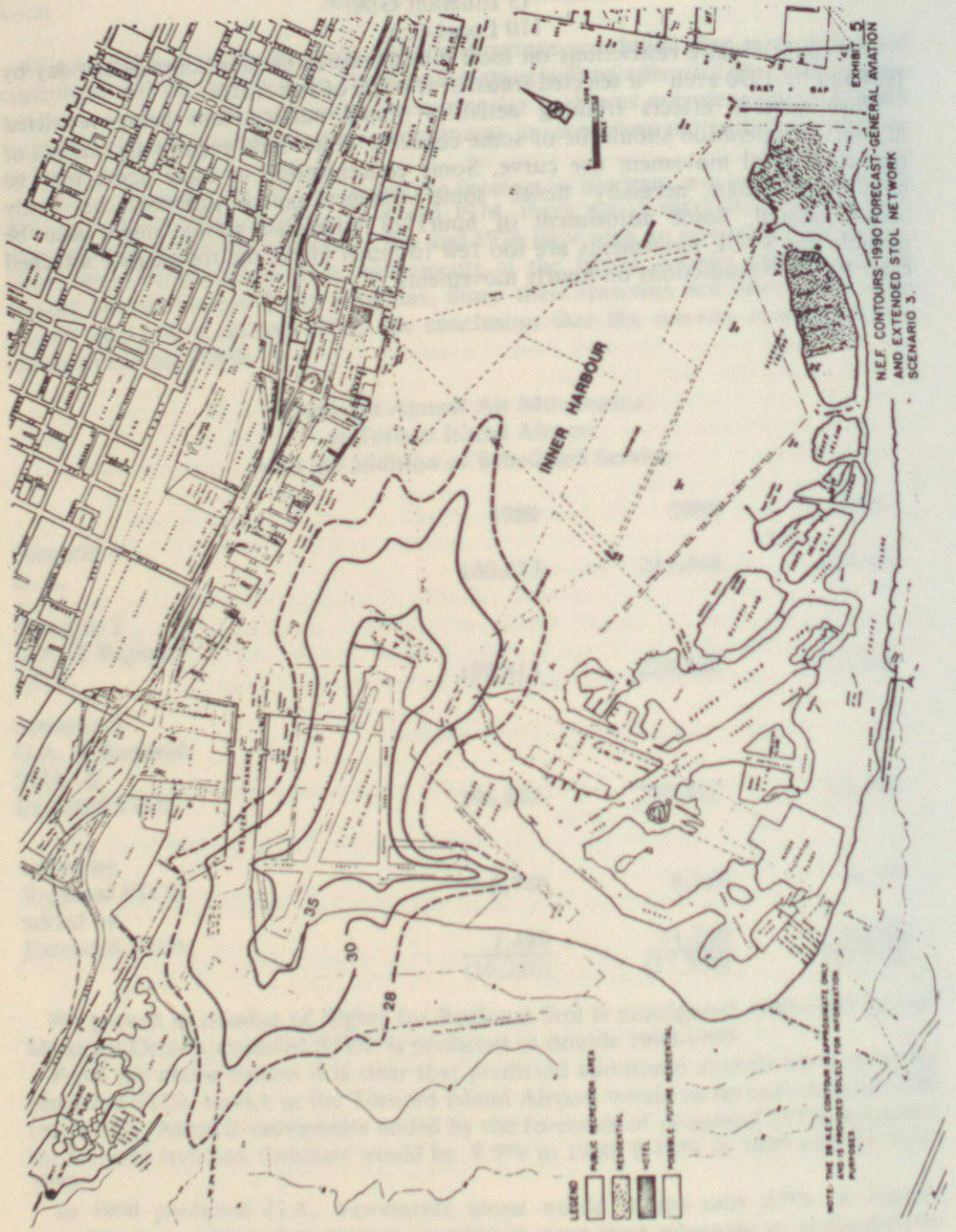
But the mix of aircraft in a 1990 peak hour is predicted as

4 STOL Craft
13 Itinerant G.A.
110 Local G.A.

This could require restrictions on local movements to certain hours of the day by 1984 and by 1990 even a selected transfer of some of this traffic.

What adverse effects training activities would suffer from being restricted in hours of operation should be of some concern. This would require an analysis of the actual local movement use curve. Some concentration in some hours may be more habit than necessity hence some changes could probably be easily accommodated. Some adjustment of hours of scheduled service might also be possible but STOL movements are too few to much affect the totals. (See attached chart for 1980 predictions on hourly movements.)

CHART I



NEED OF RELIEF FOR MALTON

When the present phase of construction at Malton is completed, the airport will, according to the Ministry of Transport, have the capacity to handle 13 million passengers per year. It is expected that it will reach that level by the end of 1978. After that, further growth in traffic will result in deteriorating service based on existing conditions. The runway capacity now exceeds that of passenger terminal service capacity but changes in airport layout that would permit greater traffic use are now ruled out by decision of the Ministry.

When, in 1967, this situation came under study by the government, the options were considered to be:

(1) to further expand Malton;
(2) to build a second International Airport;
(3) to divert some portion of the short-haul (under 500 miles or perhaps up to 1,000 miles) traffic to a smaller airport which progress on the development of short-take-off-landing craft seemed to make possible.

Public opposition from communities near Malton to further expansion has continued and Transport Minister Otto Lang again, on March 14, 1977[8] assured municipal leaders that there would be no further expansion at Malton even when present capacity is reached.

A second International Airport in Pickering was proposed by the Federal Government in 1972 but the Province yielded to strong public opposition to the idea and refused to co-operate to provide access roads and sewers and continues to maintain that it sees no need yet for a new airport in Pickering. The Federal Government continues to hold the 19,000 acre site which cost $110 million.

However, there is no present budget for construction and, in the current atmosphere of budget restraint, time would be required to re-activate the project even should the Province change its position.[9]

In 1972 Aviation Planning Services Ltd. undertook a study on the "Effects of Introducing STOL Service on Malton Development". This was the third option for the relief of Malton.

For purposes of the study the construction of a new STOL port was estimated at a cost of approximately $10 million dollars. Two possible alternative sites were designated: one at the present Downsview Airport and the other on the Eastern Headland, east of the newly created Outer Harbour. The Greater Toronto Region was divided into 30 zones and the analysis consisted of study of travel to and from each of these 30 zones to each of the possible STOL sites, to Malton and to the proposed Pickering site.

Because the STOL port sites were closer to the areas of traffic generation than either Malton or Pickering, the study found savings in ground travel expense as well as time savings and concluded that 70 - 80% of the passengers would find a STOL port for their short-haul flights of benefit to them. Of the remaining passengers only 1% would prefer Pickering, the rest would continue to use Malton.

The study concluded that short-haul traffic diversion to a STOL port would reduce passenger movements at Malton by 18-20% thus, based on the 1972 forecast, postponing by approximately 3-1/2 years (from 1978) the reaching the passenger limits set for Malton. This would permit deferral of the construction of a second International Airport. Whether this would result in a net savings would depend on the need to build another airport, the cost of borrowing and future construction.

Actual dollar values were placed on the savings predicted but since the study was made in 1972, such figures have become irrelevant to the inflationary values of 1977. The principal, however, is relevant, namely:

(1) that significant time and fuel savings are possible to a large portion of

travellers;
(2) that significant financial savings are possible in the deferral of investment in another International Airport by diverting short-haul flights to a STOL port.

In the present examination of the options for the use of the Island Airport the addition of STOL service is considered one option. For the cost of improving the access, increasing terminal facilities for passengers and adding equipment for instrument flight regulations the Island Airport could provide a place to test this kind of relief for Malton at less expense to taxpayers than building a new STOL port. These changes would also improve the airport for General Aviation service.

In January 1974, the Toronto Airports Project, Canadian Air Transportation Administration, reviewed nine STOL forecast studies for possible use of the Island Airport prepared between 1970 and 1973. They found:

(1) In the absence of historical data and prior experience with this mode of travel variations in the base on which to estimate growth were to be expected.
(2) That the many factors involved in making the estimates, the difficulty of quantifying many of them, the inclusion or exclusion of some factors in some studies and not in others, differences in gathering data and the mathematical treatment of it, make comparison and evaluation of the estimates difficult.
(3) That there was a wide range between the various forecasts for 1980 for an Island STOL port with a 500-mile stage length: the low - 750,000 passengers (Toronto Area Airports Project 1973) and the high - 2,340,000 passengers (Aviation Planning Research Division Canadian Air Transportation Administration 1972).
(4) That while two studies (Toronto Area Airports Project 1973 and Aviation Planning Services 1972) were in substantial agreement that 15-20% of the total STOL patronage **on a Toronto - Montreal route** would be diversion from ground modes, the former forecast a total of 224,000 passengers and the latter 454,000 STOL passengers for the route.
(5) They concluded that it was impractical to choose a single preferable forecast for an Island Airport STOL service and that at best the choice is a range, probably 750,000 to 1,300,000.

It seems reasonably evident that nothing short of a trial run will produce solid evidence upon which to base future planning.

With improved access and provision of instrument landing facilities at the Island Airport, another possibility for Malton relief would be created. In 1975, there were 71,932 General Aviation movements at Malton and by 1985 this is expected to increase to 116,200 movements.[10] Some portion of these might well be diverted to the Island under the improved circumstances, freeing Malton for greater concentration on the servicing of the scheduled air traffic which only it is equipped to handle.

Concern has been expressed by some that the large (80%) diversion for the short-haul from conventional service to STOL flights would exacerbate Air Canada losses and thus put an added burden on taxpayers. This overlooks the possibility that Air Canada could itself become the operator of the STOL service. This might indeed assure the most effective rationalization of the air system. Freeing a single management to divert their traffic to the most efficient plane and flight for each service offered might most quickly encourage the use of the most economical mix. If, without loss of revenue, Air Canada could divert a considerable portion of its General Aviation and its short-haul business to STOL planes operating out of another Toronto airport, Malton would be freer to serve its essential role.

There are, of course, many who take the position that to have STOL as a competing service offers the best opportunity for assuring efficiency at both airports. They believe that one of the Regional Carriers would do a more vigorous job of handling a STOL service at the Island Airport.

ALTERNATIVE SITES TO THE ISLAND AIRPORT FOR GENERAL AVIATION AND FOR A SCHEDULED AIR SERVICE USING DASH 7

The Island Airport is much closer to the Central Business District than any other airport. While it is true that a strictly STOL port would not require as much land as the 215 acres of the present Island Airport even so, a suitable parcel of land, free of high building interference, as close to city centre and with similar access to public transportation does not seem to exist. Even if one were found, it would require building a new airport and duplicating the services already available at I.A. at considerable capital cost. Most of the alternatives suggested involve far more overflight of inhabited areas. The Island Airport provides largely over-water access which reduces noise and pollution problems for nearby residences, as well as a much improved safety factor.

DOWNSVIEW AIRPORT

The Downsview Airport is frequently mentioned as an alternative site but it lacks many of the attractions of the I.A. site. For one, it is much further from city centre. Even when the subway extension reaches Downsview, boarding or deplaning passengers would be involved in a time consuming extra trip to reach destinations.[11] Many would resort to cars or taxis to make the trip easier if not faster just as at present, many Malton passengers ignore the bus services provided to subway terminals. Time and convenience often outweigh economy concerns.

All departing and incoming flights would be over built up areas whereas the Island Airport furnishes largely over-water approaches. In addition, technical studies have identified operational constraints and areas of airspace confliction between Downsview and Malton that make it unsuitable to contemplate the establishment of another airport at Downsview. The Ministry of Transport has therefore recommended against further consideration of this site.[12]

ALTERNATIVE WATERFRONT SITE

The Harbour Commissioners have long suggested the possibility of providing an airport site on the new Eastern Headland. It would offer the water approach advantages of the present Island Airport and could accommodate the seaplane base. While it is further from centre city (4.5 miles as opposed to 2.2 miles) City access via Leslie Street and Lakeshore Boulevard is available and does not involve ferries, bridges or tunnels. The time to central City is estimated as 10 minutes by car and 20 minutes by public transit. The site is completely removed from high building interference and would be suitable for installing sophisticated instrument flight facilities.

To make use of this site would, of course, entail the cost of building a new airport which costs would need to be weighed against the estimated costs of improving the present Island Airport.

The agencies that are presently involved in development of the Eastern Headland — Metro Torotno, the City of Toronto, the Toronto Harbour Commissioners and the Metropolitan Regional Conservation Authority — have recently agreed to the development of the Headland for open space and recreational purposes exclusively. This would seem presently to rule out this site as an alternative.

One disadvantage of the "site-specific" terms of reference of the I.S.F. teams is that they do not permit evaluation of alternatives. It is difficult to understand how the Policy Steering Group can make a decision on closing the Island Airport **without** evaluation of the alternatives available for accommodating the displaced services. The

study team made an exception in evaluating Downsview but in no other instance.

From the remarks of Federal Minister Lang and Provincial Minister Snow at the public meeting on May 14 (see footnote 9, page 73) it is evident that an additional federal-provincial transportation study is in progress and that no decision will be finalized until these results are available.

BUTTONVILLE, MAPLE, KING CITY, MARKHAM

There are airports at Buttonville, at Maple, at King City and at Markham, all north of Hwy. 401, on Routes 404, 400 and 48 and only Buttonville is served by a tower. All now are utilized for General Aviation, Buttonville almost to capacity. The possibility of their enlargement to accommodate the present General Aviation activities and training functions of the Island Airport and for the establishment of a scheduled air service using Dash 7 has been discussed.

All are privately owned and operated. All are far from city centre, none are well serviced by public transportation and none have customs service. For present General Aviation users of the Island Airport moving to any of them would represent an inconvenience even if the airports could or would be upgraded and enlarged to accommodate the extra traffic. Training facilities would be less accessible for many Toronto young people who now find it possible to hold a downtown job and still reach the I.A. for training courses. While some of these airports might absorb additional training activity, it is doubtful that any would accept transfer of the Island Training Schools.

For many users, these locations are convenient. For those whose businesses or residences are closer to the city, they represent a less attractive base. For visiting aircraft, they pose a real transportation problem in reaching the city which is usually their destination.

As a feasible base for STOL operation these smaller, rural airports are much too far from the city to gain maximum advantage of paired-city service. On the provincially proposed southern Ontario network, the longest flight contemplated is 66 minutes. The flight time to Montreal is 90 minutes. A long surface trip to city centre would cancel much of both the time and fuel savings available with a more central airport.

Two other sites have been examined by Aviation Planning and Research Division, Civil Aeronautics, Canadian Air Transportation and Administration for a purely STOL operation (September 1972):

(1) North Scarborough, north of Finch and east of McCowan:
- — Ground travel time to central city car - 43 min., public transit - 75 min. +
- — Rural area, noticeable pollution increase but still far below Ontario maximum emission standards

(2) Off-shore Mimico Creek, near the mouth of Mimico Creek in Humber Bay. On fill well out into the Bay:
- — Suitable for single runway STOL port of 25 to 30 acres
- — Would require a causeway for road access and be expensive to build as water in the area is approximately 60 feet deep
- — Ground travel to central city car - 15 min., public transit - 30 min. +
- — No pollution problem

The seaplane base operated in conjunction with the Island Airport could not be accommodated at any inland airport. The airport now provides service to convert seaplanes to land planes and vice versa and is the only place in Southern Ontario

where such service is available. While seaplane traffic has declined at least 50% from its peak of nearly 3,500 movements in 1964, it is still a vital service for some people particularly for medical emergencies from the north.

A summary of the findings of the technical team that did the assessment of the potential for existing G.A. airports to handle their own projected growth plus the absorption of the Toronto Island activities in the event that that airport were closed is reproduced in Appendix C1. The team believes that "with no change in the composition of General Aviation demand, increased air traffic will require additional General Aviation facilities in the Toronto Region. The loss of Toronto Island Airport, particularly if followed by the closing of Markham is likely to severely reduce the capacity for pilot training as well as itinerant recreational and business aviation in the Toronto Region and distort the demand/supply relationship of the local aviation industry".

If the Toronto Island Airport is closed, the evaluation team believes that attention must be given to the need to provide a new G.A. airport in view of the limited capacity of other G.A. airports to absorb the activities even in the short run. They estimate that the cost of new buildings, runways, miscellaneous facilities and air navigation costs would be of the order of $11.5 million. They believe up to 800 acres should be acquired for the new site to allow for future expansion and permit control of noise levels to avoid resident annoyance. This would cost, if between 15 and 30 miles from Toronto, $2 million to $5 million; if within 15 miles of the city up to $ 16 million. The total cost of a replacement for the Toronto Island Airport would be $13.5 million to $27.5 million in 1976 dollars.

SOME ENVIRONMENTAL AND ECONOMIC IMPACTS OF AIR USES OF THE ISLAND SITE

This section summarizes the findings of some of the studies conducted in the Island Airport Study Program that investigated the impacts of air use of the Island site. These studies provide much of the information requested at the public participation meetings. While this review is not exhaustive, it does present the results of the studies in several important areas of concern.

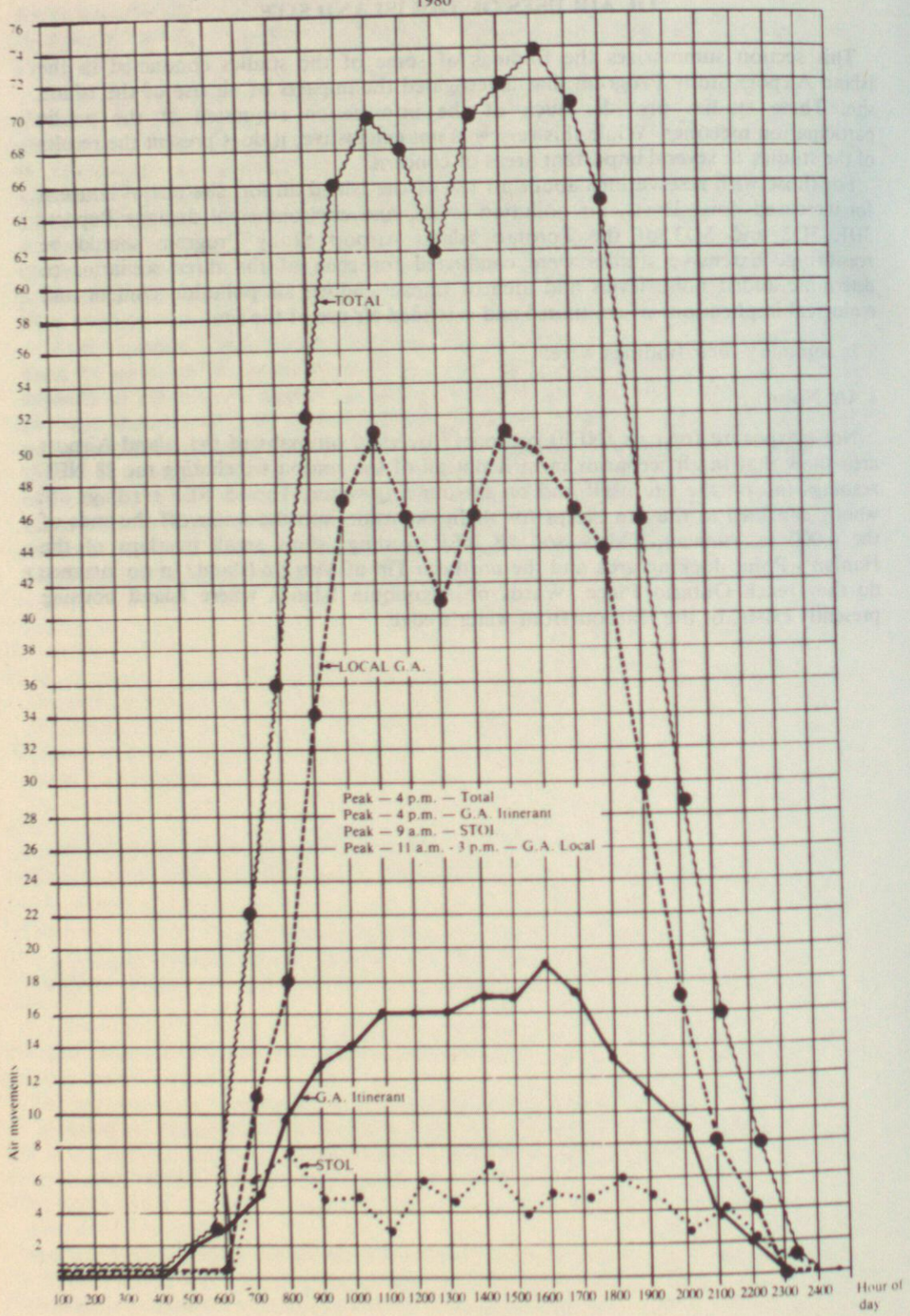
For those with reservations about air use of the Island airport site out of concern for increased noise levels, air pollution levels, and environmental damage Reports 3D1, 3D2 and 3D3 of the Toronto Island Airport Study Program should be reassuring. Extensive studies were conducted for each of the three scenarios to determine added noise levels and area of impact, added air pollution content and ecological implications of continued and extended air use of the site.

In summary their findings were:

1. On Noise

Noise exposure forecast (NEF) contours[13] overlaid on maps of the Island Airport area show that in all scenarios most if not all of the contours including the 28 NEF readings fall on the site itself and on surrounding water. The 35 NEF readings are wholly confined to the site except for slight extension into the water off the ends of the 4,000 ft. runway. Thirty and 28 NEF readings show small overlaps of the Hanlan's Point docking area and the northern Tip of Mugg's Island. In no instance do they reach Ontario Place, Wards or Algonquin Islands where Island housing presently exists, or the Harbourfront water's edge.

Predicted
24 Hour Air Movement Distribution Toronto Island Airport
1980



If the MOT guidelines for "Land Use in the vicinity of Airports" is applied then, with the small exceptions at Hanlan's Point docks and the tip of Mugg's Island, all land areas lie outside the 28 N.E.F. contour at which sound insulation would be recommended if housing were contemplated. Since residential use is considered the most sensitive to noise annoyance all other uses would also be considered as within safe noise limits.

NEF was originally designed to assess the impact of noise exposure around large, commercial airports characterized by increasing numbers of jet operations and an increasing number of disturbed neighbours. General aviation noise and craft performance are not well documented since the levels of noise are considerably less and in general it has not been considered essential to measure noise levels for G.A. airports.

The question does arise in this study as to whether the NEF system is appropriate and whether conclusions reached under it can be applied with confidence to a G.A. airport with largely over water approaches[14].

The Study Team developing the NEF contours did considerable research into flight patterns, craft performance by class and runway utilization to provide reliable information for input into calculating the contours.

When building the contours that would apply to Scenarios 2 and 3 they adopted a procedure that results in higher noise levels for the contours than will actually occur. They took as a single representative peak day one which combined the week-end day peaking of G.A. movements and the week-day peaking of STOL movements as though they happened the same day. That way they assured not underestimating noise levels.

It is not possible to develop the statistical base necessary to include seaplane and helicopter activity in the NEF contour. The few movements of the former make the additional noise local and occasional rather than persistent and therefore seaplane noise is considered relatively unimportant. In the case of helicopters the activity is more likely to be a potential annoyance to some people. There are three heliports in the waterfront area: Ontario Place, Spadina Quay and on the airport site. Tours are operated in season from Ontario Place and on week-ends from Spadina Quay. In addition many helicopters from other bases operate in the waterfront area, particularly traffic helicopters. A training school for helicopter pilots operates daily at the Island Airport.

In a survey conducted among 933 Harbourfront visitors from June 9 to September 4, 1976 to determine factors interfering with enjoyment 4.8% responded "yes" to "noise from the Island Airport?" — though the staff cautions that the respondents did not appear to differentiate between helicopter noise from the other sites and aircraft noise from the airport.[15]

The only formal complaints about aircraft noise received by the City of Toronto Noise Control Department or the Airways Branch of the Ministry of Transport are regarding helicopter noise. The Harbour Commission, managers of the airport, have received no complaints regarding aircraft noise, including helicopters.

If helicopter noise complaints reach high levels it is conceivable that tours will need to be restricted. It is difficult to see how other services performed by the helicopters can be reduced since they are very specialized and often of an emergency nature.

2. On Air Pollution[16]

The basic conclusion of the Air Resource Branch of the Ontario Ministry of the Environment was that "the existing Island Airport is a very insignificant contributor to the air quality levels in Metropolitan Toronto. With the projected increase due to

General Aviation and extended STOL activities in 1990, the Toronto Island Airport impact on surrounding urban air quality is estimated to remain small and insignificant."

Quantities of airport related pollutants: carbon monoxide, hyrdo-carbons and nitrogen oxide were estimated from the most recent data available on engine performance at various stages of air activity. The typical "worst case" meteorological conditions[17] were assumed for a summer Sunday and a winter Thursday afternoon to yield the worst possible results. Pollutants from vehicular and stationary sources were added. For all sources combined the calculated pollution concentrations in the vicinity of the airport are within acceptable levels except in one case where hydrocarbon around the Don Valley may exceed the U.S. standard of .24ppm over a 3-hour period. (Neither Ontario nor the Federal government has specified a criterion for hydrocarbon emission.)

In all cases simulated in the study, concentrations due to the airport alone are very low.[18] Maximum levels are found within the airport boundary. Any air pollution impact of the airport on urban areas of Metropolitan Toronto will occur primarily with southerly winds.

The surrounding urban areas with high commercial and industrial activities and arterial highways are much denser in emissions than the Island Airport. Even at Bathurst and Front in 1990, airport contribution to pollution is low and much lower further downwind.

Island Airport emission densities are substantially lower than the urban area averages. Also Island Airport emission densities are much lower than those of other commercial airports.

3. On Environmental Impacts

"The continued utilization of the site for aviation activities (under any of the three aviation scenarios) could have positive and beneficial long-range effects on the wildlife and vegetation population now existing on the airport lands."[19]

With proper management of the non-operative lands (i.e., those areas not directly utilized for aviation purposes) they could become an environmental reserve protected from human interference and predators while remaining compatible with safe airport operation.

Proposals for new drainage and sewerage provisions would not only prevent additional sanitary problems but would correct some existing ones resulting in:

a. Improved water quality around the island
b. Elimination of flood prone area problems

An environmental data base was developed by the Study Team[20] and from this major environmental concerns were identified as: the bird populations, the beach, dune and wet meadows communities, drainage and the need for a management program for vegetation and wildlife.

The danger to bird life is much less from aviation activity than from the overpopulation now prevalent in the whole Island complex. Ecologists and authorities are agreed that some controls must be found to reduce the population of geese and ducks (some think also of terns and gulls) whose numbers now exceed the capacity of their normal habitat and are inducing invasion of areas not appropriate for their nesting. A solution is needed soon.[21]

New drainage to reduce airport ponding and perhaps replacement of present grass with some types less comfortable for nesting might help to check the proliferation, but as long as the more suitable habitats in other island locations are overcrowded spillover to the airport is inevitable. Extensive use of egg and gosling collection and transfer to far away sites has not so far solved the problem.

There have been few collisions between birds and aircraft (4 reported in 1975) perhaps due to low take-off and landing speeds, but as the number of birds increases so does the potential danger. A regular duty of airport personnel is to chase geese and ducks off the runways. Ingenious scare-off devices have not proved outstandingly successful but persistence has so far resulted in relative safety for aircraft as there have been no fatal collisions.

The beach, dune and wet meadow areas, so unique in their plant species are well protected by the security fence. Proposed new drainage of nearby ponded areas has been especially planned for minimal impact on this area though there may be some acceleration of the natural evolution from wet to dry meadow.

Basically aviation use is compatible with the preservation of island ecology. A vegetation and wild life management program with monitoring of the use of pesticides and checking-up on the operation of drainage provisions could make the site an environmental reserve.

4. On Traffic at Bathurst Quay

No present traffic problems result from G.A. airport use. Even in 1990 when 254,000 air movements are anticipated parking for cars can be arranged at the present site. While there are peaking hours both for itinerant traffic and training activity, there are no real surges of incoming or departing passengers, hence no concentrated addition to motor traffic.

Depending on the access mode selected the traffic situation at Bathurst Quay will vary with the introduction of STOL. It is anticipated that large numbers of STOL passengers will be transported to and from flights by mini-bus from central hotel locations. Some passengers will drive to enplane, leaving their cars until a same day return. Others will arrive by taxi or private car and probably depart by the same mode. Some will use public transportation to and from the Quay (or the site with bridge access).

For the Regional STOL scenario the daily number of passengers anticipated:

1980	1985	1990
365	525	680

and in the peak hour:

1980	1985	1990
55	78	102

For the Extended STOL scenario the daily number of passengers anticipated:

1980	1985	1990
1995	3225	4160

and in the peak hour:

1980	1985	1990
300	480	620

There is no doubt that any intensified use of the island site will increase traffic on Bathurst Quay. In the case of the STOL scenarios less traffic is generated than for any of the non-aviation scenarios except for winter days for the Regional park plan when daily attendance could drop to an anticipated 500 from a 4000 - 7000 summer attendance. Less parking spaces are deemed to be needed on the Quay with tunnel access for Scenarios 2 and 3 than are required for the Pedestrian Community (830 as compared to 1600). Two non-aviation plans require bridge access because of traffic demands and in the case of the Major Housing Community pose morning and evening congestion problems.

To what extent 620 peak-hour passengers will congest traffic at Bathurst Quay will in large measure depend on public response to mini-bus transportation to and from central downtown locations which is much encouraged by airline operators. If nearly everyone elects to go and come by private car or taxi, or to drive and park to have his car available for the return trip some congestion might result. If the total day's traffic were all the same day return 2,080 people, all Toronto based, would be involved but there will be only parking space for 830 cars. Peak hour passengers include those arriving and departing so in any event there will not be 620 people going in the same direction at one time.

STOL traffic peaks on weekdays hence its motor traffic peak will not coincide with harbourfront week-ends.

5. No jet-STOL for the Airport

There is no civil jet-STOL craft. There are two military experimental jet-STOL models in the U.S. designed for specific military purposes and not contemplated for civilian use. Contrary to some popularly held views, there are many technical impediments to adapting such military craft for civilian use. As yet, no jet-STOL technique exists that can produce a plane to meet even minimal noise standards. Even if in the future a jet-STOL is developed for civilian purposes, it would undoubtedly be a large plane, unsuitable for any except large airports with longer runways.

For several years aircraft designers have concentrated on producing planes to meet certain needs. One such concentration was on the need for a plane to operate within and between cities. It would need to be economical in land use (have short-take-off and landing capacity); be economical in fuel consumption (have a low emissions rate); produce little noise (to meet increasing demands for the reduction of city noise levels) and be safe in operation. Through extensive design research and experimentation, these demands have been met by several designers such as DeHavilland of Canada in its Twin Otter and in its Dash 7 planes.

A jet-STOL is so far a short-take-off and landing craft without the other qualities demanded for planes suitable for in-city operation and particularly so in meeting noise level standards and fuel economy.

DeHavilland is now considering the possibilities of a stretched body version of the Dash 7 (currently known as Dash 10) to try to gain similar economies to those that have been gained by wide-bodied over conventional-bodied jets. The Dash 10 keeps the qualities and efficiencies of the Dash 7 but with a body designed to accommodate 150 passengers and a consequently higher fuel efficiency per passenger. It is suitable for heavily travelled routes where passenger demand is great enough to produce paying loads for the larger plane but unsuitable for less heavily travelled routes. Presently no use for it is contemplated at the Island Airport.

Aircraft manufacturers now have to meet very tough standards to get a certificate of airworthiness without which their planes cannot be used. Additional protection from airplane annoyance is obtainable by the passage of strict noise and pollution regulations in the use of an airport which could ban planes failing to meet the standards.

6. Alternative Modes

It is understandable that railway personnel are committed to railway travel and the renovation of the Canadian rail system. After all jobs and possible rates of pay are dependent on the health of the system. It is natural that they oppose expenditures on any other transportation mode that they believe will result in any curtailment of

funds for rail improvement.

There is probably substantial agreement in Canada that passenger rail service needs improving and wide support for government expenditures to make that possible.

But given Canada's broad expanse and its relatively low population density, the kind of money needed to improve the rail network's performance to approximate airplane speeds would be astronomical and it would not be profitable in view of the passenger potential. The present aim of European railways to make their rail service competitive with plane service in speed and convenience is perhaps possible given their shorter distances and heavy population concentrations. When speed is essential to serve transportation demands in Canada, air service must be depended on for some time to serve those in a hurry.

Improving the speed, comfort and convenience of rail service for the many who use it is surely a valid objective. It may, if the service is significantly improved, furnish a desirable alternative to flying for many, especially if speed is not their primary concern. Certainly it should succeed in luring many people from using their cars, which is the mode of transportation for 87% of the miles travelled by Canadians.

Much remains to be accomplished in providing appropriate transportation at affordable rates for the users of all forms of public transportation. Time, comfort and convenience, and cost are all factors in choice of transportation mode. But their weights vary greatly with individuals and with trip purposes.

The aim in Canadian transportation must be to increase the efficiency of all modes of transportation where possible. All transportation provides jobs, directly in the operation, and in the related supplier and service functions. To provide a transportation means by which executives and professional men may more effectively use their time is not pampering individuals but is contributing to increased productive activity.

And not to forget the spin-off of opportunity to more ordinary individuals to add effective time to vacation periods and to meet emergency personal situations.

In this context it is interesting to note the difference in % of use by various income levels when the traveller is on business and when the travel is for non-business reasons:

Business purpose air travel	
Income less than $10,000	1.8%
Income $10-15,000	12.2%
Income $15-35,000	68.3%
Non-business purpose air travel	
Income less than $10,000	24.4%
Income $10-15,000	31.0%

86% of business air travel is by those with income **over** $15,000

55.4% of non-business air travel is by those with income **under** $15,000.

Estimated average diversion to STOL from other modes

to STOL from -	CTOL	Auto	Rail	Bus
1980	81%	11%	6%	2%
1985	80%	12%	6%	2%
1990	80%	12%	6%	2%

Variation on some routes

Ottawa - Toronto

Present rail service suffers from infrequent and slow trains.

STOL could divert upwards of 28% of the rail market in 1990 from this route if rail service not improved.

Montreal - Toronto

Suffers from declining rail patronage.

STOL could divert 25% of the conventional rail market in 1990 if unpopularity of rail service is not alleviated.

The foregoing figures were based on an assumption of no improvements in rail services.

Present discussions of rail improvements, particularly in the Windsor-Quebec corridor, fall into 3 categories:

Short-term improvements

There are possibilities of modest expenditures to improve a number of segments in the corridor which would permit increases in speed from the present average of 60-70 m.p.h. to a maximum of 85 m.p.h.

Immediate-term improvements

By more significant expenditures for both equipment and infrastructure (to improve rail beds and to reduce interference between passenger and freight trains) speed could be increased to 125 m.p.h.

Long-term improvements

By making major capital investments and major new track alignments, speeds of 185 m.p.h. and more could be achieved.

Certain short-term improvements such as:

— rationalization of schedules
— improved marketing and promotion
— renovation of equipment

might reverse present declines in patronage. Broad changes in equipment and trackage possible in the intermediate-term could markedly improve the attractiveness and reduce the cost of rail service.

Estimated Capital Costs to Accomplish the Immediate-Term Improvements in the Windsor-Quebec Corridor

For trains	$128,000,000

Average planning value of $4,000,000 per train

32 train sets required to operate the 5 corridor segments under present levels of frequency, service and operating criteria

Right-of-way improvements	$430,000,000

$124,000,000 for improvements on the 5 segments to permit speeds up to 95 m.p.h. $300,000,000 to provide additional capacity to reduce interference between passenger and freight trains

Terminal improvements	$7,000,000
Total	$565,000,000

Costs for the short term improvements under consideration have not been calculated in detail but are considered to be about $9 million ($3 million per year for 3 years).

The long-term high investment required to furnish the infrastructure for high speed rail and the introduction of new technologies such as magnetic levitation vehicles, tube trains, etc. is at present disproportionate to the relatively low passenger volume available with the currently low population densities in this Canadian corridor. There does not appear to be the potential for patronage of really high speed rail services on new rights-of-way that would make such changes economically viable.[22]

Studies were made of four of the route links included in the proposed Extended STOL network.

1. Assuming that STOL service were not initiated, but improved rail service were a reality:
   — On the Montreal route, traffic in 1979 might increase by 50% over 1974. An annual growth rate of 3% would be forecast in the period after rail improvements were introduced.
   — A leap of 200% in rail demand could follow improvement on the Ottawa route with a 4% annual increase thereafter. Other studies indicate that the Ottawa rail service could more than double by 1985 based on reducing travel time by 2/3 and increasing the frequency of service.
2. Assuming that the STOL mode was in existence and improved rail service initiated, forecasts were made of reductions in the volume of STOL forecasts.

Toronto to/from	% reduction in STOL volume 1979	% reduction in STOL volume 1990
Montreal	12%	10%
Ottawa	20%	17%
Windsor	8%	7%
London	20%	20%

The existence of STOL service would cause Improved Rail forecasts to decline from the case of Improved Rail without STOL.

Toronto to/from	% reduction in IRS volume 1979	% reduction in IRS volume 1990
Montreal	33%	43%
Ottawa	33%	35%
Windsor	7%	4%
London	4%	4%

Choice of mode of travel is obviously influenced by service and price. Improvements in one will draw riders to the disadvantage of others but that is subject to change with subsequent improvements in other modes.

A 16-month study has recently been completed by the "Canadian Institute for Guided Ground Transport" at Queen's University for the Ministry of Transport.[23] The study recommends building a 400-mile experimental operation using electric power on the railway between either Thunder Bay and Winnipeg or between Edmonton and Kamloops, B.C. to furnish a basis for determining whether the results justify consideration of spreading electrification to Canada's 9,500 miles of track at an estimated cost of $1.8 billion over a 30-year period. The study estimates that a 50% reduction in diesel fuel consumption could be realized and maintains that

annual savings of $52 - $65 million could be made by electrifying 885 miles of track.

Improvement in bus equipment, scheduling and amenities has proved successful in increasing patronage especially to towns not well served by rail or air.[24] Luxury bus service is considered to have limitations because it means increased fares. This is not satisfactory to many who seek inexpensive transportation. Bus service is a valuable component of the transportation system where it can serve many communities not possible to serve by rail because of the low volume of traffic. There is future potential in introducing various levels of bus service and fitting the type of service to the demand.

7. Energy Consumption and Efficiency in the Various Modes of Transportation[25]

This is not a simple thing to compute or for the layman to understand. To arrive at comparable consumption figures it was necessary to compute the BTU yield of the various fuels used by the competing modes, gasoline, aviation gasoline, diesel fuel and electric power.

To arrive at per passenger per mile energy consumption it was necessary to compute the energy consumption on an **available** seat basis for each type vehicle and then apply **observed or assumed occupancy or load factors** to get actual performance figures. For cars and buses an urban and a suburban sector of the total distance had to be calculated and appropriate fuel consumption figures applied to each sector. Allowances had to be made for altitude assignments for air-routes and particularly for restrictions imposed in the busier air centres, which tend to reduce maximum achievable fuel efficiency.

When considered in the frame of performance on actual routes and related to actual percentages of seat occupancy achieved the per passenger energy consumption figures do not always confirm popular concepts.

Summary findings of the Study Team which investigated this area were based on total energy consumption for the entire trip from destination to destination, which included ground transportation to and from embarkation and debarkation.

They found:

1. That the air mode (CTOL[26] and STOL) represents the least energy efficient of the modes studied for all routes linking the seven cities in Ontario under consideration.
2. On all routes except Toronto/Kingston the STOL mode demonstrated greater efficiency[27] but on at least 3 routes the difference was not large.
3. Energy consumption for the automobile (at observed or assumed occupancy) was roughly equivalent to the STOL performance or at least to the CTOL performance on six of the seven routes.
4. The diesel bus was consistently the most efficient though the electric train, because of the generally shorter track mileage than road mileage, was more efficient in some instances.
5. Rail modes which followed the bus in efficiency shower greater efficiency for the electric train followed in order by "Rapido" the "average Canadian train" and the "Turbo train".
6. Ground access modes effect on total trip energy consumption on both air modes is of significant impact. The greatest savings would accrue from the use of bus for CTOL access because of the longer distances involved. Exclusive use of bus access for CTOL would do much to negate or diminish the apparent energy advantages of STOL particularly where the CTOL airport is far from the city.

7. Considerable energy savings in total trips on short haul routes[28] would accrue from the location of STOL airports close to the cities. Where STOL ports are within 2 miles of city centre there are only minimal savings in energy by bus over car or taxi as an access mode.

8. Because railway and bus stations are located in or near city centres their access costs are similar to those of the in-city STOL port.

Below is a summary table of the energy efficiency by mode for the seven selected routes.

EXHIBIT 19
RANK ORDER OF ENERGY EFFICIENCY BY MODE FOR SELECTED INTERCITY ROUTES

Mode	Toronto St. Catharines	Toronto Kingston	Toronto London	Toronto Windsor	Toronto Sudbury	Toronto Ottawa	Toronto Montreal
STOL	7 (7)	8 (7)	7 (7)	7 (7)	7 (7)	7 (6)	7 (6)
CTOL	n/a	7 (n/a)	8 (8)	8 (8)	8 (8)	8 (8)	8 (8)
Automobile	6 (6)	6 (6)	6 (6)	6 (6)	6 (6)	6 (7)	6 (7)
Rail-Turbo	5 (5)	5 (5)	5 (5)	5 (5)	5 (5)	5 (5)	5 (5)
Rail-Rapido	3 (3)	3 (3)	3 (3)	3 (3)	3 (3)	3 (3)	3 (3)
Rail-average passenger train	4 (4)	4 (4)	4 (4)	4 (4)	4 (4)	4 (4)	4 (4)
Rail-electric	2 (2)	1 (2)	1 (2)	1 (2)	2 (2)	2 (2)	1 (2)
Diesel Bus	1 (1)	2 (1)	2 (1)	2 (1)	1 (1)	1 (1)	2 (1)

Notes:
a) 1 = most efficient, 7-8 = least efficient in terms of BTU/passenger trip
b) rank order relates to efficiency of mode at 100% load factor. Rank order in parenthesis ( ) relates to efficiency of mode at observed or assumed load factor.

From Toronto Airport Study Program - Technical Study 3D4, p. 34.

FOOTNOTES

1. Defined in footnote on page 1 of Technical Study 2 of Toronto Island Airport Study Program as 100 mile radius from Toronto.

2. Malton, Buttonville, Hamilton, Oshawa, St. Catharines, Toronto Island, Waterloo-Wellington.

3. Brampton, Brantford, Guelph, Lindsay, King City, Maple, Markham, Peterborough, Welland.

4. An aircraft movement is either a take-off or a landing. A local movement is one where the plane does not leave the zone of the control tower. An itinerant movement is one which lands at the airport from outside the zone of the control tower or which takes off and leaves the control tower zone. The control zone of the Toronto Island Tower extends in a three-mile radius and to a height of 2,000 feet above sea level. Associated with local movements are "touch-and-go" movements. Pilots in training and some recreational flyers are intent on practicing take-offs and landings. They come in for landing and continue along the runway for an immediate take-off. The whole is counted as two air movements. The process is known as touch-and-go, does not consume as much time as separate landings and take-offs, so more such movements can be handled by the tower and runways.

5. For details of the sources of information and the methodology employed to arrive at these forecasts, see the report.

6. With the exception of the Central Airway's planes, most are not hangared but are tied down on the infield and ramp areas. Hangaring and docking facilities for float aircraft are provided at cost by Harbour Commissioner staff using dollies and beaching gear.

7. In earlier years at Toronto Island Airport "touch-and-go" accounted for as much as 88% of the total air movements. In more recent years touch-and-go percentage has been 69-70%.

8. Globe and Mail, March 15th, 1977.

9. At the final public participation meeting on the Island Airport Studies on May 14, Ontario Transport Minister James Snow said that if a "federal-provincial study now in progress on how best to handle passenger transportation in Southern Ontario comes up with very strong information about future passenger trends the Ontario Government may have to look at the Pickering airport question again". Globe and Mail, Monday, May 16, 1977.

10. Studies of Alternative Aviation Uses for the Toronto Island Airport Site Summary Report, page 10.

11. STOL Port Site Evaluation, Toronto, Ontario Aviation Planning and Research Division, Civil Aeronautics, Canadian Air Transportation Adminstration, Sept. 1972, pg. 93, Estimated travel time to city centre: Car 30 min., Public Transit 45 min. +.

12. Toronto Island Airport Study Program, Technical Study 3B.3, pg. 42, "Recommendations. As many major operational constraints and unresolved areas of airspace confliction have been identified, the recommendation of the evaluation team is that the airport at CFB Downsview **not** be considered as a base for the introduction of commercial STOL aircraft operations in the Toronto area."

13. Noise Exposure Forecasts (NEF) is the Ministry of Transports' accepted methodology for determining a single numbered rating of the culmative noise intruding into communities from known or predicted aircraft operations. An NEF contour line (or NEF contour) is a line representing the locus of all points on the ground at which the NEF value is the same.
35 NEF is the upper limit above which land should not be used for residential development.
30 NEF is the level above which significant disturbance is likely to occur.
28 NEF is the lower limit, above which sound insulation for residential buildings is recommended. If the sound insulation proposed is substantially below that deemed adequate, financing under the National Housing Act is denied. Marine use is deemed acceptable at 40 NEF.

14. In an addendum report issued in April 1977, Study Team 3 replies to comments on the "inapplicability of the NEF system" made by the City of Toronto and the Ministry of State for Urban Affairs. The criticism suggests that a more applicable system is to be found in a study conducted by Dr. Johnston for the University of Toronto called the NPL rating system. (V STOL Community Annoyance Due to Noise: Proposed Indices and Levels, Research Report No. 6, June 1972). Acknowledging that Dr. Johnston's study is an important addition to the body of work on "Noise Impact" Study Team 3 believes that his concern is entirely with residential communities and that his criteria were so selected and would require modification to be applied to the airport site in an essentially recreational community. In assessing noise impact for actual aircraft operations under actual background noise conditions Study Team 3 believes the NEF system to be reasonably adequate and appropriate for the Island Airport Study.

15. 12.1% responded "yes" to "noise from the Gardiner Expressway?"

16. This section of the study was undertaken by the "Air Resources Branch of the Ontario Ministry of the Environment" at the request of Transport Canada. "The Toronto Air Quality Simulation Model" was used. While the model has limitations when applied to moving aircraft there is no other more valid data available.

17. Southerly Winds, low wind speed and mixing height and neutral atmospheric stability.

18. In the Addendum issued in April 1977 page 63-64 newer emissions statistics for the Dash 7 are presented which somewhat lower pollution figures.

19. Toronto Island Airport Study Program 3D3 Summary page 111.

20. From the airport Projects Team of the Ministry of Transport and the Environmental Office of the Ontario Ministry of Transportation and Communications.

21. Globe and Mail, July 16, 1977.

22. Toronto Island Airport Study Program, Technical Study 8, March 1977 pages 63-64. "At this time, there does not appear to be the potential for very high speed rail service on new rights-of-way for the introduction of new non-rail technologies (e.g. magnetic levitation, tracked hovercraft) in the Canadian Corridor". Study Team 8 (from the Surface Planning and Urban Applications Branch, Transport Canada) recommends "the preferred approach should be to carefully select high value improvements to incrementally improve rail passenger services**** (such as) use of rolling stock capable of higher speeds on the existing infrastructure."

23. Globe and Mail, July 30, 1977.

24. For example the successful introduction of a sleeper-bus service from Toronto to Timmins.

25. Toronto Airport Study Program March 1977 Technical Study 3D4 pages 1-26.

26. Conventional take-off and landing planes.

27. Aircraft service from Kingston to Toronto was performed by Ontonabee Airways operating out of Toronto Island Airport and using a Saunders ST27. This service therefore shared the advantage of lower access cost with STOL. It used a small plane with short take-off and landing capability though not a pure STOL craft. It has suspended operations at Toronto Island Airport pending outcome of the present studies.

28. The high fuel burn for jets on short-haul routes is illustrated by the higher rates of consumption on the Toronto-London route with DC9's — per available seat mile 6300 BTU — compared to the average on other DC9 routes of 3000 - 4000 BTU per available seat mile. The Toronto-Windsor route is over twice the distance of the Toronto-London route and yet it requires only 33% greater fuel burn.

ALTERNATIVE SCENARIOS FOR AVIATION USE OF THE TORONTO ISLAND AIRPORT

By the terms of reference established by the "Joint Committee - Toronto Island Airport" and confirmed by the "Intergovernmental Policy Steering Group" there are two options for continued use of the Airport site for aviation purposes:

1. Retain as an exclusive general aviation facility
2. Introduce short-take-off landing scheduled services.

In preparing the studies on these options Study Team 3, made up of technical staff from the Federal Ministry of Transport and the Provincial Ministry of Transportation and Communications, considered these options in 3 scenarios:

Scenario 1: General Aviation

Toronto Island Airport is presently being used for a variety of General Aviation activities, consistent with its physical capabilities and limitations. The general aviation scenario is a continuation of that present use, allowing for the projected growth of general aviation activity, without the addition of any other type of aviation activity. A detailed description of the present and projected G.A. activity is given in the report.

Scenario 2: Regional STOL

The Regional STOL scenario involves the use of the Toronto Island Airport for the G.A. role coupled with the introduction of commercial STOL aviation services serving a network of cities in the Ontario Region. The Regional STOL network extends service from Toronto island to London and Windsor (with a connection between London and Sarnia), Sudbury (with connections to northern Ontario), Kingston and St. Catharines.

Scenario 3: Extended STOL

The Extended STOL Scenario adds additional STOL services to the Regional STOL Scenario. These include services to Montreal and Ottawa. The G.A. activity would also continue to operate out of the airport under this scenario.

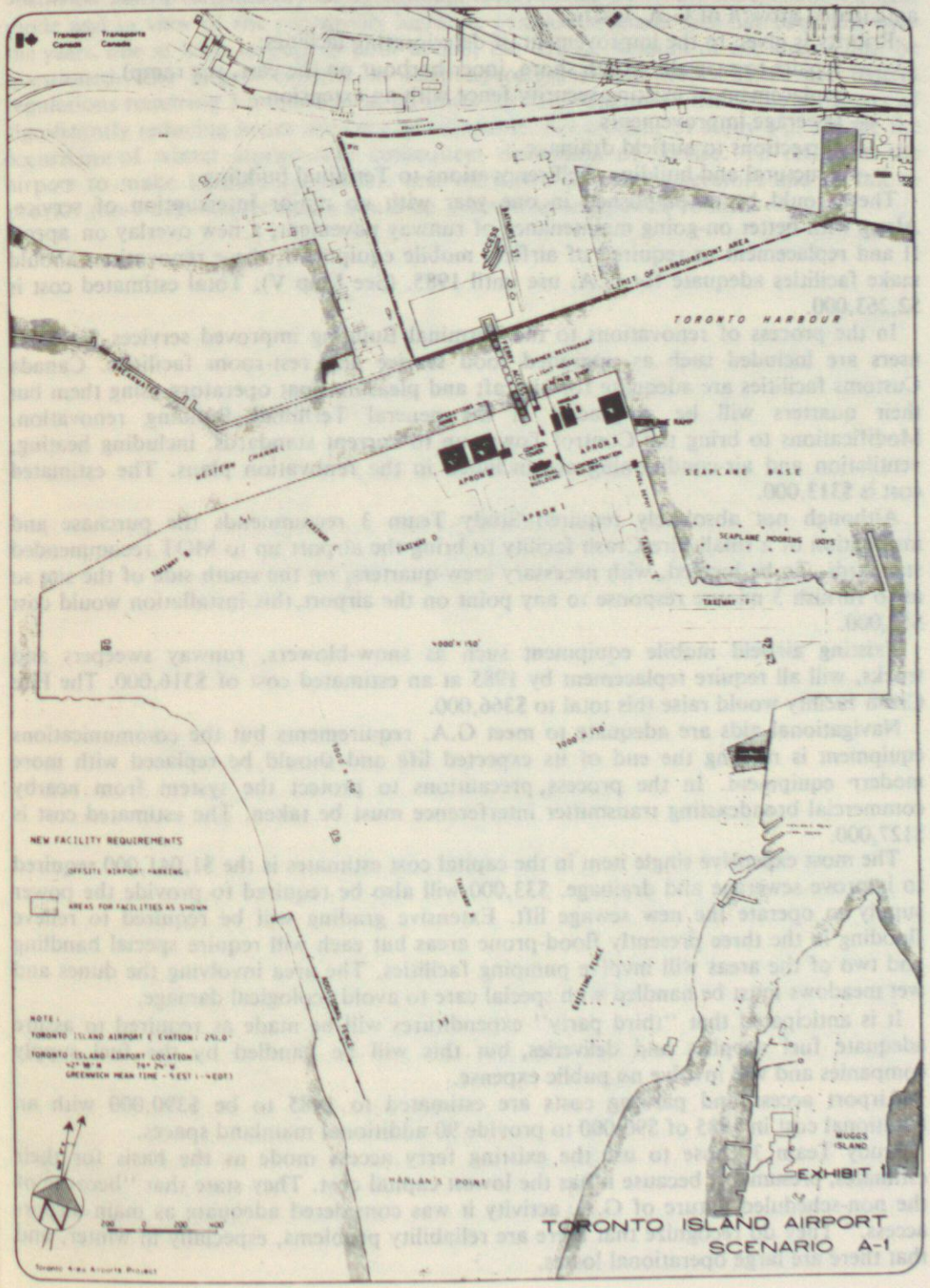
The presentation of alternative uses in the form of scenarios while a useful device for permitting comparisons of needs, costs and social and economic impacts for fully developed plans for each option has the disadvantage of perhaps being misinterpreted as firm, inflexible design proposals. This is nowhere of more concern than in the question of the possible introduction of STOL service at the site.

According to the Ministry of Transportation and Communications, STOL service if permitted would not be instituted simultaneously as a complete network but would be geared to public demand and individual carrier initiative for the various links.

Provision of adequate instrument flight equipment, necessary apron space, servicing and safety equipment would obviously need to be provided initially but until some routes were firmly established, temporary passenger accommodation could be provided in the present terminal and/or alternatively arranged at a central downtown location where mini-bus transportation could be provided to flights without need for much passenger accommodation at the airport itself. Investment in more elaborate passenger accommodation could be timed on the basis of proven need.

Recognizing that some lead time would be required to keep accommodation adequate, nevertheless, if a user-pay principle is to be applied to the service, care should be taken not to overburden initial services with amortized capital costs for too much accommodation geared to forecast future demand.

MAP V



Scenario 1. General Aviation

In the past few years of uncertainty over the fate of the airport site there has been an understandable neglect of upkeep in some areas.

Study Team 3 makes recommendations for site improvement to better serve the anticipated growth of G.A. traffic.

Priority is given to the improvement of deteriorating facilities;

— repairs to seawalls (south shore, inner harbour on the east, sea ramp)
— replacement of existing security fence with an extension
— sewerage improvements
— corrections to airfield drainage
— structural and building shell renovations to Terminal building

These could be accomplished in one year with no major interruption of service. Along with better on-going maintenance of runway pavement, a new overlay on apron II and replacement as required of airfield mobile equipment, these renovations should make facilities adequate for G.A. use until 1985. (See Map V). Total estimated cost is $2,263,000.

In the process of renovations to the Terminal Building improved services for G.A. users are included such as upgraded food service and rest-room facilities. Canada Customs facilities are adequate for aircraft and pleasure boat operators using them but their quarters will be up-graded in the general Terminal Building renovation. Modifications to bring the Control Tower up to current standards, including heating, ventilation and air-conditioning are included in the renovation plans. The estimated cost is $313,000.

Although not absolutely required Study Team 3 recommends the purchase and installation of a small Fire-Crash facility to bring the airport up to MOT recommended standards. To be located, with necessary crew-quarters, on the south side of the site so as to furnish 3 minute response to any point on the airport, this installation would cost $50,000.

Existing airfield mobile equipment such as snow-blowers, runway sweepers and trucks, will all require replacement by 1985 at an estimated cost of $316,000. The Fire Crash facility would raise this total to $366,000.

Navigational aids are adequate to meet G.A. requirements but the communications equipment is nearing the end of its expected life and should be replaced with more modern equipment. In the process, precautions to protect the system from nearby commercial broadcasting transmitter interference must be taken. The estimated cost is $127,000.

The most expensive single item in the capital cost estimates is the $1,041,000 required to improve sewerage and drainage. $33,000 will also be required to provide the power supply to operate the new sewage lift. Extensive grading will be required to relieve flooding in the three presently flood-prone areas but each will require special handling and two of the areas will involve pumping facilities. The area involving the dunes and wet meadows must be handled with special care to avoid ecological damage.

It is anticipated that "third party" expenditures will be made as required to assure adequate fuel supplies and deliveries, but this will be handled by the fuel supply companies and will involve no public expense.

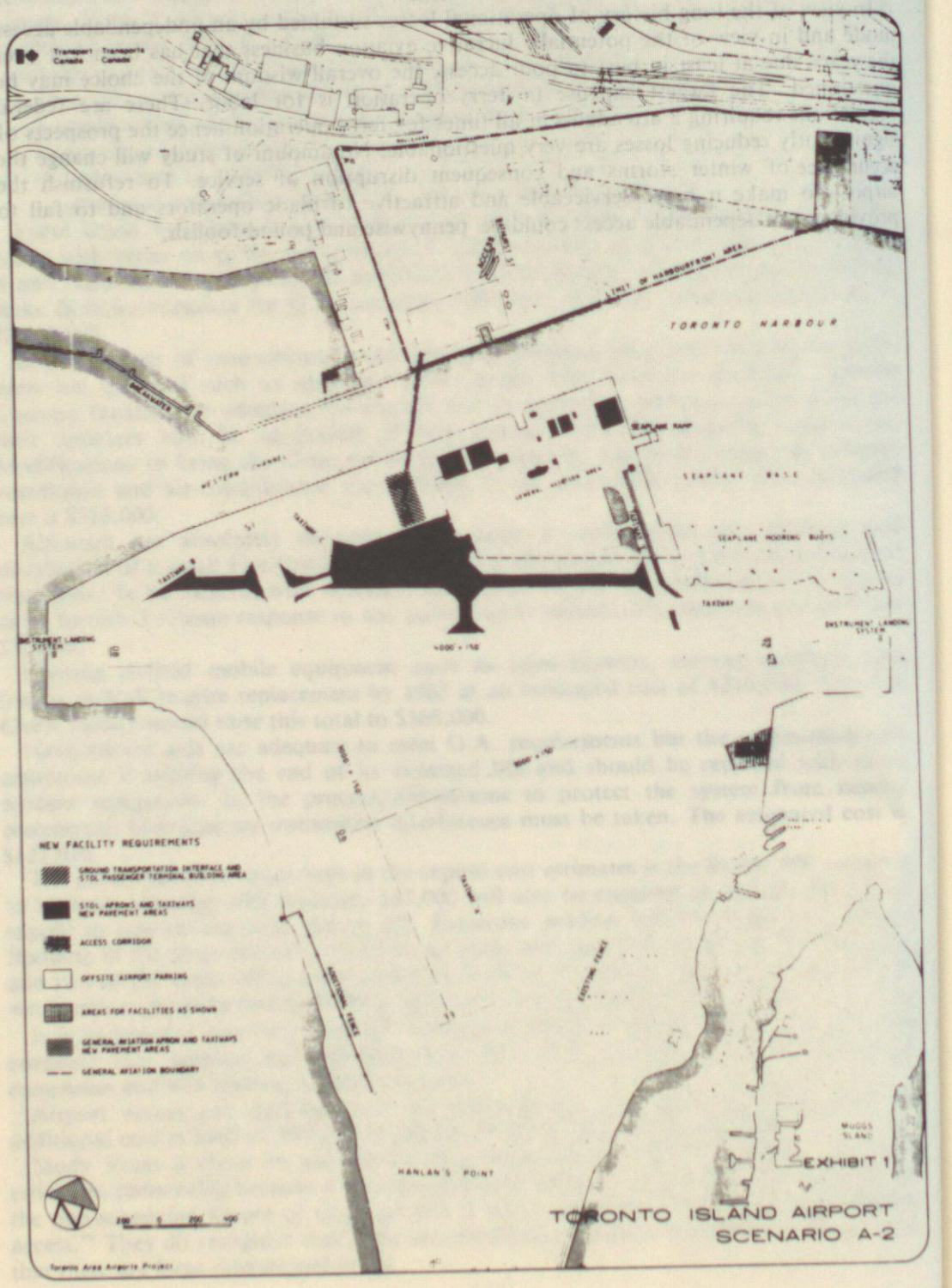
Airport access and parking costs are estimated to 1985 to be $390,000 with an additional cost in 1985 of $90,000 to provide 90 additional mainland spaces.

Study Team 3 chose to use the existing ferry access mode as the basis for their estimates, presumably because it has the lowest capital cost. They state that "because of the non-scheduled nature of G.A. activity it was considered adequate as main airport access." They do recognize that there are reliability problems, especially in winter, and that there are large operational losses.

They leave it to Study Team 6 to present the alternative access schemes. They suggest further analysis in further airport planning to assess the possibilities of reduction of operational losses and the substitution of improved channel crossing in bad weather in comparison with the costs of alternative schemes.

In view of the long history of operational losses sustained by an undependable access mode and in view of the potentially lucrative aviation business that has been lost over the years, due at least in part to poor access, the overall wisdom of the choice may be questioned. The largest expense in ferry operation is for labor. There are federal regulations requiring 3 attendants at all times for ferry operation hence the prospects of significantly reducing losses are very questionable. No amount of study will change the occurrence of winter storms and consequent disruption of service. To refurbish the airport to make it more serviceable and attractive to plane operators and to fail to provide more dependable access could be pennywise and pound-foolish.

MAP VI



Scenario 2. General Aviation Plus Regional STOL

The runway layout of the present airport is to remain intact and be utilized by both G.A. and STOL craft.

It is proposed to leave G.A. facilities where they are for service to G.A. users. Improvements will be made to aprons I and II. Taxiways will be widened to 75 feet.

STOL facilities

It is proposed to develop separate facilities for STOL users west of Hangar 4:

A STOL passenger terminal of 8,000 sq. ft.[1]

A STOL Aircraft Parking Apron of 115,000 sq. ft.
Permitting 2 aircraft parking positions with adequate manoeuvering space.

The new necessary ATS/Telecom facility would be accommodated in the terminal building.

Some modification of runway lighting will be required to meet MOT standards but present taxiway lighting is adequate.

Two runways will require resurfacing. Taxiways will require resurfacing by 1985.

Improved airport maintenance facilities will be required and it is proposed to combine these with the Fire-Crash facility in an 8,600 sq. ft. building on the south side of the airport. This is sufficient to serve for Scenario 3 as well.

A de-icing pad and service will need to be provided.

Some additional emergency equipment will be needed besides the replacements required for Scenario I.

Some modern improvements to the remote transmitter site at Gibraltar Point will be needed.

Fuelling facilities at 3rd party expenses will need to be enlarged to meet the new demands.

Airport access and parking

Study Team 6 proposes 5 alternative access plans for Scenario 2.

1. Existing ferry
2a. Pedestrian tunnel with Ongiara for service vehicles
2b. Pedestrian tunnel with conveyor system for services
3. Vehicular bridge (2 lane - 65 ft. clearance)
4. Single lane tunnel for service and transit vehicles

Of these Study Team 3 rejected the existing ferry as inadequate for scheduled air service. They chose the pedestrian tunnel with escalator entrance and egress, accompanied by the Ongiara for service vehicles (delivered to Hanlan's Point Docks) as the representative method although acknowledging that the other 3 were possible alternatives. Their reservations regarding the bridge access, which requires on-site parking, relate to possible electromagnetic interference from car operation on the sensitive electronic facilities of the control tower. They believe car-parks and roadways should be kept at least 600 ft. away from the control tower. Similar questions are raised for the single lane vehicular tunnel, and to conveyor service deliveries.

On Map VI the location of the parking lot on Bathurst Quay for 330 cars up to 1985 and 420 cars by 1990 is indicated. The tunnel, the new terminal building and the apron and runway layout are also outlined. The size and shapes of these facilities are subject to change with more detailed planning.

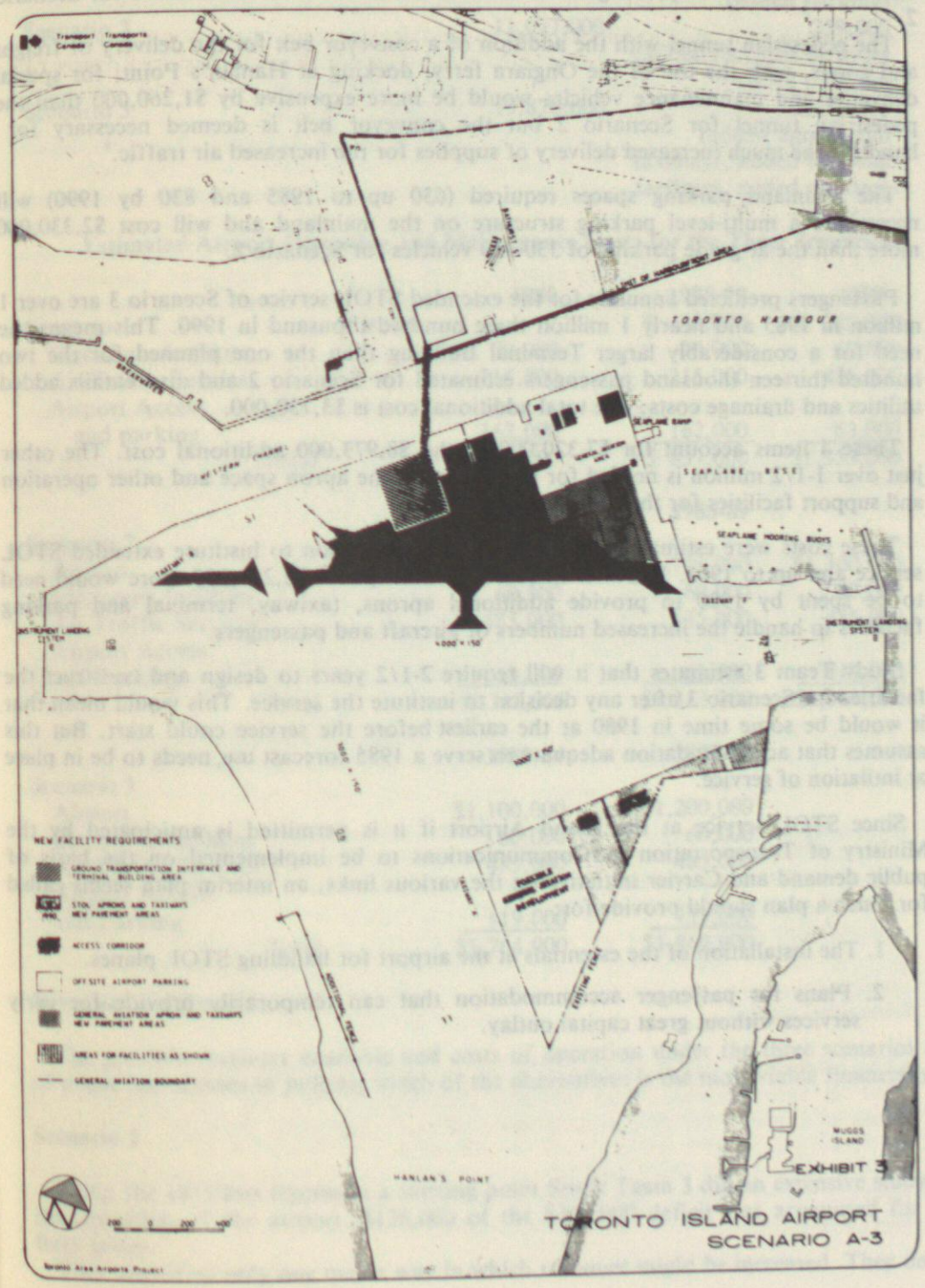
The total capital cost of airport development for Scenario 2 is $11,077,000 or $8,414,000 more than for Scenario 1. The largest of these additional costs are in:

Tunnel and Ongiara service	$2,340,000
Air navigation, electronic and meteorological facilities	2,232,000
New terminal facilities	1,137,000
Runway, taxiway and apron improvements	954,000
Added utility and drainage costs	634,000
Operations and support facilities	494,000

The remaining $623,000 is accounted for by small additions in other categories such as site preparation and additional parking.

Study Team 3 estimates that it will require 2 years to design and construct the facilities for Scenario 2 after any decision to institute the service. This means that the earliest the service could start would be early 1980.

MAP VII



Scenario 3 **General Aviation Plus Regional and Extended STOL**

In the plans for Scenario 2 the necessary equipment, machinery and air navigation services are all adequate to serve for Scenario 3's extended STOL service. The $8,973,000 additional costs are largely related to provisions for handling approximately 6 times the number of passengers forecast for Scenario 3 over the number for Scenario 2.

The pedestrian tunnel with the addition of a conveyor belt for the delivery of freight and goods, with the use of the Ongiara ferry, docking at Hanlan's Point, for special deliveries and maintenance vehicles would be more expensive by $1,260,000 than the pedestrian tunnel for Scenario 2 but the conveyor belt is deemed necessary for handling the much increased delivery of supplies for the increased air traffic.[1]

The mainland parking spaces required (630 up to 1985 and 830 by 1990) will necessitate a multi-level parking structure on the mainland and will cost $2,330,000 more than the at-grade parking of 330-420 vehicles for Scenario 2.

Passengers predicted annually for the extended STOL service of Scenario 3 are over 1 million in 1985 and nearly 1 million three hundred thousand in 1990. This means the need for a considerably larger Terminal Building than the one planned for the two hundred thirteen thousand passengers estimated for Scenario 2 and also entails added utilities and drainage costs. The total additional cost is $3,730,000.

These 4 items account for $7,320,000 of the $8,973,000 additional cost. The other just over 1-1/2 million is needed for providing for the apron space and other operation and support facilities for the increased air-traffic.

These costs were estimated for the original construction to institute extended STOL service and up to 1985. If traffic increases as anticipated $2,231,000 more would need to be spent by 1990 to provide additional aprons, taxiway, terminal and parking facilities to handle the increased numbers of aircraft and passengers.

Study Team 3 estimates that it will require 2-1/2 years to design and construct the facilities for Scenario 3 after any decision to institute the service. This would mean that it would be some time in 1980 at the earliest before the service could start. But this assumes that accommodation adequate to serve a 1985 forecast use, needs to be in place at intiiation of service.

Since STOL service at the Island Airport if it is permitted is anticipated by the Ministry of Transportation and Communications to be implemented on the basis of public demand and Carrier initiative on the various links, an interim plan seems called for. Such a plan should provide for:

1. The installation of the essentials at the airport for handling STOL planes.
2. Plans for passenger accommodation that can temporarily provide for early services without great capital outlay.

Summary of Capital Costs for airport preparation for the Three Scenarios

	To 1985	added 1990
Scenario 1 G.A. alone	$ 2,663,000	$ 90,000 (added parking)
Scenario 2	11,077,000	259,000 (added terminal facilities added parking)
Scenario 3	19,870,000	2,231,000 (added aprons and taxiways, added terminal facilities, added parking)

Estimated Airport Operating and Maintenance Costs for the Three Scenarios

		1980	1985-90	1990
Scenario 1	Airport		$ 440,000	$ 745,000
Electronic facilities		20,000	20,000	60,000
Air Traffic Services		215,000	215,000	485,000
Airport Access and parking		162,000	162,000	63,000
	Total	$ 837,000	$ 837,000	$1,353,000
		1980-84	**1985-89**	
Scenario 2		$ 710,000	$ 725,000	$1,300,000
Airport		60,000	60,000	60,000
Electronic facilities		485,000	485,000	485,000
Air Traffic Services				
Airport Access and Parking		63,000	63,000	119,000
	Total	$1,318,000	$1,333,000	$1,964,000
		1980-84	**1985-89**	
Scenario 3		$1,100,000	$1,200,000	
Airport		60,000	60,000	
Electronic facilities		485,000	485,000	
Air Traffic Services				
Airport Access and Parking		119,000	119,000	
	Total	$1,764,000	$1,864,000	

Revenues and Profits

The possible revenues available and costs of operation under the three scenarios are of prime importance in judging which of the alternatives is the most viable financially.

Scenario 1

Using the 1975 loss figures as a starting point Study Team 3 did an extensive study of the operation of the airport. $138,000 of the $300,000 deficit was accounted for by ferry losses.

They identified only one major way in which revenues might be increased. They deem

hangar rents at $1.10 per sq. ft. including maintenance, heating and taxes to be low for the Toronto Region and suggest $1.50 to $2.00 per sq. ft. for hangar and repair shop spaces with the tenant paying heating, utilities, taxes and routine maintenance as a reasonable objective.

Another possible improvement might lie in the reduction in the direct involvement of airport employees in aircraft handling and the team recommends sub-contracting, or leased concessions for these services.

From these two sources it is estimated that a $90,000 improvement by 1990 might be achieved. But such improvements would be dependent on assured long term tenure of aircraft owners and sales and servicing organizations.

Total revenue in 1990 is estimated to be $376,000 annually. For the capital improvements suggested in the previous section, amortization over the useful life-time of each item at 8% was calculated. On this base, the annual cost is estimated to be $258,000.

Adding operational and maintenance costs (excluding air Traffic Control and electronic services of $235,000 annually now funded by Transport Canada) the maximum short-fall in 1990 is estimated to be $484,000 assuming the rate of revenue as projected from 1976.

This represents something under a $2 short-fall per aircraft movement as compared to a short-fall of $1.50 per movement in 1975. But control and electronic costs would be $1.00 per movement in 1990 whereas they were over $1.50 per movement in 1975.

Proceeds from training schools are a percent of the training fee received by Central Airways (operator of the schools) and there is no separate charge for landings. A review of the fees charged by the school and the percent paid to the airport might be in order to establish the extent to which they do or do not cover costs incurred by the airport.

Itinerant planes are charged $1.30 landing fee (most G.A. airports do not charge for landing of planes under 5,000 lbs. and fees for those over 5,000 lbs. vary. Malton charges fees for all itinerant and local planes). Parking of itinerant planes is charged for at $4.00 if in excess of six hours and $4.00 every twenty-four hours thereafter up to the monthly rate.

Any increase in these fees would need to be studied in relation to charges in other airports in the region with an analysis of the competitive impacts to assess the viability of increases.

Estimated Annual Costs for Scenario 1:

Local annual net costs for the operation	$484,000
Federal costs for Control and Electronics	235,000
Total public cost	$719,000

Scenarios 2 and 3

For Scenarios 2 and 3 income is based on the number of passengers anticipated times the fare structure. Fare structure and revenues for the "most likely" case (based on a fare of $17.00 plus $ .09 per mile) are predicted as follows:

Two approaches to the allocation of these costs can be made:

1. STOL users should be charged a fee to cover costs added by the STOL operation over G.A. costs incurred.
2. STOL users should be charged for the total costs under each scenario on the grounds that most of the facilities are required for STOL and that G.A. O&M costs are negligible compared to STOL's.

We thus have a minimum (total - G.A. costs) and a maximum to be covered.

to 1985	**Scenario 2**	**Scenario 3**
minimum	$10,288,000	$23,066,000
maximum	18,890,000	31,668,000
1985-90		
minimum	10,768,000	26,955,000
maximum	19,504,000	35,691,000

Cost per passenger (1990)	**Scenario 2**	**Scenario 3**
minimum	$ 6.65	$ 2.64
maximum	12.13	3.56

Recovery would obviously be significantly easier to achieve with Scenario 3.

The charges shown are per passenger. On a round trip each passenger would be charged twice. To cover these costs in Scenario 2 charges of $13.30 to $24.26 per round trip would be necessary. In Scenario 3 they would be covered by round trip charges of $5.28 to $7.12.

But under Scenario 1, G.A. deficit (1990) is estimated as $484,000 with present charging policies. Study Team 3 predicts that the airport could be made to completely pay for irself in Scenario 3 if G.A. charges were continued and an extra 40 cents charged STOL users over the $2.64 minimum or approximately $3 per passenger. Even traffic control and electronic costs could be covered by increasing the charge to $3.40.

To attempt a similar recovery under Scenario 2 seems unrealistic. With the many fewer passengers the extra charges would need to be a sizeable percentage of the original fare and no doubt would discourage patronage.

The problem of recovery of costs at the airport is part of the wider problem being discussed regarding all forms of public transportation, namely to what extent users should be expected to pay the total costs of the systems they use.

With increasing scrutiny of escalating public expenditures the trend seems to favor increasing the load on users to ease the demand on the public purse. On the other hand there is recognition that transportation facilities are essential to our on-going economic health, that encouraging a public system is a legitimate public responsibility and that it pays public dividends.

Study team 3 has pointed out the magnitude of the per passenger costs of equipping, maintaining and operating the airport and has suggested a means by which they might be recovered except for Scenario 1. To demand full recovery under Scenario 2 would, it seems likely, sink the service. A heavy load of facility costs, which would be adequate in many areas to also serve the larger traffic of Scenario 3 must be allocated to too few passengers. The airline profits available to the operator as forecast under the most favourable circumstances would be somewhat delayed and not large.

For Scenario 3 the break-even point is predicted to arrive reasonably quickly and achievable profits to increase rapidly. Because airport costs can be allocated to large numbers of passengers they are not really prohibitive though the increased charges might affect patronage. To strike a viable balance, another way in which airport costs might be recovered would be to reach an understanding with the operating airline that the airport costs were chargeable to them and leave it to them how much they would cover through foregoing some profit and how much use fee they would charge each passenger. The airline could then adjust fares, fees and profits to gain the optimum returns from the resulting patronage.

For Scenario 1 there are some avenues which could be pursued to possibly decrease the deficit:

(a) If, as claimed, there are distinct advantages to some itinerant flyers in having the downtown airport retained, the possibility of some increase in landing fees for itinerant flights should be studied.

(b) The whole area of training fees and percentages paid to the airport should be assessed.

(c) The fact that operating charges for the ferry annually exceed by $100,000 the operating charges for the tunnel for Scenario 2 should lead to a reassessment of amortized capital costs for a tunnel for Scenario 1 as possibly cheaper in the long-run as well as providing more satisfactory service. A tunnel would also have the advantage of freeing the Gap of ferry interference with small boat traffic.

1. Consideration was given for use of the present Terminal Building, but eliminated because of the high cost of interior modifications necessary to accommodate both the G.A. and STOL operations.

2. As an alternative Study team 3 considers the proposed vehicular bridge with on-site parking feasible if it can be proven that possible electromagnetic interference by the motor traffic with Control Tower operation will be no problem.

V SUMMARY AND CONCLUSIONS

SUMMARY AND CONCLUSIONS

In any decision on the use of airport land, account must be taken of the special regard in which Torontonians hold "The Islands" and the resulting intensity of public interest and high degree of personal concern with the issue.

As is to be expected, this intense public interest gives rise to strong differences of opinion as to preferable uses each supported in varying degrees of intensity by their proponents.

Because Toronto Harbour is a national harbour, it is a place where city, metropolitan, provincial and federal interests converge and overlap. Consultation is needed about viable objectives and mutual recognition of the differences in primary problems as well as preferences of the government levels involved. The ultimate objective is to make the best use possible of the unique resource of the harbour in the interests of the city, the province and the nation.

In recognition of this need for intergovernmental consultation, a process was formalized in 1974 when the matter of future use of the Island Airport site came under consideration following the announcement by the Harbour Commission that it no longer felt justified in funding airport deficits from Harbour Commission funds. "The Joint Committee - Toronto's Island Airport" was convened including in addition to representatives of the four levels of government, the Harbour Commission, the Central Waterfront Committee, the Ontario Aviation Council and the Metropolitan Toronto Board of Trade. This committee identified the three options on the use of the site as: (1) Retain as a general aviation facility (2) Introduce short take-off and landing scheduled services (3) Phase out all aviation activity. They also identified areas of investigation and study to be pursued to furnish pertinent information as a basis for the decision to be made.

An "Intergovernmental Policy Steering Group" was appointed to oversee the studies and receive the reports. This group consists of the Minister of Transport, the Minister of State for Urban Affairs, the Minister of Transportation and Communications, the Chairman of Metropolitan Toronto, the Mayor of the City of Toronto, and the Chairman of the Toronto Harbour Commissioners.

An "Intergovernmental Staff Forum" was created consisting of technical study managers from each governmental level to be chaired by a member of the Harbour Commissioners' staff. Eight studies were agreed upon and each assigned to an appropriate government body and study manager. Their consultation in the Forum was intended to result in presentation of the studies in a form to permit comparisons in respect to need, costs to implement and the environmental and social impacts of each alternative use.

As a part of Intergovernmental Staff Forum activities, provision was made for a public participation program to provide for public input to the questions that should be answered by the studies and ultimately discussion and criticism of the final documents. The final studies were published in late March and the public participation meetings concluded in mid-May. The final decision is yet to be made.

Public discussion has tended to centre on the question "an airport or not an airport?" not on "if not an airport, what?". But the governmental bodies involved realized that closing the airport after forty years of use required examination of alternative uses for the site to determine what, if any, other use should take priority.

Non-Aviation Alternatives for the Airport Site

There have been a great many proposals for the site's use and Study Team 4 made a list of 20 of the, to them, more feasible uses. After evaluation of the 20, they chose four alternatives for further study and presentation. The options chosen were housing and parks and recreation. These were obviously the most appealing and

easiest to justify since they relate to basic needs of a growing metropolitan population.

The Study Team is to be commended for their thoroughness and their imaginative and attractive presentations of four viable and different uses of the site. But in our view they did not establish a strong case of present need for any of the four uses and each is subject to some questions about timing of financial burden, cancellation of a prized open space, over-concentration of Metro recreational facilities in a single area of Metro, and the possibilities of traffic congestion in some cases.

The Park and Recreational Proposals

"Regional Parkland", perhaps the most appealing as a future use for a much larger Metropolitan Toronto, seems presently an unwarranted addition to an already large financial commitment of the Metro Parks Department. To the extent that development took place here, other Metro Parks development would likely be postponed, resulting in concentration of recreational facilities rather than the dispersal throughout Metro that might better serve public needs. The Parks Department has not yet made full use of the Islands Park area under its jurisdiction. Budget restraints would probably postpone full development of the airport site and mean for sometime an underutilization, particularly of the water-oriented possibilities which would be more expensive to develop. Regional Parkland can remain a future option as long as no large permanent construction is placed on the site.

"Marine Life-Park and Parkland" has the appeal of park and recreational use for the site plus, the forecast, attraction that it would not only pay for itself but would provide substantial public revenue from use of the site. But it would represent a change of policy in Islands Park uses from the present open parkland, nature study and the quieter forms of recreational activity in an essentially non-commercial context.

The success of many marine life performance parks on this continent as well as the public popularity of the C.N.E., Ontario Place and the Science Centre give reason to believe that the proposed commercial recreational venture on the airport site would be profitable. The high cost of site development, bridge access, new channel and spit would require at least a $12 million dollar public investment before there would be any collection of revenue and there would still remain the risk that the project would prove successful. There are other waterfront sites in and beyond Metro where the educational and recreational advantages of a Marine Life Park could be realized. Only financial gains appear greater with the central location of the Island site.

As in the Regional Park proposal, there is question of the virtue of concentration of recreational facilities rather than wider dispersion to best serve the needs of Metro citizens. In the case of the Marine Life Park, there is the additional question of the effect of heavy added recreational traffic, particularly at peak periods of use of all the recreational facilities on the waterfront which might prove a disservice to them all.

In making a decision on possible use of the airport site, a basic question requires an answer, namely, "Does Toronto really need another heavy user-charge recreational facility in this waterfront area which tends to limit the use of parkland to those most able to pay and restricts the area available to those who must seek simpler, less costly recreation?". We believe it does not though we recognize that others hold a different view.

Housing Proposals

The need for more housing in the central City area gives added fillip to the lure of the Island site for proposals to build a new community there. The two proposals made by Study Team 4 are very different in their concepts but both provide for some preservation and use of regional parkland, protection of sensitive ecological areas and a fairly high density of population which by innovative planning is economical in land use while preserving a considerable degree of natural amenity.

The Major Residential Community plans for the maximum number of housing units compatible with reasonable density for family housing and the constraints on traffic imposed by the Lakeshore-Bathurst intersection. It proposes 5,000 housing units, 2,500 of them assisted housing and 2,500 for the conventional market. This would result in an estimated population of 14,750 (including 5,720 children), large enough to support a complete range of community and public services.

Because of the Housing Department's difficulty in finding central city sites for assisted housing in neighbourhoods suitable for children, the Study Team considers the airport site a major opportunity. Their reasons are that is it publicly owned and large enough to permit a complete community with a mix of housing types. Its central location meets the goal of added housing in the central City area. It is an attractive setting for housing with its water amenities and its proximity to central city employment, entertainment and shopping. A residential community would be a stabilizing influence on a long stretch of waterfront now largely committed to recreation. It would add year round use to an area presently of summer use pattern.

For the Pedestrian Community and Park, Study Team 4 proposes a much smaller community offering a life-style orientation essentially to walking and public transit. Its plans propose putting 3,000 housing units, 1,500 assisted and 1,500 market on one-half of the site, the other 100 acres, separated by a lagoon from the residentional area, to be Regional Parkland consolidated with the Islands Park. The estimated population for the community would be 8,835, including 3,420 children. This community is considered to need a full range of community services but is too small to justify a separate school and can justify only a combination junior-senior school and one junior school. Its commercial area would be very small.

The access planned for the two communities is very different. For the major community, a bridge to the Island is considered necessary and this would require a new channel to Blockhouse Bay because of bridge interference with boat traffic through the Western Gap. Garage spaces would be provided with housing units but would be limited to 3,200 of the 5,000 units because fewer occupants of assisted housing are car owners. By the housing mix planned, Study Team 4 believes the traffic at Lakeshore-Bathurst would not exceed the capacity of the intersection.

For the smaller Pedestrian Community, access would be by ferry across the Western Gap. Car access would be permitted only in emergencies. Garages would be provided in a structure on Bathurst Quay for one of every two housing units plus 100 visitor spaces. Shopping carts and pallet movers would need to be provided for goods delivery to houses.

Study Team 6 from the Metropolitan Toronto Planning Department who made the study on "Access Alternatives" has reservations on the access plans chosen for both projects. They believe that congestion would occur at Lakeshore and Bathurst in the Major Community Proposal even with the reduced car ownership. They believe, from a traffic standpoint, the size of the community should be reduced to assure a

traffic flow more in line with the expected trip time for a community as close to Central City. Their greatest concern is with ferry service for the Pedestrian Community which they consider to be inadequate for many emergency situations and dangerously so in the event of a major disaster requiring two way vehicular traffic. They believe that daily ferry inconvenience, when experienced, will affect the marketability of the housing and possibly result in petitions to the government to provide more efficient access.

There are objections to the use of the airport site for housing. As a large building complex it would have the effect of further removing the present inner-city core from the lake front. Housing would cancel out a now prized open vista and permanently commit this unique site to a routine use. It would create an enclave community requiring a complete infrastructure and provision of a range of community services for its exclusive use but duplicating services already available in nearby mainland neighbourhoods.

This is particularly serious in the instance of building new schools. Empty classrooms are already a problem in many central City areas. To build new schools in an area that would be highly susceptible to the same difficulty of adjustment of population mix to utilize fully the school facilities provided could be costly for taxpayers. It would seem more prudent to search out smaller housing sites in City areas where there are already excess classrooms and where city infrastructure is already intact. This would undoubtedly be more difficult for the Housing Department but could pay dividends in savings on building new community and city services. The acreage required for the actual housing is not large but the shortage of undeveloped land in the Central Area could probably mean recourse to infilling, remodelling and reconstruction to provide the necessary sites. If the city is to meet its objective of 30,000 units in the Central Area by 1985 this will be a necessary process in any event.

There are some additional objections to housing on the airport site. A sizeable residential population would threaten contiguous park areas with overuse or at least overwhelming use by resident citizens to the disadvantage of visiting users. Despite the charm of its water orientation, the Island has some drawbacks for winter housing entailing discomfort and possible high heating costs. Both housing proposals presented would pose some traffic problems on Bathurst Quay at 8 o'clock egress and 5 o'clock ingress due to the large number of cars or people converging on a single acces route.

Until such time as Toronto may become much shorter of possible housing sites, it seems unnecessary to entail the disadvantages associated with such use of this unique site.

Alternative Aviation Uses for the Airport

The strong case for the retention of the Island Airport rests on a number of factors: a) The importance of general aviation activity in Canada's air service; b) The importance of the Toronto Island Airport in the general aviation facilities of the Toronto Region; c) The unique advantages of the Island Airport's location; d) The difficulty and expense of providing substitute accommodation in the event of closing the airport and the near impossibility of providing a substitute with the advantages of the Island site; e) The airport's potential for serving a larger role in aviation activity with its capacity to accommodate the new Dash 7 craft from a location suitable to gain maximum advantage of paired city service; f) The possibilities offered by extended use of the site in the relief of Malton as that airport reaches its maximum capacity for passenger accommodation.

Of Canada's 900 airports, only 8% are served by scheduled flights. The rest are served by the general aviation fleet which grew from 3,894 registered planes in 1961 to 18,955 in 1976 and the hours flown by general aviation craft more than quadrupled in the same period. Of all the provinces, Ontario has the largest number of general aviation registrations — 33.5% of the Canadian total.

The Toronto Region is served by 16 major general aviation airports of which the Toronto Island Airport is the third busiest. Only seven of these airports have traffic control towers, which is a necessary service for the operation of many planes, and as a consequence the seven handle about 75% of the total aircraft movements at the 16 airports, with a larger percentage of itinerant movements. Three of these airports presently operate at or near capacity and none of them have adequate capacity to accommodate their own anticipated growth and in addition absorb the traffic of a displaced Island Airport operation

In their October 1974 report, the "Joint Committee - Toronto Island Airport" stated that "the consequences of closing the Toronto Island Airport to aviation would be the need to develop an airport with similar facilities in another location". This report also points out the difficulties of finding another location with comparable advantages.

The unique advantages of the Island site lie in its largely over-water approaches, its closeness to the Toronto business district and downtown hospitals, its accessibility to Toronto-wide public transportation, its seaplane base and facilities for conversion of planes from wheels to floats. Its one great disadvantage has been considered to be its poor mainland access.

An extensive assessment of general aviation facilities in the Toronto region done by Study Team 3 for the Toronto Island Airport Study confirms the view of the Joint Committee and states: "With no change in the composition of General Aviation demand increases in air traffic will require additional General Aviation facilities in the Toronto Region. The loss of the Toronto Island Airport, particularly if followed by the closing of Markham, is likely to severely reduce the capacity for pilot training as well as itinerant recreational and business aviation in the Toronto Region and distort the demand/supply relationship of the local aviation industry."

The evaluation team estimated the cost of a new airport if located 15 to 30 miles from Toronto to be up to $16.5 million and if within 15 miles of Toronto up to $27.5 million. But the substitute site would obviously sacrifice many of the advantages of the present site.

The Toronto Island Airport is clearly beneficial in serving regional aviation. To close it would cause disruption in air services and probably spur demands for the provision of a substitute facility, at considerable cost and at the sacrifice of important advantages of the present airport. For this reason we believe that continued operation of the Toronto Island Airport would fulfill a more urgent present need than that established for any of the non-aviation use proposals.

In the Island Airport Study Program extensive research was done to determine possible deleterious affects of air use of the Island site. The results of the research are reassuring.

Noise exposure forecast (N.E.F.) contours overlaid on maps of the Island Airport show that with present use projected to 1990 and with the addition of Extended S.T.O.L. service to 1990 most if not all of the readings, including the 28 N.E.F. readings[1], would fall on the site itself or on surrounding water. The 30 and 28 readings show a slight overlap on the Hanlan's Park docking area and the northern tip of Muggs Island but do not reach Ontario Place, Wards or Algonquin Islands or the Harbourfront waters edge.

The airport now or with proposed extended service is an insignificant contributor to pollution levels in the Metropolitan Toronto area. Maximum concentrations would fall on the site itself but Island Airport emission densities would remain substantially lower than urban averages.

The studies found aviation use compatible with preservation of Island ecology and positive and beneficial long-range effects on wild-life and vegetation could occur.

Even with projected STOL service, traffic on Bathurst Quay would be increased less than with any of the non-aviation uses with the exception of winter days for the Regional park proposal. STOL service would peak on week-days hence its traffic peak would not coincide with Harbourfront weekends. Any increased use of the Island site will increase traffic on the Quay but there is little indication that airport traffic would pose serious problems.

There is no way that we can see in which the Island Airport could become a large commercial airport. It is too small, its runways are too short and its overall runway capacity is too limited to permit burgeoning growth. It has the capacity to become a busier airport but we believe never a big one given its present physical limitations.

Study Team 3 presented the alternative aviation uses of the airport in the form of scenarios: Scenario 1 dealing with continuing the present use as a purely general aviation facility; Scenario 2 presenting plans for adding Regional STOL service to serve four Ontario centres, Kingston, London, St. Catharines and Sudbury with connecting service to the north from Sudbury, and to Sarnia and Windsor from London; Scenario 3 outlining plans for adding service to Ottawa and Montreal and therefore called Extended STOL. They made extensive analysis of facilities cost, operating and maintenance costs, projected growth and possible revenues for each.

The team is not hopeful that a purely General Aviation facility can be made self-supporting by 1990. They predict an annual short-fall of $484,000 with the continuation of present rates of revenue. There is some hope that if the airport is given a more assured future, permitting longer leases to service facilities companies, that more realistic rentals could be charged and significantly raise revenues. Possibilities of raising aircraft fees are to some extent limited by the fee schedules of competitive airports in the region but if, as contended, there are significant advantages in the central location to aviation users then some higher fees for the use of the more convenient facility would be justified. The high annual cost of continued ferry access suggests the need to reassess the amortized costs for a tunnel to provide more convenient and reliable access at a far lower annual operating cost.

The capital costs of the addition of Regional STOL service seem disproportionate to the projected passenger volume. The facilities that need to be provided for STOL operation are adequate to serve Extended STOL but would be chargeable to only 1/6 as many estimated passengers, making recovery difficult. If STOL service is to be added at the airport it is our view that the Regional service should be augmented by the Extended STOL program to increase financial viability.

The added capital costs for the Extended STOL service are largely related to the need for increased terminal facilities for the projected one million to one million three hundred thousand annual passengers anticipated compared to the two hundred thirteen thousand projected for Regional STOL. Study Team 3 believes that amortized capital costs plus operating, maintenance and traffic control costs and the short-fall in General Aviation revenue could be recovered under the Extended STOL program by an airport user fee of $3.40 per passenger thus making the airport completely self-sustaining.

Anticipated revenues for the two proposals show that the Regional STOL service is anticipated to be over six years in reaching break-even and that 1990 annual profit to the operating airline is estimated to be about $1.2 million. For Extended STOL service break-even would be expected to be reached in about two years; five years later it is estimated that profits to the airline should reach $12,462,401 and at the end of 12 years be approximately $20 million annually.

The studies confirm that STOL operation is compatible with General Aviation use of the airport. Aircraft movements added by the Extended STOL operation would, not even by 1990, reach 10% of the total projected movements at the airport and total movements would be well within airport capacity. The extended STOL service would not produce detrimental noise, pollution or environmental impacts and added traffic at Bathurst Quay would not be a serious problem. We now have a needed and well-located facility that is underused and requires public subsidy. To add a service that offers the possibility of making the airport self-supporting is financially very attractive.

With the development of a quiet, fuel efficient, short-take-off and landing plane capable of operating from a small, in-city airport we now have the opportunity to realize some greater fuel efficiency in short-haul flights. The high fuel-burn of jets at take-off and landing increase relatively the per mile fuel consumption on short-haul flights compared to longer stage lengths. The De Havilland Dash 7, contemplated for the proposed Extended STOL service because it is designed for short-take-off and landing,avoids some of this excessive burn. The considerably less fuel consumption for passengers reaching an in-city airport is an added efficiency over the long trip to reach outlying airports needed for the longer runways required for conventional jets. These two factors account for the somewhat more efficient rating received by STOL in the energy efficiencies studies done by Study Team 3. The five times greater speed achieved in air over rail and car travel is compensation in many instances for the added energy consumption which in any case is not great on an occupied seat-mile basis.[2]

To permit the introduction of scheduled STOL service at the Island Airport seems advantageous in more fully utilizing the facility, in offering a more efficient air service, in the possibilities of making the airport self-sustaining and in contributing relief for Malton that would postpone provision for other facilities as it reaches its capacity.

There is real need for the General Aviation facilities at the Toronto Island Airport. To add the advantages offered by Extended STOL service is an opportunity that should be utilized.

1. The demarcation of noise level considered compatible with housing which is the most sensitive to noise annoyance.

2. Dr. E. P. Cockshutt, Co-ordinator of the Energy Project of the National Research Council says that energy costs are roughly equilavent for air transport, car and rail transport. "Energy Considerations in Aeronautical Transportation", 1976.

VI RECOMMENDATIONS

RECOMMENDATIONS

There was no discussion in the Island Airport Study program of who should operate the airport, who should be responsible for any deficits, who should originally fund the capital investment or what airline should operate the proposed STOL service. Since we support continued operation of the airport and the addition of Extended STOL service, we make the following recommendations on these practical matters:

1. A minimum 10-year tenure for the airport
   (a) To give the management important latitude in negotiating more profitable, longer time leases with service companies and hence to stabilize the operation. This applies even to exclusive General Aviation use.
   (b) To provide time for a larger operation to prove its potential profitability and its capacity to aid in the rationalization of total air service.

2. Continued management of the Airport by the Harbour Commission
   (a) Given the circumstances they have a good record of management with a good team under the supervision of a government agency and are sensitive to community interests.
   (b) With improved tenure and new financial arrangements continuity of management would be desirable.

3. A temporary arrangement for sharing any deficits, principally by the Federal Government and the Province, until the airport is viable and the user pay principle can be more fully operative.
   (a) Benefits accrue beyond Toronto boundaries of provision for air service.
   (b) In the long run the Carrier must assume responsibility for a fare and fee schedule that will cover airport operation costs. In the short run there may be deficits which all principals should help to cover but which the Carrier should subsequently be responsible for reimbursing from future profits.
   (c) As a prime beneficiary from the service, the City should also participate particularly in provision of infrastructure of access.
   (d) To assure continued careful management the Harbour Commission, as operator, should share in the financial responsibility.

4. In connection with the financial arrangement provision should be made for deposit of any excess revenue in a fund to provide for covering losses in a subsequent year and provide for renewal of capital assets.

5. The deficit or profit from airport operation is separate from the profit and loss of the airline operation. In making leases with Carriers account should be taken of projected airline profits. A lease with renewable options to permit periodic review, protection of the principle of full recovery of operating costs plus amortized cost of the capital outlay, and perhaps some public participation in airline profits if they reach sizeable amounts should be considered.

6. The Federal Government should provide the necessary capital to renovate the airport and provide facilities for extended service but with the expectation that the capital expense will be amortized and repaid through annual operations charges within the new suggested revolving fund.

7. Although regional carriers have expressed an interest in a STOLport operation, consideration should also be given to Air Canada as an operator of STOL service at the Island Airport.

VII APPENDIX

APPENDIX A1

Type, ownership and usage of G.A. Planes in Canada 1974

Of the 1974 fleet of 12,959 G.A. planes,
87.1% of the fleet were under 4,000 lbs.
11.6% of the fleet were between 4,001 and 12,500 lbs.
1.3% of the fleet were over 12,500 lbs.
Of these:
73.3% were privately-owned
24.6% were commercially-owned
2.1% were government-owned

Use of commercially-owned craft is approximately four times greater than the average use of private planes.

Of the hours flown by commercial G.A. aircraft in 1974:
31.9% were for transportation of goods and passengers
48.0% were for flight training
6.8% were for recreational purposes
1.8% were for aerial photography
1.5% were for agriculture, forestry, fishing and crop dusting
2.9% were for inspection (crops, forests, game)
0.8% were for fire protection and fighting
6.3% were for other purposes

Of the hours flown by private G.A. aircraft:
49.6% were for business transportation
26.3% were for recreational purposes
13.9% were for personal transportation
7.0% were for training
3.2% were for other purposes

APPENDIX A-2

FORECASTS OF GENERAL AVIATION ACTIVITY
TORONTO REGION
1975–2000
SUMMARY OF GROWTH RATES
(percent per annum)

Year	AIRPORTS WITH TOWERS			T.I.A.–MALTON			AIRPORTS WITHOUT TOWERS			All Airports In Region
	Itinerant	Local	Total	Itinerant	Local	Total	Itinerant	Local	Total	
1975–1980	6.9	4.6	5.3	6.6	(4.0)*	5.3	5.2	7.4	7.1	5.8
1980–1985	4.5	3.7	4.0	5.0	(4.0)	4.5	4.1	4.6	4.6	4.2
1985–1990	4.0	3.6	3.8	4.6	(3.8)	4.1	4.0	4.4	4.4	4.0
1990–1995	3.8	3.5	3.6	4.2	(3.3)	4.0	3.8	4.3	4.2	3.8
1995–2000	3.4	3.4	3.4	4.0	(3.1)	3.9	3.7	4.1	4.1	3.6

*Brackets indicate negative growth rate

APPENDIX A-2 continued

GENERAL AVIATION FORECASTS 1975 - 2000
THE TORONTO REGION
TOTAL MOVEMENTS: AIRPORTS WITH TOWERS*
(number of movements for aircraft 12,500 lbs. or less)

Year	Movement Classification: Itinerant	Local	Total
1975**	274,332	582,486	856,818
1980	391,300	765,500	1,156,800
1985	487,600	918,000	1,405,600
1990	593,200	1,089,630	1,682,830
1995	714,230	1,294,030	2,006,260
2000	841,860	1,529,490	2,371,350

* Aircraft under 12,500 pounds.
** Actual movements reported to Aviation Statistics Centre in 1975.

GENERAL AVIATION FORECASTS FOR THE TORONTO REGION
AIRPORTS WITH TOWERS
AIRCRAFT OVER 12,500 POUNDS
(annual movements)*

Year	Aircraft Power Plant: Jet	Turbo and Piston	Total
1975**	1,459	1,849	3,308
1980	2,036	3,246	5,282
1985	2,539	4,038	6,577
1990	3,078	4,905	7,983
1995	3,650	5,852	9,502
2000	4,377	6,916	11,293

* Includes movements at Buttonville, Hamilton, Oshawa, St. Catharines, Toronto Island and Waterloo/Wellington.
** Actual movements reported to Aviation Statistics Centre in 1975.

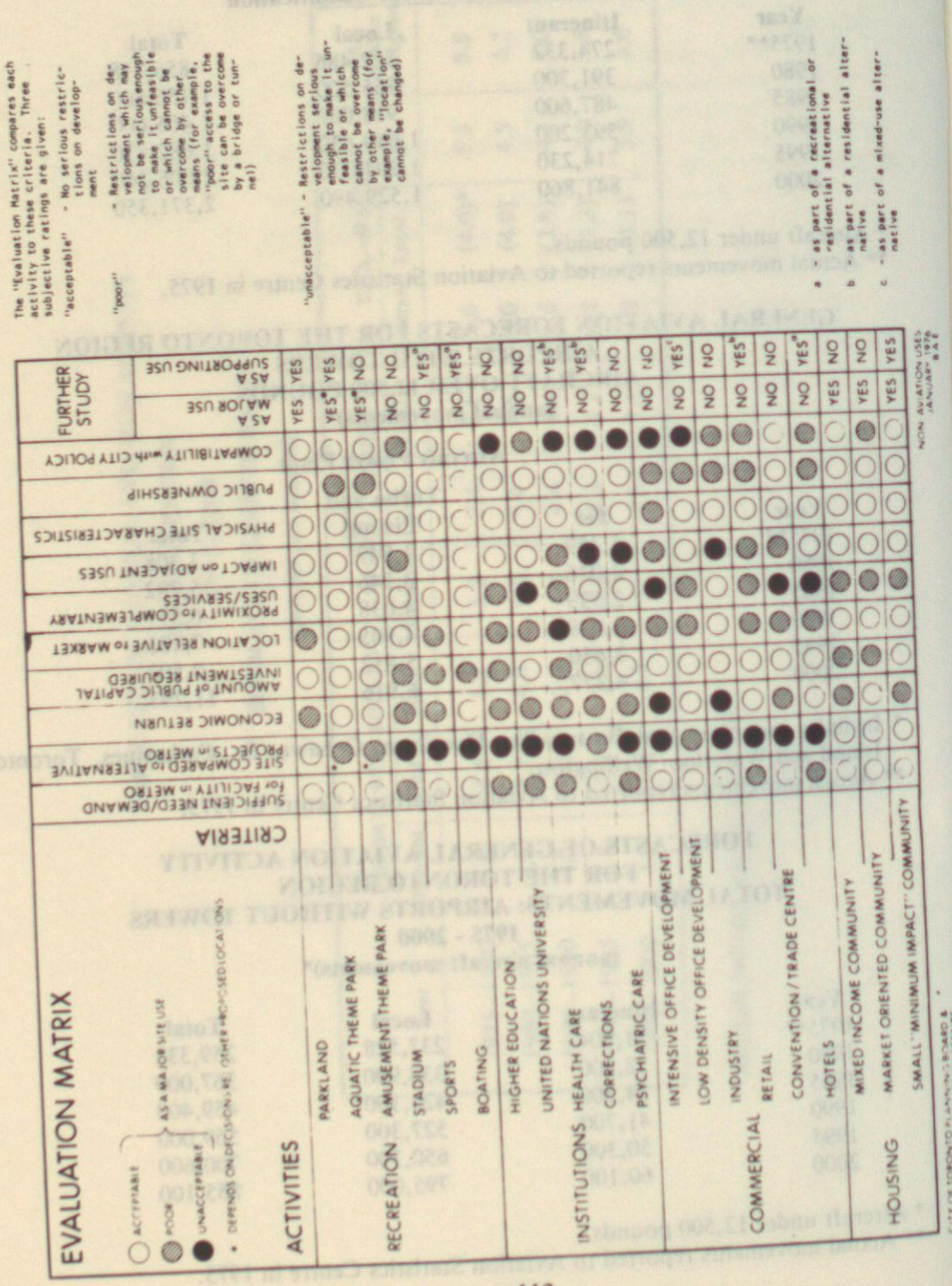
FORECASTS OF GENERAL AVIATION ACTIVITY
FOR THE TORONTO REGION
TOTAL MOVEMENTS: AIRPORTS WITHOUT TOWERS
1975 - 2000
(annual aircraft movements)*

Year	Itinerant	Local	Total
1975**	21,804	237,528	259,332
1980	28,100	338,900	367,000
1985	34,300	425,100	459,400
1990	41,700	527,300	569,000
1995	50,300	650,300	700,600
2000	60,100	795,000	855,100

* Aircraft under 12,500 pounds.
** Actual movements reported to Aviation Statistics Centre in 1975.

APPENDIX B-1

From Toronto Island Airport Study–Non-Aviation Uses Study–Background Report 1976.



The "Evaluation Matrix" compares each activity to these criteria. Three subjective ratings are given:

"acceptable" - No serious restrictions on development

"poor" - Restrictions on development which may not be serious enough to make it unfeasible or which cannot be overcome by other means (for example, "poor" access to the site can be overcome by a bridge or tunnel)

"unacceptable" - Restrictions on development serious enough to make it unfeasible or which cannot be overcome by other means (for example, "location" cannot be changed)

a - as part of a recreational or residential alternative

b - as part of a residential alternative

c - as part of a mixed-use alternative

APPENDIX B-2

Anticipated Revenues for Marine Life Park - Scenario B

Projected Annual Attendance Figures:

Marine Life Park	1st year	10th year
	1,200,000	1,800,000 - 2,000,000
80% in summer months (50% in July and August)		
Peak summer week-end day		13,000
Other summer week-ends and week-days		10,000
Peak winter day		4,000
Recreational Swimming Pavilion		400,000 - 500,000
Peak summer day		5,000 - 7,000
Open year round so winter attendance would be high		

Indoor sports, Camping, Playing fields, Tennis courts

In the Regional Park Scenario (A) annual attendance for the fully developed facility was estimated at 200,000 to 300,000. It was noted that change of access over the Western Gap would undoubtedly increase this considerably. In this Scenario B the study team did not make a special forecast for attendance at these smaller recreational facilities except to note that they could be more intensively developed with bridge access and would contribute to a peak daily attendance at the site of at least 20,000.

Estimated Annual Lease Revenues for Marine Life Park - Scenario B

Major Activities	Guaranteed Minimum	Probable Maximum
Marine Life Park (57 acres)	$300,000	$600,000
Indoor recreational Swimming Pool (9 acres)	50,000	60,000
SUB TOTAL	$350,000	$660,000
Other activities		
Terminal Bldg. and Concessions	20,000	30,000
Indoor Sports 3/4 complex	10,000	10,000
1-2 Hangars	10,000	10,000
Tennis - break even	—	—
Boat rentals, marina day mooring	10,000	15,000
SUB TOTAL	$50,000	$65,000
OVERALL TOTAL	$400,000	$725,000

Pro-rated on % of ownership
Harbour Commission - 75.4%
City of Toronto - 22.1%
Federal Government - 2.5%

Lease terms would probably be arranged as:

1. Guaranteed minimum lease payment (based on land value of $65,000 per acre at 8%)
2. Proposed participation in admissions and concessions sales and revenues at an agreed rate — which would add approximately 25 to 35% on lease payments in early years of operation up to doubling payments by the 12th year.
3. Proposed participation in gross operating profits at an agreed escalating rate (probably a function of developers rate of corporate income tax) which could be a source of substantial income in later years.

Site-owners would incur 1) fees and expenses in transfers of ownership and subdividing the site estimated at $300,000 2) some payment to harbourfront for land taken for bridge approaches — about 1.1 acres — (at a maximum rate of $600,000 per acre but subject to negotiation that would probably result in a lower price), which might marginally reduce the financial returns to site owners.

For the parkland operation of the Metro Parks Department it is expected that an annual deficit of $150,000 would be incurred in the administration of this portion of the site. If the Department elected to operate the sports activities leasable portion they would incur lease payments of $50,000 - $65,000 and additional site development and access shares but it is conceivable that they might operate them so as to yield some profit to help offset the deficit incurred in the parkland operation.

The commercial activities would pay commercial real property taxes. They would receive city and Metro services. (In general taxes received from commercial properties exceed the cost of services they receive.)

APPENDIX B3

Anticipated Revenues for Major Residence Community - Scenario C

1. To Site owners

Land Rents	
500 Senior citizen units	$ 2,061,000
1400 Non-profit units	(1,510,000)
600 AHOP units	3,930,000
900 N.H.A. units	6,950,000
800 Conventional units	10,740,000
800 Luxury units	17,900,000
Commercial space units	840,000
Schools	1,610,000
Community Facilities	300,000
	$42,821,000

From this the owners would be required to make a grant to the Development Corporation of $19,069,000 which reduces payment to site owners to $23,752,000 (to be shared T.H.C. 75.4%, City 22.1%, Federal Government 2.5%). Whatever compensation would be negotiated for the harbourfront land used for the bridge access would have to be paid from this $23 million.

2. To Housing Developers

Non-Profit		**Revenue** $	**Costs** $	**Profits** $
500 senior citizen units capitalized rents	7,128,000			
Fed./Prov. grants	2,300,000	9,428,000	9,428,000	—
1400 Non-profit units capitalized rents	30,419,000			
Fed./Prov. grants	7,224,000	37,643,000	37,643,000	—
Profit				
600 AHOP units		21,036,000	18,354,000	2,782,000
900 N.H.A.		30,197,000	26,347,000	3,850,000
800 Conventional units		31,755,000	27,706,000	4,049,000
800 Luxury units		45,120,000	39,367,000	5,753,000
Commercial space		2,515,000	2,515,000	—

APPENDIX B4

Unit type allocation and estimated populations Scenario D

1. For 50% market - 50% assisted

Type	Market	Assisted	Total	Percentage
Bachelor	250	200	450	15
1 Bedroom	375	375	750	25
2 Bedroom	380	400	780	26
3 Bedroom	360	360	720	24
4 Bedroom	135	165	300	10
	1500	1500	3000	100

2. For 75% market — 25% assisted[1]

Type	Market	Assisted	Total	Percentage
Bachelor	350	100	450	15
1 Bedroom	575	175	750	25
2 Bedroom	600	180	780	26
3 Bedroom	525	195	720	24
4 Bedroom	200	100	300	10
	2250	750	3000	100

3. Expected Population 50% market 50% assisted

Type	Market	(Children)	Assisted	(Children)
Bachelor	300	—	240	—
1 Bedroom	675	—	600	—
2 Bedroom	1064	(304)	1280	(480)
3 Bedroom	1404	(684)	1620	(900)
4 Bedroom	662	(392)	990	(600)
	4105	(1380)	4730	(2040)

Total population 8,835 (including 3,420 children)

4. Expected Population 75% market 25% assisted[1]

Type	Market	(Children)	Assisted	(Children)
Bachelor	420	—	120	—
1 Bedroom	1035	—	280	—
2 Bedroom	1680	(480)	576	(216)
3 Bedroom	2050	(1000)	878	(480)
4 Bedroom	980	(584)	600	(400)
	6165	(2060)	2454	(1104)

Total population 8,619 (including 3,164 children)

1. Because the 75% market oriented community would not fulfill the stated city policy of providing 50% assisted housing, it is not considered as desirable hence Study Team 4 used only the 50-50 mix in most of the detailed studies.

APPENDIX B5

Anticipated Revenues and Costs for Scenario D

1. Airport Land-Holding-Partnership	**Revenue Land Rents**	**Costs**	
300 Senior Citizens units	$ 1,484,000	$ 8,861,000	payment to public owner
840 Non-profit units	68,000		
360 AHOP units	3,136,000		
540 N.H.A. units	4,173,000		
480 Conventional units	7,578,000		grant to Dev.
480 Luxury units	12,294,000	19,090,000	Mgnt. Corp.
	28,733,000	$27,951,000	
Less location discount	(2,394,000)		
	26,349,000		
Commercial Space	502,500		
Schools	940,000		
Community Facilities	160,000		
	$27,951,500		
Transfer of general parkland, local parkland, public rights-of-way	FREE		

2. Development Management Corporation	**Revenue**	**Costs**	
Grant from Land-Holding Partnership	$19,090,000	$ 8,102,500	Gen. Site Dev.
CMHC Servicing Grant	327,000		
Shares of development costs		2,150,000	Access (Ferry)
Metro-Parkland	1,218,000	1,150,000	Legal & Planning Fees
City-Parkland	219,000		
City and Local Agencies	164,000	8,234,500	Garage 1600 spaces
Board of Education	959,000		
	$21,977,000	$21,977,000	

3. **Housing Developers**

(Public and Private)	Revenues Non-Profit	Development costs	Profit
300 Senior Citizen units			
Capitalized rents	$ 4,029,000		
Fed. & Prov. Grants	1,380,000	$ 5,409,000	—
	$ 5,409,000		
840 non-profit units			
Capitalized rent	$18,137,000		
Fed. & Prov. Grants	4,335,000	22,472,000	—
	$22,472,000		
	Profit		
360 AHOP units	$11,843,000 sales	$10,333,000	$1,510,000
540 NHA units	16,862,000 sales	14,712,000	2,150,000
480 Conventional units	20,416,000 sales	17,813,000	2,603,000
480 Luxury units	25,520,000 sales	22,267,000	3,253,000
Commercial units	1,479,000 sales	1,479,000	— (to management)

APPENDIX C1

Findings of the technical team[1] on assessment of the potential for absorbing projected growth plus displaced Toronto Island Airport activities.

Airport capacity:

1. The four regional airports under Air Traffic Control:
   Buttonville and Hamilton are currently close to their practical operating capacity which they are expected to reach by the end of 1977 both because of air space congestion and aircraft mix.
   Oshawa and Toronto Island operate below capacity in terms of air space and runway systems in all except some weekend periods.
2. The four airports without Air Traffic Control:
   Brampton, Maple, Guelph and Markham operate below practical capacity on week days but show great peaking at weekends (though only Brampton reaches capacity at these times).

Aircraft Parking and Storage Facilities

At capacity at Buttonville, Hamilton, Oshawa and Maple.
Excess of parking space at Brampton, Guelph and Markham.
All indoor aircraft storage space is fully utilized at all airports where available.

Expansion Space

Limited in most cases. Impossible at Buttonville, Oshawa, Toronto Island and Markham. Only Brampton reported considerable excess holdings of land.

Expansion of facilities within existing airports is possible at a number of airports but only 3 are currently planning expanded facilities (Buttonville, Brampton and Maple). Runway extensions are deemed possible but not currently planned at Oshawa, Brampton and Guelph. Maple has long-range plans for runway extension, hangar building and parking increases.

Maintenance Services

Adequate at all airports with the exception of major overhaul and radio repair which are available at Buttonville and Malton (radio).

Flying Schools

Depend on instrument capabilities at Hamilton and Malton.

Customs Service

Available only at Hamilton, Guelph and Toronto Island in addition to Malton.

Ability to Absorb Additional Demand:

1. Those with Air Traffic Control: Buttonville and Hamilton unable to absorb additional activity. The greatest potential is at Oshawa.

2. Those without Air Traffic Control: The four[2] can absorb 406,700 additional G.A. movements.

3. Five airports[3] can absorb flying training increases but not on weekends at Oshawa, Brampton or Guelph.

4. In general, those able to provide increased parking and storage cannot absorb additional traffic and those able to accommodate increased traffic cannot provide significant aircraft parking.

5. Absorbing activities of a closed Toronto Island Airport:

Airports generally reported that they would accept displaced craft from the Island Airport but four can only accommodate single engine or light twin aircraft.

All indicated unwillingness to accept another flying school. This means Central Airways would need to relocate at a considerable distance from its Toronto market. In spite of healthy demand for training, Central Airways would risk losing many of its present students and might have difficulty attracting a new clientel.

Accommodation for aircraft sales/rentals and maintenance service would be acceptable at Maple and Hamilton airports but not at Brampton, Guelph or Markham.

Principal Conclusions of the Assessment Team:

Of the Air Traffic Control airports, only Oshawa is capable of absorbing increased air traffic but it is unable substantially to increase its accommodation for aircraft based at the airport.

The four airports without Air Traffic Control[4] are not generally equipped to accommodate any dramatic shift of demand in their favour. They essentially cater to the recreational and flying club sector of G.A. Some of the sites are physically suitable for expansion but the owners do not necessarily have the desire or the financial ability to expand facilities in the short term.

In the event of the closing of the Island Airport, aircraft based there could find accommodation in the Toronto region but it would not necessarily be suitable from the point of view of access to Toronto or availability of customs service. The probably result would be additional pressure on Malton to provide parking space and customs service for those who find Toronto access and customs service important.

Establishing customs service at Buttonville might relieve Malton but to attract sufficient itinerant traffic (particularly corporate aviation) to Buttonville to justify customs service, the airport would probably have to reduce the amount of flying training to accommodate the new traffic. Training could of course go to other airports for a time.

With no change in the composition of General Aviation demand increased air traffic will require additional General Aviation facilities in the Toronto Region. The loss of Toronto island Airport, particularly if followed by the closing of Markham is likely to severely reduce the capacity for pilot training as well as itinerate recreational and business aviation in the Toronto Region and distort the demand/supply relationship of the local aviation industry.

The retention of the Toronto Island Airport with introduction of scheduled service will probably result in some displacement of some flying training activity.

If the Toronto Island Airport is closed, attention must be given to the need to provide a new G.A. airport in view of the limited capacity of other G.A. airports to absorb the activities even in the short run.

1. Toronto Island Airport Study Program Technical Study 3B.4, pg. 13-19.
2. Brampton, Maple, Guelph and Markham.
3. Brampton, Maple, Guelph, Markham and Oshawa.
4. Brampton, Maple, Guelph and Markham.

APPENDIX C-2

ESTIMATED ANNUAL PATRONAGE AND REVENUE SCENARIOS 2 AND 3

Regional STOL	1980		1985		1990	
	Annual Patronage	Total Revenue	Annual Patronage	Total Revenue	Annual Patronage	Total Revenue
Toronto Island — Sarnia	14,400	$ 259,200	24,000	360,000	29,600	$ 532,800
Windsor	44,460	1,556,100	77,220	2,316,600	81,640	2,857,400
London	22,360	581,360	37,960	797,160	40,040	1,041,040
North Bay	6,500	208,000	12,750	357,000	12,060	385,920
Sudbury	11,750	434,750	22,200	710,400	20,800	769,600
Kingston	6,200	192,200	10,900	283,400	13,100	406,100
St. Catharines	7,500	165,000	13,100	222,700	15,900	349,800
London - Windsor	46,500	1,255,500	78,750	1,732,500	81,400	2,197,800
Sub total		$ 4,652,110		$ 6,779,760		$ 8,540,460
Extended STOL						
Toronto Island - Ottawa	174,200	6,445,400	320,320	10,250,240	389,200	14,401,140
Montreal	333,840	15,356,640	531,700	21,799,700	695,500	31,993,000
Sub total		$21,802,040		$32,049,940		$46,394,140
Total		$26,454,150		$38,829,700		$54,934,600

APPENDIX C-3

Aircraft Fixed Costs
Scenarios 2 and 3

	Dash 7	Twin Otter
Capital Cost		
Aircraft Price (includes 10% for avionics)	$3,373,000	$800,000
Spare Parts (15% of capital cost)	506,000	120,000
	$3,879,000	$920,000
Annual Aircraft Fixed Costs		
Principal and Interest[1]	631,300	149,700
Insurance (2% of aircraft cost)[2]	77,600	18,400
	$708,900	$168,100

Aircraft Variable Costs
Scenarios 2 and 3

Dash 7	
Fuel Cost	$130.00 per block hour[3]
Oil Cost	1.50 per block hour
Maintenance Cost	35.26 flight and 83.91 flight hour[4]
Landing fees	12.00 flight
Total $47.26 flight, $83.91 flight hour and $131.50 block hour	
Twin Otter	
Fuel Cost	$37.50 per block hour
Oil Cost	.50 per block hour
Maintenance	14.84 per flight and $36.33 per flight hour
Landing fees	5.00 per flight
Total $19.84 per flight, $36.33 per flight hour and $38.00 per block hour.	

Annual Flight Crew Costs
Scenarios 2 and 3

	Dash 7	Twin Otter
Captain	$ 45,000	$ 25,000
Co-Pilot	25,000	15,000
Flight Attendant	10,000	—
Crew Expenses (5% of crew cost)	4,000	2,000
Fringe benefits (18% of crew cost)	14,400	7,200
Total	$ 98,400	$ 49,200

1. Financing at 10% over 10 years.

2. Includes hull and passenger liability.

3. Block hour is the time aircraft engines are operating and includes flight time, taxiing time, and aircraft delay time.

4. Flight hour is actual time in the air.

VIII BIBLIOGRAPHY

BIBLIOGRAPHY

Toronto Island Airport Study Program

Technical Study Series

1. Southern Ontario Local and Feeder Air Service Network, Ministry of Transportation and Communications, March 1976.
2. General Aviation Demand and Evaluation of General Aviation Facilities in the Toronto Area, Transport Canada, March 1977.
3. (a) Studies of Alternate Aviation Uses for Toronto Airport Site — Alternative Aviation Uses Demand Forecast, Ministry of Transportation and Communications and Transport Canada, March 1977.
   (b) Alternative Aviation Uses Impact Studies — Air System Implications. Study Nos. 3B1, 3B2, 3B3, 3B4, Transport Canada, March 1977.
   (c) Alternative Aviation Uses Impact Studies — Facility Requirements. Study Nos. 3C1, 3C2, 3C3, Transport Canada, March 1977.
   (d) Alternative Aviation Uses Impact Studies — Physical Environment. Study Nos. 3D1, 3D2, 3D3, 3D4, Transport Canada, March 1977.

Addendum to Alternative Aviation Uses:

2. General Aviation Demand
3. Impact Studies

Study Nos. 3A, 3D1, 3D2, 3D3, 3D4, Transport Canada, April 1977.

4. A. Non-Aviation Uses Study — Background Report, City of Toronto Planning Board and Ministry of State for Urban Affairs, February 1976.
   B. Non-Aviation Uses Study Progress Report, City of Toronto Planning Board and Ministry of State for Urban Affairs, March 1976.
   C. Non-Aviation Uses Study Program — Four Scenarios, City of Toronto Planning Board and Ministry of State for Urban Affairs, March 1977.
5. Alternative Channel Study, Engineering Department of the Toronto Harbour Commissioners, March 1977.
6. Access Alternatives, Metropolitan Toronto Planning Department, March 1977.
7. Alternative Ground Transportation Modes, Ministry of Transportation and Communications and Transport Canada, March 1977.

Summary Report Series

Summary of Alternative Scenarios, Intergovernmental Staff Forum, May 1977.

3. Alternative Aviation Uses Summary Report, Ministry of Transportation and Communications and Transport Canada, March 1977.
4. Alternative Non-Aviation Uses Summary Report, City of Toronto Planning Department and Ministry of State for Urban Affairs, March 1977.

Public Participation Program Reports

Report on Public Conference May 13 and 14, 1977, Earl Berger Ltd., August 1977.
Final Report on Public Participation, Earl Berger Ltd., July 1977.

Report of the Joint Committee — Toronto Island Airport, October 1974.

Aviation Planning and Research Division - Civil Aeronautics, Ministry of Transport

January 1970. Toronto Lakeshore Site Suitability Meteorological Conditions at Toronto Island vs Toronto International Airports. (S-70-1)

May 1972. The Effects of Introducing STOL Service on Malton Development (Project No. 472-222).

July 1972. A Study of Toronto Island Airport to Determine its Potential as a Civil Aviation Airport and its Potential for STOL Operations (S-72-3)

September 1972. STOLport Site Evaluation, Toronto, Ontario. (S-71-18)

Toronto Area Airports Project, Ministry of Transport

July 11, 1972. Impact of STOL on the Toronto Area Airports System.

1973 Analysis of "A Quiet Alternative Airport Plan".

January 1974. A Review of STOL Forecasts for the Toronto Region.

June 1974. Toronto Island Airport Historical and Forecast Aircraft Movements and Runway Capacity (Aviation Systems Planning Branch).

DeHavilland Aircraft of Canada Ltd.

May 1971. STOL Transportation System Planning.

October 2, 1973. A Plan to Introduce Quiet STOL Transportation in Canada 1974-1977 (STOL Industry Systems Office).

June 1974. The Introduction of STOL Air Services at Toronto Island Airport.

Institute for Aerospace Studies, University of Toronto

November 1970. An Assessment of STOL Technology. Prepared for Canadian Transport Commission, Research Division by J. H. De Leeuw and L. D. Reed.

December 1971. STOL Technology Bibliography Update. Study prepared for Canadian Transport Commission, Research Division by J. H. De Leeuw and L. D. Reed.

Metroplan

1. Projections to 2001 — Population, Housing, Employment. Prepared by the Research Division, Municipality of Metropolitan Toronto Planning Department, January 1975.
2. The Central Area and Sub-Centres. Prepared by the Long-Range Planning Division of the Municipality of Metropolitan Toronto Planning Department, January 1976.

Cockshutt, Dr. E. Philip, Co-ordinator, Energy project, National Research Council, **Energy Considerations in Aeronautical Transportation.** May 1976.

Swaine, Linda, **The Island Airport; Port George VI.** Department of Geography, University of Toronto, 1971.

Toronto Harbour Commissioners, **Annual Reports.** Issues of **Port of Toronto News.**

CORPORATE

A. E. Ames & Co. Ltd.
Bank of Montreal
Bank of Nova Scotia
Bell Canada
Board of Trade, Metro Toronto
Bovis Corporation Ltd.
Bramalea Consolidated Development
Brascan Limited
Cadillac Fairview Limited
Canada Malting Co. Ltd.
Canada Packers Foundation
Canada Permanent Trust Co.
Canadian Freehold Properties Ltd.
Canadian Imperial Bank of Commerce
Canadian National Railways
Canadian Pacific Railways
Commonwealth Holiday Inns of Canada Limited
Confederation Life
The Consumers' Gas Co.
Crown Life Insurance Co.
Dofasco Ltd.Dominion of Canada General Insurance
Dominion Securities Corp. Ltd.
Donlee Manufacturing Ind. Ltd.
T. Eaton Co.
Gilbey Canada Ltd.
Group R
GSW Limited
Guaranty Trust Co. of Canada
Gulf Realty Co. Ltd.
I.B.M. Canada
The Imperial Life Assurance Co. of Canada
Imperial Oil Ltd.
INCO Ltd.
Independent Order of Foresters
Jackman Foundation
Kodak Canada Ltd.
John Labatt Ltd.
A. E. LePage Ltd.
Lever Brothers Ltd.
Maclean-Hunter Publishing Co. Ltd.
Manufacturers Life Insurance Co.
Maple Leaf Mills Limited
Marathon Realty Company Ltd.
L. J. McGuinness and Co. Ltd.
Russell J. Morrison
Noranda
Northern and Central Gas Corp.
Ostranders Jewellers
Parking Authority of Toronto
Proctor and Gamble of Canada Ltd.
Redpath Industries
The Royal Bank of Canada
Royal Insurance Company
Royal Trust Co.
Samuel Son & Co. Ltd.
Shell Canada Ltd.
Sheraton Centre
Robert Simpson Co.
Simpsons Sears Ltd.
Steel Co. of Canada
Sun Oil Co. Ltd.
The Toronto-Dominion Bank
Toronto Real Estate Board
Toronto Star Ltd.
TransCanada Pipe Lines Ltd.
Turner and Porter Funeral Directors Ltd.
Union Carbide Canada Ltd.
Victoria & Grey Trust
Weber Reproductions Ltd.
George Weston Ltd.
Wood Gundy Limited
F. W. Woolworth Limited
Y & R Properties Limited

PROFESSIONAL

Armstrong & Molesworth
Arthur Andersen & Company
Bird & Hale Ltd.
Blaney, Pasternak, Smela and Watson
John Bousfield Associates
Mary Collins Consultants Ltd.
Currie, Coopers & Lybrand Ltd.
Development Engineering (London) Ltd.
A. J. Diamond Associates
Dilworth, Secord, Meagher & Assoc.
Goodman and Carr
Govan, Kaminker, Architects and Planners
Eric Hardy Consulting Ltd.
I.B.I. Group
Jarrett, Goold & Elliott
Mackie & Slavik
Marshall Macklin and Monaghan
Mathers & Haldenby Architects
Murray V. Jones and Associates
Norman Pearson, Planning Consultant
Osler, Hoskin and Harcourt
Peat, Marwick and Partners
Price Waterhouse & Co.
Proctor and Redfern Group
P. S. Ross & Partners
Thorne, Riddell & Co.
Weir and Foulds
Woods, Gordon & Co.

GOVERNMENTAL

Burlington
Reg. Mun. of Durham
Bourough of East York
Borough of Etobicoke
Township of Gloucester
Reg. Mun. of Hamilton-Wentworth
Kingston
London
Metropolitan Toronto
Ministry of State for Urban Affairs
Ministry of T.E.I.G.A.
Mississauga
Reg. Mun. of Niagara
Borough of North York
Oakville
Ottawa
Reg. Mun. of Ottawa/Carleton
Reg. Mun. of Peel
Richmond Hill
St. Catharines
Sarnia
Sudbury
Toronto
Town of Vaughan
Borough of York
Reg. Mun. of York

LABOUR

Ontario Federation of Labour
Sudbury and District Labour Council
Labour Council of Metropolitan Toronto

200 Personal/Academic Memberships, including Libraries