



Dover Shores Development Planning Rationale Addendum Report

Submitted by:
1231507 Ontario Inc.

Prepared by:



Plans

- communities
- environment
- transportation

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August 2002



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1. Background & Purpose

1231507 Ontario Ltd., hereinafter referred to as Roy Investments Limited, previously submitted an Official Plan Amendment application to the Municipality of Chatham-Kent (File No. DO/20/99/0) to permit a combined residential/marina golf course development on lands immediately to the south of the hamlet of Mitchell's Bay.

Roy Investments Limited have since amended the original application to include additional lands immediately to the northeast. The purpose of this Addendum Report is to revise the original Dover Shores Development Planning Rationale Report prepared by Storey Samways Planning Ltd. in April, 1999, to include the additional 127 acres of land, legally described as Parts 3 & 4 on Reference Plan 24R-4511, save and except Part 1 on Reference Plan 24R-5215 (Part Lot 11 & 12, Concession 12). Figure 1.1 illustrates the lands subject to the first application, the additional lands and the entire lands subject to the revised application.

This Addendum Report provides a summary of the arguments presented in the Dover Shores Development Planning Rationale Report prepared by Storey Samways Planning Ltd. in April, 1999, in addition to arguments relevant to the additional lands.

2. Existing Site

2.1 General and Existing Land Use

The lands subject to the current application represent a combined area of 262.9 acres (106.4 hectares). The Subject Lands consist of Class 2 farmland and are currently used for agricultural purposes. There are no buildings or structures located on these lands.

2.2 Surrounding Land Use

Figure 1.1 illustrates the land uses abutting the Subject Lands.

North: Lands to the north are located within the Mitchell's Bay Hamlet Area and consist of urban type uses including, residential, commercial, institutional, recreational and park and open space uses;

East: Lands to the east consist of farmland and are used for agricultural purposes;

South: Lands to the south consist of marshland and are used for open space purposes; and

West: The western boundary of the Subject Lands abut the ARDA dyke, the lands beyond the dyke consist of provincially significant wetland areas and Lake St. Clair.



2.3 Existing Services and Utilities

A Sanitary Sewage Capacity Report, prepared by BTS Consulting Engineers in March 2002 has been prepared to reflect the revised Master Concept Plan (Appendix "A").

Stormwater Drainage

As discussed in the Planning Rationale Report, April 1999, the existing Pinsonneault Pumping Works provides drainage to the Subject Lands located within Lot 10 and roughly 90 acres in Lot 11, via a drainage ditch immediately adjacent to the ARDA dike and a pump located at the southwest corner of the site. A second private pump is located at the north end of the drain.

Sanitary System

A review of the sanitary sewage capacity was completed in March 2002. Sanitary sewage within the hamlet is collected by gravity in a series of 8" and 10" diameter pipes leading to a pump station at the end of Allen Road, from which it is pumped to three stabilization ponds located in Lot 13 for treatment and eventual discharge into the Rankin Drain.

Water Supply

The Subject Lands are serviceable via the water main extending up Winterline Road from Chatham.

Utilities

Three phase power and natural gas utilities are available to service the Subject Lands.

Access

Principal access to the site is provided via Park Street and Main Street to the north, Winterline Road to the east and Angler Line to the south.



3. Proposed Development

The Master Concept Plan has been revised to integrate the additional lands with the concept plan proposed in the original application. The Dover Shores development is comprised of a mixed residential, commercial, institutional and recreational development. The Master Concept Plan is illustrated in Figure 3.1. The following bullets outline the main land use components of the Master Concept Plan:

- **Residential** – a mix of residential housing types include approximately 180 detached single family units and 200 townhome or dockominium units.
- **Commercial** – a limited amount of commercial space is proposed adjacent to Bay Line and interior to the proposed development;
- **Institutional** – a limited amount of institutional space is provided for a community activity centre; and
- **Recreational** – A proposed marina would provide for approximately 170 berths for seasonal and transient use and some ancillary marina services (ie. fuel storage). An 18-hole golf course routed through approximately 160 acres of constructed wetlands or tall grass prairie habitat. The Master Plan Concept accommodates recreational trail linkages to the existing and planned trail network.

Table 3.1 summarizes the development statistics for each land use component of the proposed Master Concept Plan. Open Space and recreational uses account for the majority of land use, approximately 61%, which accommodates the proposed golf course and associated stormwater management ponds. The residential component accounts for approximately 22% of the lands.

**Table 3.1
 Master Concept Plan Development Statistics**

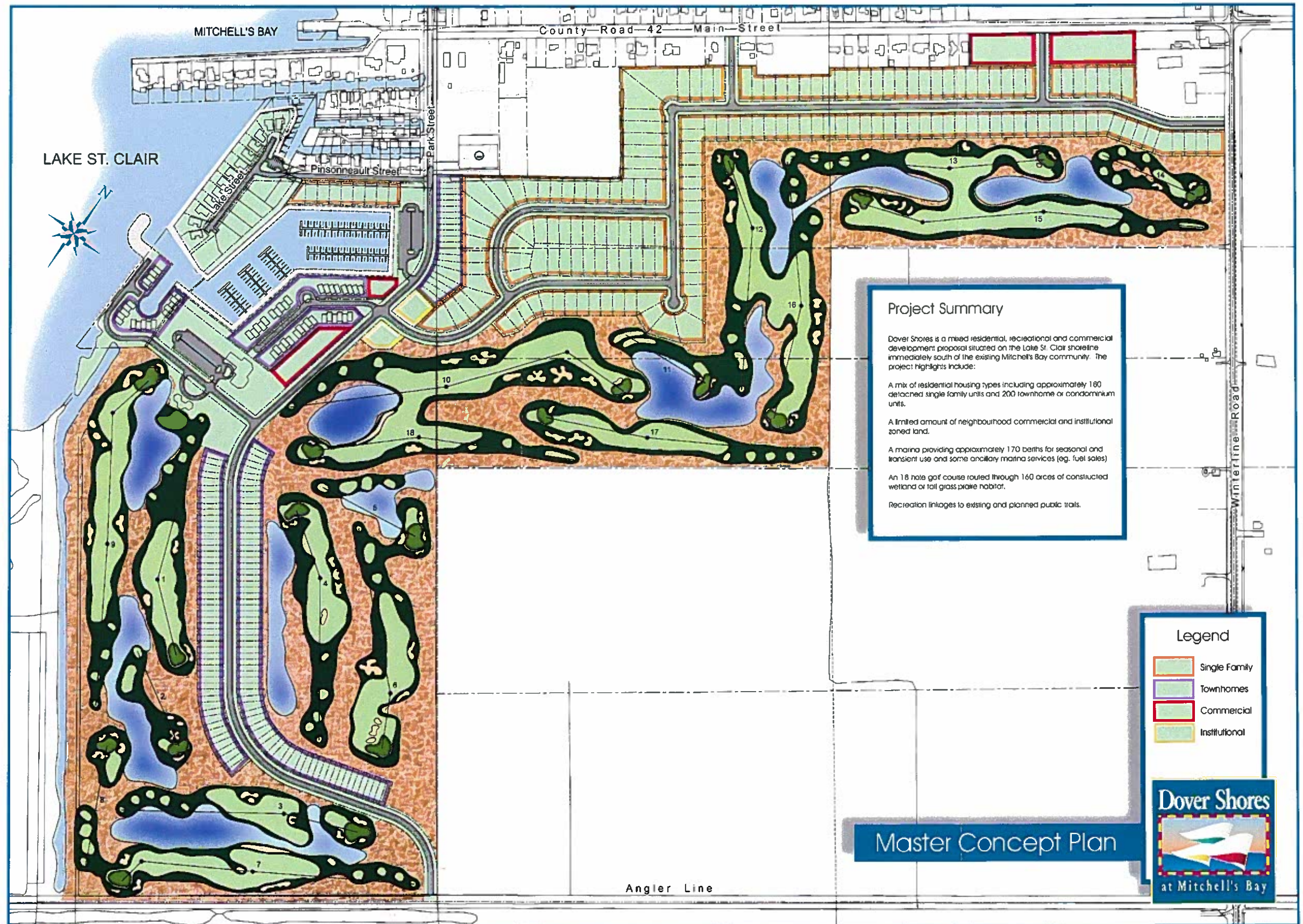
LAND USE COMPONENT	AREA (HA/AC)	PERCENTAGE OF TOTAL (%)
<i>Single Family (180 units)</i>	<i>15.66 ha / 38.70 ac</i>	<i>14.7 %</i>
<i>Townhomes (200 units)</i>	<i>7.44 ha / 18.38 ac</i>	<i>7.0 %</i>
Total Residential (380 units)	23.10 ha / 57.08 ac	21.7 %
Commercial	1.75 ha / 4.32 ac	1.6 %
Institutional	0.37 ha / 0.91 ac	0.3 %
Open Space (Golf Course)	65.5 ha / 161.85 ac	61.6 %
Other (Marina, Docks, Roads etc.)	15.68 ha / 38.75 ac	14.7 %
TOTAL	106.4 ha / 262.9 ac	100.0 %

The proposed development will be phased in accordance with service requirements, infrastructure improvements in response to market conditions and annual absorption rates.



Figure 3.1
Dover Shores
Master Concept Plan

Source: BTS Consulting Engineers.





4. Planning Status

The following provides a review of the current planning status of the Subject Lands.

4.1 Provincial Policy Statement

The Dover Shores Development Planning Rationale Report prepared by Storey Samways Planning Ltd. April, 1999, outlines several policies of the Provincial Policy Statement that are relevant to this application. The following section summarizes these policies and augments them in light of the additional lands subject to this application.

1.1 Developing Strong Communities

1.1.1a) Urban areas and rural settlement areas (cities, towns, villages and hamlets) will be the focus of growth;

The proposed Official Plan Amendment would focus growth within the Mitchell's Bay Hamlet Area.

1.1.1c) Urban areas and rural settlement areas will be expanded only where existing designated areas in the municipality do not have sufficient land supply to accommodate the growth projected for the municipality. Land requirements will be determined in accordance with policy 1.1.2.

Expansions into prime agricultural areas are permitted only where:

1. there are no reasonable alternatives to avoid prime agricultural areas; and
2. there are no reasonable alternatives with lower priority agricultural lands in the prime agricultural area.

Although there is no inventory of land use requirements prepared for Chatham-Kent, there are no other examples of recreation-related housing available on full services and with protection from flooding. The land requirements are addressed under policy 1.1.2.

A study of agricultural capability commissioned by the applicant confirmed that, while the subject site consisted of prime agricultural lands, there were no other lands of lesser priority which could reasonably be considered for expansion. The development of the Subject Lands also reflects the municipality's preferred growth direction as per numerous planning documents and initiatives, including the Township of Dover Official Plan, Mitchell's Bay Concept Plan and the Recreation Master Plan at Mitchell's Bay (as discussed in the following sections).

1.1.2 Land requirements and land use patterns will be based on:

- a) the provision of sufficient land for industrial, commercial, residential, open space and institutional uses to promote employment opportunities, and for an appropriate range and mix of housing, to accommodate growth projected for a time horizon of up to 20 years...



- b) densities which:
 - 1. efficiently use land, resources, infrastructure and public service facilities;
 - 2. avoid the need for unnecessary and/or uneconomical expansion of infrastructure;
- c) the provision of a range of uses in areas which have existing and or planned infrastructure to accommodate them;
- e) providing opportunities for redevelopment, intensification and revitalization in areas that have sufficient existing or planned infrastructure.

As no growth projections have been prepared as of yet for Chatham-Kent, the provision of land uses are guided by the economic conditions, market trends and the growth of the tourism industry in the municipality.

The Master Plan Concept proposes a range of housing opportunities providing appropriate densities which efficiently utilize the land and recently upgraded infrastructure services. The water supply system has been significantly upgraded by the construction of a water storage facility and connection to the watermain extending from Chatham. Expansions to the sanitary system are also possible to accommodate the proposed development.

1.2 Housing

- 1.2.1 Provision will be made in all planning jurisdictions for a full range of housing types and densities to meet projected demographic and market requirements of current and future residents of the housing market area by:
 - a) maintaining at all times at least a 10-year supply of land designated and available for new residential development and residential intensification;

The proposed development, due to its relatively modest size of 380 dwelling units, cannot be expected to meet the requirements of all segments of the housing market. However, the applicant retained a real estate market specialist firm which identified the different housing types necessary to meet the potential market at this location.

Although a municipal wide housing study has yet to be prepared, there is clearly not a 10-year supply of land for recreation-related housing available. Within Mitchell's Bay, the prospects for developing of the existing designated lands are low due to location and ownership circumstances, which are serving to frustrate the intent of the existing Official Plan.

1.3 Infrastructure

1.3.1 Sewage and Water Systems

- 1.3.1.1 Planning for sewage and water systems will recognize that:
 - a) full municipal sewage and water services are the preferred form of servicing for urban areas



and rural settlement areas. In areas serviced by full municipal sewage and water services, lot creation will be permitted only if sufficient reserve water and sewage plant capacity will be available to accommodate it;

Additional stormwater drainage capacity may be accommodated on-site within the proposed 18-hole golf course which will consist of ponds/marshes integrated with the overall stormwater management plan for the Subject Lands. An Official Plan policy will be required to ensure that adequate stormwater drainage facilities are provided at the time of lot creation.

The sewage treatment capacity requirements of the proposed development were estimated based on the revised Master Concept Plan (Figure 3.1), and appropriate provincial design parameters. The report concluded that there is sufficient reserve capacity to service 63% of the overall proposed development based on the current number of units. It should be noted that the unit mix is preliminary and is subject to change with respect to market conditions. Accordingly, an Official Plan policy will be required to ensure that development is contingent upon full municipal services being provided by the proponent and any plans of subdivision or condominium phased accordingly.

2.1 Agricultural Policies

2.1.3 An area may be excluded from prime agricultural areas only for:

a) an expansion of an urban area or rural settlement area, in accordance with policy 1.1.1c);

2.1.4 New land uses, including the creation of lots, and new or expanding livestock facilities will comply with the minimum distance separation formulae.

The area may be excluded from prime agricultural area for the expansion of the Mitchell's Bay Hamlet Area since the expansion is proposed in accordance with policy 1.1.1c).

There is no livestock farming in proximity to the Subject Lands.

2.3 Natural Heritage

2.3.2 Development and site alteration may be permitted on adjacent lands to a) and b) if it has been demonstrated that there will be no negative impacts on the natural features or the ecological functions for which the area is identified.

The lands immediately to the west of the ARDA dike are provincially significant wetlands. The Master Plan proposes that the golf course, a low intensity use, be located adjacent to the ARDA. The proposed golf course will incorporate a pond/marsh system as an integral component of the overall stormwater management plan. This proposal will improve the wetland ecological functions and natural features of the adjacent wetlands.

2.5 Cultural Heritage and Archaeological Resources

2.5.2 Development and site alteration may be permitted on lands containing archaeological resources



or areas of archaeological potential is significant archaeological resources have been conserved by removal and documentation, or preservation on site. Where significant archaeological resources must be preserved on site, only development and site alteration which maintain the heritage integrity of the site will be permitted.

The Subject Lands lie within 300 metres of a primary water source (Lake St. Clair), requiring an assessment of archaeological resources to be taken prior to any development. A policy indicating such a requirement will be necessary in the proposed Official Plan policies.

3.1 Natural Hazards

3.1.1 Development will generally be directed to areas outside of:

- a) hazardous lands adjacent to the shorelines of the Great Lakes – St. Lawrence River System and large inland lakes which are impacted by flooding, erosion, and/or dynamic beach hazards;

3.1.2 Development and site alteration will not be permitted within:

- a) defined portions of the one hundred year flood level along connecting channels (the St. Mary's, St. Clair, Detroit, Niagara and St. Lawrence Rivers;

Much of the Subject Lands fall below the 100-year flood elevation for Lake St. Clair and would flood in the event of a dyke breach. To comply with this provincial policy, three guidelines outlined in the Planning Rationale Report, April 1999 must be included in the proposed Official Plan policies for development to occur, these include:

- All dwellings must be subject to a minimum opening elevation to be determined in consultation with the St. Clair Region Conservation Authority;
- The flood protection performance standards afforded by the ARDA dike must be maintained, ie. any alterations to the dike must either have no effect or enhance its flood protection ability, and the relocated portions of the dike necessitated by the marina construction must be equal or greater in flood protection standards than the dike being replaced; and
- Safe access must be provided for vehicles and people during times of flooding.

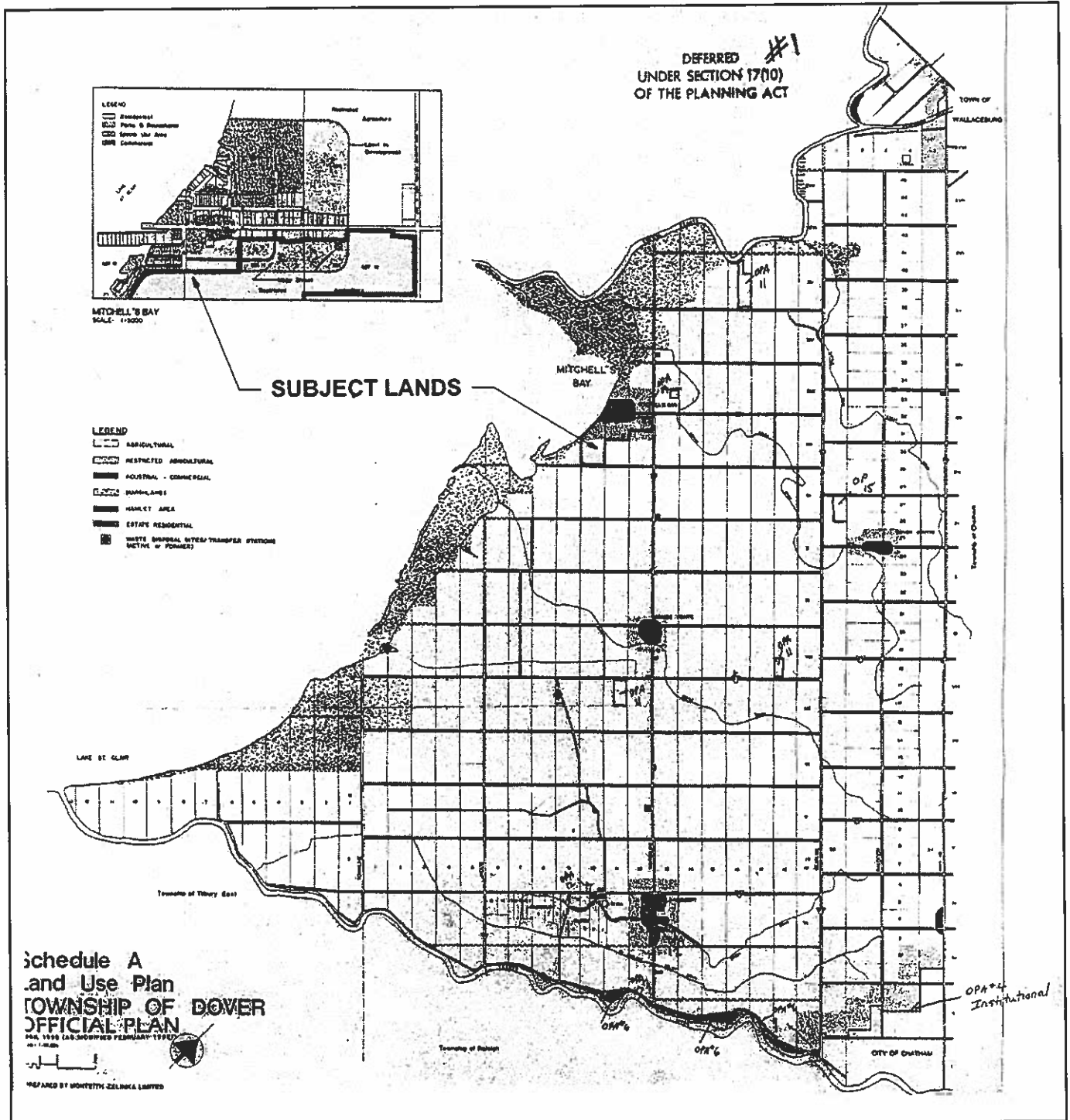
4.2 Township of Dover Official Plan

As shown on the Township of Dover Official Plan Schedule A – Land Use Plan (Figure 4.1), the additional lands are designated Restricted Agricultural and Residential. The lands designated Residential are located within the Hamlet Area of Mitchell's Bay.

The Official Plan envisages the Residential designation to include primarily single family residences, parks and institutional uses. Council may consider permitting residential uses such as: small lot singles, semi-detached, townhouses and apartment buildings to a maximum height of three stories, provided such uses do not conflict with adjacent development. All new residential development will be serviced by municipal water and sewer and the construction of paved roads, services, sidewalks and utilities.



Figure 4.1
 Township of Dover Official Plan Schedule A – Land Use Plan



Source: Township of Dover Official Plan: Schedule A – Land Use Plan



The Official Plan is intended to provide a framework to guide and control land use in the Township of Dover. The Planning Rationale Report, April 1999, outlines the Official Plan policies that support the proposed amendment. The following section augments these policies and lends additional support to the revised Master Concept Plan:

Goal 1.4 c) To minimize conflict between agricultural operations and other land uses.

The Master Plan Concept minimizes potential land use conflicts between the residential uses and abutting agricultural uses by accommodating a golf course between the two uses, effectively functioning as an open space buffer between the uses.

Goal 1.4 d) ...to encourage the establishment of new industries and services, particularly those which support the agricultural and tourism industries, while minimizing the loss of agricultural land.

The Master Concept Plan supports the tourism industry by providing recreational opportunities, both boating and golfing. A comprehensive study completed in 1991, concluded that a major untapped tourism market existed among US boaters for transient berths in addition to other tourism and recreational activities, such as golfing, particularly when combined with other recreational opportunities.

The Commercial designation accommodates retail commercial uses serving the local area and uses serving tourists visiting the area such as fishing and hunting supplies, eating establishments, motels, hotels, arts and crafts, and other similar uses of a tourist commercial nature. Institutional uses and ancillary residential uses are also permitted within the Commercial designation. The commercial uses are intended to be of a small scale in terms of building size and be designed to fit in with the character of the hamlet.

Goal 1.4 e) To help stabilize the declining population level of the Township, and to encourage population growth to occur in Mitchell's Bay.

Given the tourism and recreational potential at Mitchell's Bay, an opportunity exists to encourage growth through the provision of a range of housing opportunities. The Master Concept Plan proposes approximately 380 residential units. Furthermore, the proposed development will benefit the economy through additional jobs associated with the marina, golf course and commercial uses, and the spin-off activities associated with an expanded tourism industry.

Goal 1.4 g) To encourage and support the provisions of recreational and social facilities as required by the citizens of the Township.

The development proposal supports the provision of recreational and community facilities, including the development of a marina and a community activity centre.

6.5.2 h) Residential expansion beyond the area designated in this plan may be considered when 75% of the land within the Residential designation has been used for housing or when the supply of vacant developable Residential lands in the Township fall below a projected 20 year demand.



The existing vacant lands are owned by non-developers whom have not show a serious interest in pursuing any projects in the immediate future. Furthermore, these lands are also poorly located to take advantage of the amenities offered by the waterfront. Dover Council recognized that these circumstances were acting in effect to frustrate the Official Plan intentions, and accordingly agreed in principle to extend the limits of development to accommodate the proposed marina, golf course and residential development. Recent planning initiatives, including the Mitchell's Bay Concept Plan and Recreation Master Plan at Mitchell's Bay (discussed below), demonstrate the municipalities intentions with respect to the future development of Mitchell's Bay.

1231507 Ontario Inc. is committed to undertaking discussions with landowners in Mitchell's Bay who have not shown serious interest in pursuing development and may be willing to transfer their development rights to the Dover Shores Development proposal. The outcome of these discussions will be provided in a follow-up letter.

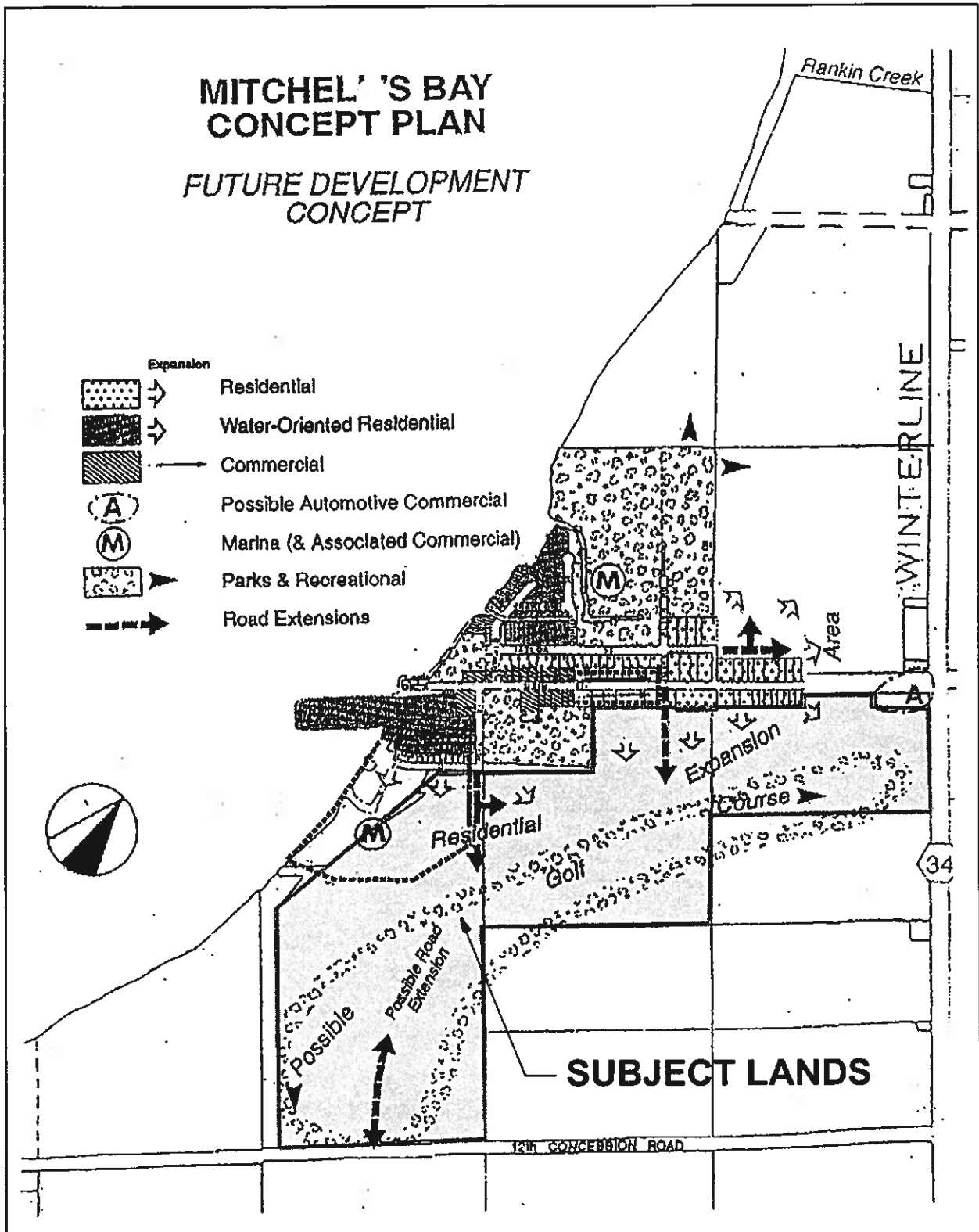
4.3 Mitchell's Bay Concept Plan

The Master Plan Concept is in keeping with the Mitchell's Bay Concept Plan for the area, adopted by Dover Council in August 1995. Figure 4.2 illustrates the Mitchell's Bay Concept Plan.

The Plan supports the amendment of Official Plan policies to expand and revise areas eligible for residential, commercial and recreational development. The plan further directs that priority be given to new development in the vicinity of the waterfront and any new development which integrates with the existing development. The residential development of the additional lands south of Main Street represents the logical extension of the existing urban fabric of the hamlet.



Figure 4.2
 Mitchell's Bay Concept Plan



Source: Mitchell's Bay Concept Plan - Future Development Concept



4.4 Recreation Master Plan at Mitchell's Bay

The Municipality of Chatham-Kent, prepared a the Recreation Master Plan at Mitchell's Bay, adopted by Council in April, 2001. The purpose of the Master Plan study was to identify recreational needs and opportunities in the Mitchell's Bay community and develop a preferred Master Plan and implementation strategies.

The study did not identify any major recreational need that is not currently met. The proposed Dover Shores development would not place major demands on the local recreational resources. The highest priority implementation initiatives of the Plan focus on maintaining the function of the existing public facilities including the marina, campground and beach park. Furthermore, the Plan recognizes Mitchell's Bay unique role of providing recreation based tourism opportunities.

The Master Plan is built on six initiatives, they include:

- Marine Park Marina and Campground;
- Dover Beach Park and Wharf;
- Mitchell's Bay Community Park;
- Dover Shores Marina and Golf Course;
- Lakefront Trail; and
- Strategic Links to Regional Recreational Resources.

As noted in the study, the Dover Shores Marina and Golf Course will add variety and depth to the range of recreational options available to visitors. The Plan establishes recreational trail connections from Dover Community Park through the Dover Shores development, links the marina and golf course with a multi-purpose trail to Mitchell's Bay Main Street and identifies a safe trail route along the ARDA dyke adjacent to the golf course.

Discussions with municipal staff indicate that there are no future expansion plans for the Marine Park Marina.

5. Community Impact

The proposed Official Plan Amendment provides for numerous community impacts, almost all of which are beneficial, and some of which have already been realized. The community impacts include:

- In 1993, the applicant contributed funding for the construction of a new water storage tower in Mitchell's Bay equal to the difference between the construction cost and the provincial grant, approximately \$200,000, meaning that there was no charge to the existing ratepayers. At the time, the water tower resolved water storage capacity problems occurring during peak hour flows, and allowed fore protection to be incorporated into the water service area.
- In 1996, the applicant paid \$60,000 to Union Gas to assist in the extension of a natural gas service to the hamlet. The extension would not have occurred without this contribution.



- The development will improve utilization of existing services, which should lower costs to the local users.
- As the capital cost for the sewage treatment facility has already been paid, connection fees generated by this development can be utilized for other community facilities.
- The seasonal component of the proposed marina will meet a significant local demand for additional berths, with the St. Clair Parkway facility being full.
- The golf course and transient and seasonal components of the marina should benefit local tourist and boating-related commercial enterprises. The additional lands provide for the development of an 18-hole golf course, enhancing the marketability of the golf course by appealing to a larger user base, including Americans and retired seniors.
- There is an obvious economic benefit of job creation associated with all aspects of the proposal.
- The development should result in enhanced recreational opportunities for local residents as well as the broader community.
- Vehicular traffic will be increased, but will be confined to the main street which is classified as a collector road and has the carrying capacity to accommodate this traffic.

6. Conclusion

The proposed Dover Shores Development presents an exciting opportunity for the Municipality of Chatham-Kent to enhance the recreational opportunities offered at Mitchell's Bay. The proposed Dover Shores Development and Official Plan amendment should be supported for the following reasons, the proposal:

- represents good planning and is consistent with the planning initiatives of the Province and Municipality, including the:
 - Provincial Policy Statement;
 - Township of Dover Official Plan;
 - Mitchell's Bay Concept Plan; and
 - Recreation Master Plan at Mitchell's Bay.
- utilizes existing infrastructure and services;
- enhances the recreational opportunities at Mitchell's Bay;
- reinforces Mitchell's Bay as a recreational destination within the municipality; and
- offers economic benefits for the municipality through increased tourism and job creation.

APPENDIX "A"

Sanitary Sewage Capacity Report

5 March 2002
#M135

FILE COPY

Roy Investment Limited
P.O. Box 159
24253 Winterline Road
Pain Court, Ontario
N0P 1Z0

Attention: Mr. Paul Roy

Roy Investment Ltd.
Mitchell's Bay Development
Review of Sanitary Sewage Capacity

Dear Mr. Roy:

As requested, we have completed our review of the issue of wastewater generation and treatment requirements related to the subject development and are pleased to provide this brief report thereon.

Our report provides an estimate of the reserve capacity of the existing treatment facility, as well as an estimate of the treatment demand that will be generated by the subject development. The estimated reserve capacity is based on our review and analysis of the wastewater flow data, provided in the fax from Storey Samways Planning Ltd. (SSPL) dated 9 December 1999, having due regard for the impact of Phase I of the Sportsman Camp Development. The estimate of the treatment demand that the subject development will generate is based on population densities derived from the Master Concept Plan, and provincial guidelines for establishing sewage flows.

Reserve Treatment Capacity

The reserve treatment capacity was determined by comparing historical flow data to the design capacity of the existing facility. For this purpose, historical flow data was obtained from SSPL in 1999. We understand that this information was gathered by Todgham & Case Associates Inc., the consultant retained by the Chatham-Kent PUC to undertake a Water and Sewer Master Plan for the Municipality. Data included average day and maximum day flows for each month in 1997, as well as total monthly flows for 1995, 1996, and 1997. In addition, we considered the average daily flow rates for the years of 1992, 1993, and 1994, presented in Table No. 3 of Todgham & Case Associates Inc.'s letter to SSPL dated 28 November 1995.

The historical flow data that we considered to be most significant, for the purpose of estimating the reserve capacity of the existing treatment facility, is summarized in Tables 1 and 2 below.

MONTH	AVERAGE DAY (m ³ /day)	MAXIMUM DAY (m ³ /day)	MONTHLY FLOW (m ³)		
			(1997)	(1996)	(1995)
JANUARY	132	170	4,078	4,755	5,491
FEBRUARY	189	270	5,295	4,395	5,389
MARCH	183	341	5,678	4,909	6,310
APRIL	173	325	5,191	6,224	5,853
MAY	197	313	6,107	7,104	5,597
JUNE	275	406	8,255	7,535	4,847
JULY	194	283	6,024	5,918	5,413
AUGUST	150	164	4,639	4,547	5,512
SEPTEMBER	122	164	3,649	5,846	4,740
OCTOBER	109	135	3,391	4,115	4,125
NOVEMBER	132	193	3,959	4,268	5,009
DECEMBER	184	265	5,712	5,167	4,197
YEAR TOTAL (m ³)			61,978	64,783	62,483

Year	Avg. Flow Rate (m ³ /day)	Reserve Capacity (m ³ /day)
1992	122	387
1993	132	377
1994	211	298
1995	171	338
1996	177	332
1997	170	339

We contacted the City of Chatham-Kent in an effort obtain more recent historic flow data, but were informed by Mr. John Oostveen that additional data did not exist. We were further advised that the aforementioned data comprised the most relevant data for the purpose of this exercise.

From Table 2, it is evident that actual flows at the treatment facility have varied significantly in the 6 year period from 1992 to 1997, with the average flow rate ranging from 122 to 211 m³/day. It is significant to note, however, that the average flow rate for the later 3 years (i.e. from 1995 to 1997), has been more consistent, ranging from 170 to 177 m³/day. Todgham & Case indicated in their aforementioned letter, that the average flow that occurred in 1994, was significantly higher than

previous years, and that the reliability of the 1994 records was being investigated. Given the consistency of the subsequent years records, we have elected to base our estimate of current utilization of the existing facility, on the most recent 3 years of record; 1995 through 1997.

Accordingly, we estimate that the current average sewage generation of existing development in Mitchell's Bay, is in the order of 180 m³/day. Based on a design average daily flow rate capacity of 509 m³/day, the total reserve treatment capacity of the existing facility would be in the order of 329 m³/day.

It is important to note that not all of this unused capacity would be available for the proposed development. The amount should be appropriately reduced to account for the treatment demand of Phase 1 of the Sportsman Camp Development (20 single family building lots), as well as a reasonable allowance for undeveloped lots in Mitchell's Bay. We estimate that such treatment demands would be in the order of 18 m³/day for each of these. Accordingly, the reserve treatment capacity that would be available for new developments in the Mitchell's Bay area would be approximately 293 m³/day.

Sewage Treatment Needs of Proposed Development

As noted previously, the sewage treatment capacity requirements of the proposed development was estimated, based on the development layout depicted in Master Concept Plan (copy attached), and appropriate provincial design parameters. Table 3 provides a summary of the various land uses depicted in the Plan, and the assumed sewage flow requirements for each type of proposed land use.

**Table 3 – Proposed Development
(Land Uses and Sewage Treatment Requirements)**

<u>Land Use Type</u>	<u>Quantity</u>	<u>Sewage Design Flow</u>
<u>Residential</u>		
a) Detached Single Family	180 units	360 L/cap./day
b) Townhome/Condominium	200 units	360 L/cap./day
<u>Commercial</u>		
a) Retail	1.76 ha.	28,000 L/ha./day
b) Marina		
Transient Use	70 berths	440 L/berth/day
Private Use	120 berths	225 L/berth/day
c) Golf Course/Club House	150 rounds	100 L/round/day

Table 4 – Calculated Sewage Flows

<u>Land Use Type</u>	<u>Average Daily Sewage Flow</u>
<u>Residential</u>	
a) Detached Single Family	162 m ³ /day
b) Townhome/Condominium	180 m ³ /day
<u>Commercial</u>	
a) Retail	49 m ³ /day
b) Marina	
Transient Use	31 m ³ /day
Private Use	27 m ³ /day
c) Golf Course/Club House	<u>15 m³/day</u>
Total for Entire Development	464 m³/day

- Notes: 1) Assumes 2.5 persons per Single Family Dwelling
 2) Estimates include Infiltration Allowance

Table 4 presents an estimate of the design sewage flow that would be generated by each component of the development, as well as a average daily sewage treatment requirement of 464 m³/day for the total development.

It should be noted that the theoretical flows presented in Table 4 are based on design parameters that we have assumed, having due regard for applicable provincial design standards, and the historical flow records of the existing facility. With respect to our assumed per capita daily flow rate, we note that based on the historical operating data that was reported in the 1995 Todgham & Case Technical Review, the Average Flow Generation per Capita was 314 and 340 L/cap/day in 1992 and 1993 respectively. These flow rates are consistent with the Ministry of Environments recommended allowance of 225 to 450 L/cap/day, which are suggested in their Guideline for Design of Sewage Works. We note that the aforementioned Technical Review reported that a per capita flow rate of 544 L/cap/day occurred in 1994. They pointed out that this flow did not correspond with recorded water consumption for the same period, and that the operating authority was investigating the reliability of the 1994 data. Given that such values were not repeated in any of the following three years of record, we elected to regard the 1994 data as non-representative, and exclude it from our analysis. The per capita flow rate that we adopted, along with the other design parameters upon which we based our flow estimates, are summarized in the notes that follow Table 4.

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Treatment Requirements vs. Reserve Capacity

Based on a direct comparison of the estimated average daily sewage treatment requirements of the development (464 m³/day), and the estimated reserve treatment capacity of the existing facility (293 m³/day), there appears to be sufficient reserve capacity to service 63 % of the overall proposed development. For illustration purposes, the reserve treatment capacity would service 100% of the commercial land-use and 50% of the residential land-use. This of course is conditional of the Ministry of Environment and the Municipality's concurrence with the design parameters and assumptions assumed herein.

We trust this is the information that you require at this time. Please do not hesitate to call if you have any questions concerning this correspondence, or have any further needs concerning this or any other matter related to the proposed development.

Yours truly,

BTS CONSULTING ENGINEERS

Daniel M. Krutsch, P.Eng.

DMK/dk

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