



**Regional Council
Committee of the Whole
October 19, 2004**

TO: Mayor Kelly and Members of Halifax Regional Council

SUBMITTED BY:


George McLellan, Chief Administrative Officer


Dan English, Deputy Chief Administrative Officer

DATE: October 4, 2004

SUBJECT: Master Plans and Greenfield Studies

ORIGIN

- December 1, 1998 motion of Regional Council to initiate four master plan studies (Morris/Russell Lake, Port Wallace, Wentworth/Bedford South and Governor Lake North);
- July 2, 2002 motion of Regional Council to initiate a master plan study for Bedford West;
- Information Report to Regional Council, dated 29 June, 2004 regarding the status of the master plan studies.

RECOMMENDATIONS:

It is recommended that Council accept the staff presentation of this report and defer consideration of the Recommendations until the next regular Regional Council meeting (October 26, 2004).

1. Direct staff to continue to negotiate policy and regulatory amendments needed to allow for the development of the Morris-Russell Lake and Bedford West master plans;
2. Defer further work on the Port Wallace master plan pending extension of sewer and water services, by the private sector, to the nearby Dartmouth East lands; and
3. Discontinue further work on the Governor Lake North study.

Executive Summary

Council authorized five master plan studies around the metro area. The studies were initiated to determine the feasibility of developing new areas for development serviced with central sewer and water. Emphasis was placed on determining what infrastructure would be needed to maintain satisfactory service levels for new residents and existing residents in the surrounding communities, along with the associated fiscal impacts to the Municipality. If costs were reasonable, staff was to negotiate cost sharing with the proponents and the overall community design elements to achieve "smart growth" principles. One study has been completed to date in the Bedford South/Wentworth area and development has commenced. Four studies remain outstanding.

A "greenfield" servicing study has been prepared under the auspices of the Regional Planning Program. This study examined development opportunities and constraints and the cost of extending services to ten greenfield sites around the metro area. The outstanding four master plan study areas were encompassed within these ten greenfield sites.

Based on the information gathered, staff feel that the Municipality is now in a position to make decisions as to whether to continue evaluating the outstanding master plan areas. Decisions on these master plan studies will allow staff resources to be focussed on those areas which have the greatest potential. The significant findings in support of the staff recommendations are summarized as follows:

- The ten greenfield sites are more than sufficient to satisfy suburban growth needs over a twenty-five year period. Even under a high growth scenario for the region, these lands represent a supply of 4.5 to 5.5 times the region's needs.*
- The scale of development within each greenfield area is of such magnitude that approval of one implies that others cannot be developed due to capacity constraints - particularly for sewage treatment. The potential for infill development within the Municipality's established service boundaries may also be restricted if too much capacity is allocated to new greenfield sites.*
- The Morris-Russell Lake and Bedford West master plan study areas provide strong opportunities for new community developments that can be integrated with regional services at relatively low financial investment and risk to the Municipality.*
- The viability of developing the Port Wallace master plan area does not appear promising due to the cost of extending sewer and water services to this area. However, there is a possibility these services will be extended to nearby land on the west side of Micmac Lake by the developer of "Countryview Estates", which is an as-of-right development. If this occurred, the economics of developing the Port Wallace area may be more favourable.*
- The Governor Lake North master plan area requires substantial improvements to the transportation network and a major extension to the sanitary sewer system. The scale of these improvements presents a substantial financial risk to the Municipality even with a capital cost charge levied against the development.*

There is a limit to how many master plan infrastructure investments the Municipality can participate in before there is an undue impact upon capital budget capacity for other important projects. Contributing Municipal infrastructure investment to all of the master plan sites also increases the Municipality's financial risk since not all of this land is required in order to meet the region's growth projections.

Council's decision to continue or discontinue any of the master plans studies cannot be appealed to the Nova Scotia Utility and Review Board since they require amendments to HRM's municipal planning strategies. Such decisions are at Council's discretion. In addition, a public hearing is not required in order to discontinue a master plan. A public hearing however is required prior to ultimately approving a master plan.

BACKGROUND

Master Plan and Greenfield Studies

- Prior to initiating the Regional Planning process, Regional Council initiated master plan studies to determine the feasibility of developing serviced communities on four greenfield sites around the urban core (i.e. Wentworth/Bedford South, Morris-Russell Lake, Port Wallace, and Governor Lake North).
- Regional Council later added a fifth master plan study in the Bedford West area.
- After initiating the Regional Planning process, Regional Council commissioned a Greenfield Servicing Study of ten areas. These areas included the five master plan areas.
- The Greenfield Servicing Study has a fundamental bearing on the master plan studies. Both processes attempt to determine the feasibility of servicing new areas for development. The specific and comparative information contained in the Greenfield Servicing Study therefore has direct relevance to decision making on the master plan areas.
- The potential scale of development within each study area is of such a magnitude that approval of one implies that other sites may not be developed due to service capacity constraints, particularly for sanitary sewage treatment.
- There is a limit to how many infrastructure investments the Municipality can participate in and these investment decisions need to be very strategic in order to avoid having an undue impact upon the Municipality's capital budget capacity for other important projects. Spreading the Municipality's investment to more development sites than are required to meet future growth increases the Municipality's financial risk and limits capital budget capacity.
- Development approvals within the master plan areas may also limit the Municipality's capacity for infill development within established urban service boundaries.
- The key issue to be addressed for each study area is whether to undertake policy and regulatory amendments concurrently with the regional planning program or to postpone further action until the regional plan has been completed.

Status of Wentworth/Bedford South Master Plan

- The Wentworth/Bedford South master plan study has been completed and Council has amended the two relevant municipal planning strategies for this area. Development has begun on the site and homes in the first phase are occupied.

Status of Morris-Russell Lake Master Plan

- The Morris-Russell Lake master plan study is nearly complete. Regional Council amended three municipal planning strategies to allow for serviced development in the area pending confirmation of funding for a new interchange on the Circumferential Highway (Highway 111). Federal and Provincial funding through the Canada-Nova Scotia Infrastructure program has been confirmed and the Municipality has also approved funding in its capital budget. Staff are currently working with a public participation committee to finalize design guidelines for development of the site. These will be presented to Regional Council for approval.

Status of Port Wallace, Governor Lake North and Bedford West Master Plans

- Over the summer, staff met with the property owners within each of these master plan study areas to try to review the findings of the various servicing studies undertaken to date, particularly the Greenfield Servicing Study. The purpose of these meetings was to determine if there were any discrepancies in infrastructure needs, associated costs and the application of capital cost charges. This process has been completed. As noted in the following discussion, there has not been agreement with all developers on the staff assessment.
- An executive summary of the Regional Greenfield Servicing Study, prepared by CBCL Ltd., is presented as attachment II¹. Written submissions in response to the study were received from the proponents of the Governor Lake North and Port Wallace study areas which are reproduced as attachments III and IV.

DISCUSSION:

The key issues arising from the Greenfield Servicing Study and master plan studies which have led to the recommendations contained in this report are summarized as follows:

Is development in all of the greenfield study areas required to satisfy the region's projected growth?

Development of all of the greenfield study areas is not required in order to accommodate the region's projected growth. Between 2001 and 2026, the region's population is forecasted to grow by 52,000 persons under a low growth scenario and 125,000 under a high growth scenario². Under the high growth scenario, it is estimated that 50,000 to 60,000 people would be accommodated within greenfield sites. The remainder would locate within established service boundaries or developments with on-site sewer and water services.

¹ The full report can be found in PDF format on the HRM website at www.halifax.ca/regionalplanning/publications/Research.html

² *Employment, Population and Housing Projections; Halifax Regional Municipality*. Prepared by Clayton Research Associates Ltd. in partnership with Cantwell & Company Consulting. August 2004.

The Greenfield Servicing Study estimates that full build out of all ten greenfield sites under a typical suburban density of 18 persons per acre could accommodate approximately 273,000 people, which represents a supply of 4.5 to 5.5 times expected needs under a high growth scenario for the next twenty years.

Can the Municipality service all of the greenfield study areas?

A recent review of the Region's proposed and existing regional sewage treatment facilities has estimated that, if all future expansions contemplated are constructed, the sewage flow from the equivalent of an additional 261,200 persons could be accommodated. Even if relatively generous sewage generation from businesses and industries are assumed, future capacity should be more than sufficient to accommodate growth over a twenty-five year planning period.

When deciding which greenfield/master plan areas can be serviced, the most significant issue is not the Region's total sewage plant capacity, but rather the proper assignment of population growth to each plant. For example, if all the greenfield/master plan areas within the catchment areas of the Halifax and Dartmouth sewage treatment plants were developed, the capacity of each plant would be exceeded by a substantial amount.

Taking the capacity of the Halifax and Dartmouth sewage treatment plants into consideration, the following conclusions were reached³:

- The Bedford West, Birch Cove Lakes - Governor Lake and Ragged Lake greenfield areas can accommodate a combined population of 75,000 people. These greenfields are all within the Halifax treatment plant's catchment area and their combined population represents almost 1.4 times the plant's ultimate capacity after expansion.
- If only the Bedford West and Governor Lake North master plan areas are taken into consideration, they could have a combined population of 35,000. This represents over 64% of the ultimate available treatment capacity for the Halifax plant. However, at least 65% of the plant's capacity has to be reserved for potential infilling and greenfield development within Halifax' established service boundary.
- Similarly, the three greenfield sites within the Dartmouth sewage treatment plant's catchment area (Shearwater - Eastern Passage, Dartmouth East - Port Wallace and Dartmouth North - Anderson Lake) would exceed the plant's ultimate capacity by 28%.

The Municipality cannot service all the greenfield areas which potentially flow to the Halifax and Dartmouth sewage treatment plants while also servicing the lands already within the service boundaries for these plants. Decisions about how to allocate sewage treatment plant capacity will therefore have to be made. The anticipated population under current municipal servicing policies and regulations and potential future demands on the Halifax and Dartmouth treatment plants are summarized on attachments V and VI respectively.

³The Halifax and Dartmouth facilities are estimated to have available capacities of 55,000 and 64,000 persons after second planned expansions.

Which study areas have the most potential for future development?

The greenfield study addressed this question by placing each of the ten sites in one of three categories: not recommended as having development potential; sites with some constraints to development; and sites with minimal constraints. The findings and supporting rationale are summarized on pages X to XII of the executive summary, attachment II.

Staff also undertook an opportunities and risk analysis for each master plan study area and evaluated each against the seven regional planning principles which have been adopted by Regional Council. A summary of these analyses is found in attachments VII and VIII.

The rationale for the staff recommendations are summarized as follows:

1. Continue negotiations for development of the Morris-Russell Lake and Bedford West master plan study areas.

Both these areas offer the opportunity to accommodate new suburban communities at relatively low financial risk to the Municipality. Bedford West requires no significant municipal expenditures for infrastructure improvements to allow development to commence and, upon completion, would have a low cost per developable acre. The Greenfield Servicing Study estimated that this area would have the lowest cost per developable acre of the ten greenfield sites studied (the cost estimates for servicing each of the ten greenfield sites are found in Tables 7 to 9, pages at the end of attachment II to this report).

Bedford West is also expected to benefit from the new interchange which was approved in conjunction with the Wentworth/Bedford South master plan study. Under the Municipality's capital cost contribution policy, Bedford West would therefore contribute to the cost of the interchange and the Municipality's committed share would decline.

The Morris-Russell Lake area requires a new interchange on the Circumferential Hwy. with a connection to Baker Drive for development to commence. Subject to a positive environmental assessment, senior levels of government have committed 2.5 million dollars of financial support for the interchange under the Canada/Nova Scotia infrastructure program. Clayton Developments has committed to financing the road connection to Baker Drive. The interchange will also provide access to the Woodside Industrial Park by an extension of Mount Hope Avenue which may enhance the opportunities for attracting new businesses.

Upon completion of the interchange, considerable development can proceed with minimal municipal expenditures for infrastructure. Over the long term, Mount Hope Ave. is proposed to extend eastward from the interchange and across the Shearwater lands to the Caldwell Road. This project is expected to draw traffic from Eastern Passage and the Cole Harbour communities which would relieve congestion on Portland Street (the interchange and connector roads are illustrated on the conceptual land use and transportation plan, presented as attachment IX to this report).

The interchange and road improvements proposed for the Morris-Russell Lake area will allow for new transit routes which would link the surrounding community to the Woodside Ferry Terminal. With new ridership from this community and the new community college proposed at Woodside,

improved ferry service may be justified, resulting in further ridership and better utilization of an under utilized resource.

Similarly, the Bedford West study area is well situated to take advantage of a regional transit system proposed for the surrounding community whether it be a high speed ferry service between the Bedford waterfront area and downtown Halifax, rail transit along the Bedford basin or high speed bus service on the Bicentennial Hwy. An internal collector road system proposed within Bedford West would be supportive of any of these proposals. The conceptual transportation plan for Bedford West is presented as attachment X.

While it is recommended that both of these areas be approved for serviced development, the final boundaries of each area still have to be confirmed. To allow for flexibility, phasing plans will also be developed.

2. Defer further work on the Port Wallace study area.

The Greenfield Servicing Study suggests there is considerable financial investment associated with developing this area due to deficiencies in the sanitary sewer system. The Port Wallace area is currently serviced by a trunk system that extends southward along the Waverley Rd. toward the harbour and includes several pumping stations and force mains. Despite recent upgrades, this system has no reserve capacity for new development.

The Greenfield Servicing Study concluded that servicing this area would require an extension to the North Dartmouth trunk sewer northward along the western shoreline of Lake Micmac toward Lake Charles. Sewage from the Port Wallace area would then be pumped into this sewer through a new main at the southern tip of Lake Charles. Schematics are illustrated on attachment XI.

Staff had concluded that the \$15 million cost of extending services posed too much financial risk to the Municipality, especially since the expenditure would be required before any development could occur. In addition, further upgrades are needed in the downstream trunk sanitary sewer system running through the older areas of Dartmouth.

A recent as-of-right proposal to develop land in the Dartmouth East area between Hwy. 118 and Burnside Business Campus might improve the economics of developing the Port Wallace area. When land for Hwy. 118 was acquired by the Province in the 1970s, the Province committed to provide "reasonable access" to one of the abutting property owners. The current owner of this property, North American Properties Ltd. has requested that the Province fulfill this commitment by building an interchange. A variety of as-of-right retail uses are proposed for the area.

If North American proceeds with this project, the cost of servicing the Port Wallace area would decline significantly since North American would pay to extend services to their property. Most significantly for master planning, this includes the Dartmouth North Trunk Sewer. At this time it is recommended that the Port Wallace study area be deferred until construction of services to the North American Properties site (i.e. Dartmouth East).

With regard to the submission received (attachment IV), staff met with Tom Swanson, Wayne Whebbly, a major property owner in the Port Wallace area, and a representative of CBCL to discuss the discrepancies in cost estimates. While agreeing that some cost savings suggested may

be possible, staff remain of the opinion that they are not likely to be of the magnitude suggested by Mr. Swanson.

3. Discontinue Work on the Governor Lake North Master Plan Study.

Staff and the developer of the Governor Lake North lands have examined several development scenarios and infrastructure solutions. While the site design of this master plan community is reasonable and it has good proximity to a regional employment centre at Bayers Lake, there are unfortunately also significant sanitary sewage and transportation issues associated with development of this site. Staff and the developer have been unable to agree on the extent and significance of these capacity issues; the design of the appropriate infrastructure solutions; or apportionment of costs between the Municipality and developer for these infrastructure solutions.

Sanitary Sewer Services:

Alternative one:

Originally, a development designed for 11,800 people over 655 acres was proposed with sanitary sewage discharged to the Nine Mile River treatment plant in Timberlea (Parkdale Developments owns 523 acres, Kimberly Lloyd owns 100 acres and John Lordly owns 32 acres). The plant currently serves under 9,000 people its current capacity is estimated to be 10,000.

When the master plan study for this area commenced, the plant was assumed to have an ultimate capacity of 30,000 persons, if two upgrades were undertaken. However, an assimilative capacity study undertaken on the Nine Mile River, concluded that, under current provincial guidelines, it is unlikely that approvals would be granted for treatment of more than 20,000 people and possibly less⁴. It is estimated that the population growth within the plant's existing approved service boundary will exceed 20,000 people at full build-out. Therefore, the Nine Mile River service boundary cannot be expanded to accommodate Governor Lake without removing development rights from properties already inside the current service boundary. The plant limitation may require that the existing boundary be reduced in size through the regional planning process.

Alternative two:

The developer subsequently proposed to discharge the sewage to the proposed Halifax treatment system by pumping to the collection system in Bayers Lake Business Campus. They also proposed to redirect flows from a portion of the existing Timberlea service boundary to the Halifax treatment system via a pumping station and forcemain. The developer argued that this proposal could result in considerable cost savings to the Municipality by eliminating the need for the last planned upgrade to the Nine Mile River treatment plant. In total, flows from 20,800 persons would be redirected to the Halifax system (11,800 from the study area and 9,000 from the existing service boundary for Timberlea).

⁴ Dillon Consulting Ltd. in association with Loucks Oceanography Ltd. *Nine Mile River Assimilation Study*. February 2003. prepared for Halifax Regional Municipality.
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As discussed earlier in this report, the Halifax treatment plant cannot accommodate all of the greenfield/master plan lands within its catchment area and retain capacity for development already within the service boundary. The Bedford West development also proposes to direct sewage flows for 25,000 people to the Halifax treatment plant. The combined developments would consume about 83% of the Halifax plant's ultimate capacity⁵. As mentioned earlier, it is estimated that 65% of the plant's ultimate capacity has to be reserved to accommodate growth within the established service boundary (attachment V).

Alternative three:

The developer subsequently requested that a development of 8,000 persons be permitted to discharge from its lands to the Halifax system. They also requested that the development be allowed to discharge to the Nine Mile River treatment plant and switch to the Halifax system once treatment capacity is reached.

Staff does not support any additional discharge to the Nine Mile River treatment facility. The 20,000 population limit referenced in the assimilative capacity study is somewhat speculative as the provincial guidelines for dilution under dry weather conditions would not be met with this population. In fact it is possible that retracting the existing service boundary for the community will have to be reconsidered.

The question is therefore whether capacity should be allocated at the Halifax treatment facility for this development and the implications this would have for development elsewhere and Municipal infrastructure investment.

Transportation Planning:

Transportation Study #1:

The most significant obstacle to developing this site pertains to maintaining an adequate level of traffic service to the surrounding communities. The communities of Timberlea, Lakeside and Beechville have two primary routes of travel to the metro area - the St. Margaret's Bay Road (Hwy. 3) and Hwy. 103. The first traffic study analysed impacts at the end of a ten year planning period when 20% of the area was expected to be developed and at the end of twenty-five years when the development was assumed fully built out⁶.

The study assumed that the Municipality would expand the Timberlea Village Parkway to four lanes and would construct a new collector road from the new interchange serving the regional solid waste facility and the entrance to the Lakeside Business Campus (this road is commonly referenced as "the East Collector" in traffic studies). Included among the study findings were the following:

⁵ The Halifax treatment plant will initially be constructed to allow for an additional 31,000 people and a future expansion is estimated to allow for a further 24,000 population increase.

⁶Dephi Systems Inc. *Governor's Run Traffic Impact Study*. May 2001.

- At the end of the 10 years, although Hwy. 103 had significant capacity remaining, the St. Margaret's Bay Road was reaching capacity at a number of locations, including the section between Timberlea Village Parkway and Lakeside Park Drive. More traffic would be diverted to Timberlea Village Parkway as a consequence.
- At the end of 25 years, Hwy. 103 would still have adequate capacity. Capacity constraints on the St. Margaret's Bay Road however will be unmanageable without considerable improvements to the transportation system, particularly to accommodate the peak hour traffic in the evening.
- Even with the twinning of the Timberlea Village Parkway and the construction of the East Collector, widening of the St. Margaret's Bay Road to four lanes east of Lakeside Park Drive and west of the Timberlea Village Parkway was recommended. The consultant still concluded that the St. Margaret's Bay Road would operate at capacity in the future.

Staff were not satisfied that the recommended improvements were adequate. The Municipal Planning Strategy for this community is explicit in not supporting widening of the St. Margaret's Bay Road, east of the Lakeside Business Park. At a public meeting, residents clearly expressed an opinion that traffic from this development should be diverted away from the St. Margaret's Bay Road. Staff also feel that enhanced transit services to the community would be difficult under this scenario where the primary bus route would continue to be the St. Margaret's Bay Road.

Transportation Study #2:

The Municipality and the Province subsequently sponsored a comprehensive transportation study for the Governor Lake North area that included the potential impact of development of other lands including expansion of the Bayers Lake Business Park and development of the Ragged Lake lands on the south side of Hwy. 103⁷. Schematics of the recommended improvements and associated implementation costs are shown on attachment XII.

Long term expenditures of over \$35 million were estimated for transportation improvements to this area. Among the components was a new underpass at the Bicentennial Hwy. which would provide a road connection from Regency Park Drive in Clayton Park to Bayers Lake Park and the Governor Lake North study area. Substantial improvements to the exit 2 interchange at Hwy. 103 and the St. Margaret's Bay Road were also identified.

The study consultants were then retained by the Municipality to prepare an estimate of the costs attributable to the Governor Lake North study area in accordance with the Municipality's capital cost contribution policy. The developer did not concur with the apportioning of costs and, in particular, arguing that the Bicentennial Hwy. underpass and Hwy. 103/Exit 2 interchange improvements were regional projects that served a large area and therefore should not be funded by developer contributions.

⁷SGE Acres. *Governor Lake Area Transportation Study*. Prepared for Nova Scotia Department of Transportation and Public Works and Halifax Regional Municipality.

Staff views both the Highway 103 interchange and Washmill Court underpass projects as critical elements of connecting new development to the regional roadway network. Although staff concedes that the value of the Highway 103 interchange project is more closely tied to the possible development of the Ragged Lake Business Park, the need for the Washmill Court underpass is attributable to the Governor Lake development and expansion of the Bayers Lake Business Park. In this regard, Real Property Asset Management has advised that a strategic plan for the Bayers Lake Business Park expansion will be prepared in conjunction with the regional planning program but, until this work is completed, it has not determined whether further expansions to the park will be proposed.

Transportation Study #3:

SGE Acres was then retained by the Municipality to address two questions. First, could the proposed transportation plan, without the Hwy.103/Exit 2 interchange improvements but with the Washmill Court underpass improvements, adequately service the Governor Lake North study area and future expansion of Bayers Lake Business Campus. Secondly, if so, how should the costs be apportioned. The assessment is reproduced as attachment XIII. A staff assessment of the division of costs between the Municipality and the Governor's Lake North master plan area under this scenario is presented as attachment XIV.

Staff is not prepared to recommend that negotiations be continued based on this revised transportation plan for the following reasons:

- The consultant concluded that “this “minimum improvement approach” was never requested in the original study and for this reason we feel that the improvements noted below tend to become more “band-aid” solutions and do not support good long term regional planning” attachment XIII, pg. 2);
- The Municipality would still assume an unacceptably high financial risk of at least \$6.9 million of the estimated \$12.8 million “minimal” transportation improvements and possibly a further \$28.9 million for the Hwy. 103/Exit 2 interchange improvements and widening of St. Margarets Bay Road from the Armdale Rotary to Lakeside (refer to attachment XIV); and
- Development of this area would consume capacity at the Halifax Sewage Treatment Plant which could otherwise be made available to other greenfield sites which can be developed at a substantially lower cost.

BUDGET IMPLICATIONS

None associated with this report.

FINANCIAL MANAGEMENT POLICIES / BUSINESS PLAN

This report complies with the Municipality's Multi-Year Financial Strategy, the approved Operating, Capital and Reserve budgets, policies and procedures regarding withdrawals from the utilization of Capital and Operating reserves, as well as any relevant legislation.

ALTERNATIVES

1. This matter could be deferred to a future Committee of the Whole session to allow the affected property owners to make presentations and to allow decisions to be made by the new Council. If one property owner is invited to speak, other owners should also be allowed to speak since decisions regarding each site have impacts upon the others.

Staff does not object to this option, however a deferral has not been recommended since it prolongs the period of uncertainty for each project. In addition, staff does not wish to ask developers to undertake further studies and incur additional expenses while the possibility exists that Council may not authorize the continuation of the projects.

2. The Municipality could defer further consideration of all outstanding master plan studies until the growth management strategy of the regional plan is adopted by Council. The advantage of this approach is that it affords Council an opportunity to comprehensively evaluate all growth alternatives before deciding where to proceed.

Staff does not feel a deferral of the Morris-Russell Lake and Bedford West studies is warranted. There has been sufficient analyses to conclude that these lands offer the region's best potential for new community developments. Continuing negotiations on these two master plan areas allows additional serviced land to be brought to market in a timely manner, thereby furthering an objective of maintaining an affordable housing supply in the metro area.

3. Staff could be instructed to continue all four remaining master planning studies and, upon completion, submit the required policy and capital cost charges to Council regardless of the status of the regional planning program.

Staff does not support this option because it is clear that development of the Governor Lake North area will require expensive infrastructure upgrades. In addition, alternative areas are available in the region which can satisfy the Municipality's growth over the next twenty-five years at lower cost and less Municipal investment.

4. Staff and the Regional Planning Committee could be requested to consider the Governor Lake North master planning study within the context of the regional growth management strategy, while simultaneously allowing Bedford West to proceed. If Council's goal is to ensure that there is sufficient land available for the region's future growth, this option is not warranted for the reasons specified above.

This option also exposes the Municipality to additional uncertainty and risks in trying to design and fund adequate trunk sewers and manage allocation of the Halifax sewage treatment plant's finite capacity.

5. A decision regarding the Governor Lake North study area could be deferred until Real Property and Asset Management completes a study of the region's business parks. If the study concludes that a major expansion of Bayers Lake Business Park is justified and that the Washmill Court underpass is needed to support it, the business case for the Governor Lake North area might improve. The first draft of the business park study is expected to be received in the near future.

6. Staff could be directed to evaluate the impacts of the Governor Lake North master plan area under a lower population scenario. Staff does not support this option since significant time and effort has been spent already on several design options and numerous studies which to date have determined that this area has high infrastructure development costs. A pumping station and forcemain would have to be constructed to direct sewage to the Halifax treatment system and various improvements to the St. Margaret's Bay Road would still be needed. Further work on this area unreasonably perpetuates expectations that a satisfactory resolution can be reached.

ATTACHMENTS

- I Information Report from Director of Planning & Development Services, dated 29 June 2004, regarding master plan studies with attachments I to III.
- II CBCL Limited in Association with Marshall Macklin Monaghan. *Greenfield Areas Servicing Analysis: Executive Summary*. July 2004. Prepared for Halifax Regional Municipality.
- III Correspondence pertaining to Governor Lake North
 1. fax transmittal from Maurice Lloyd to Paul Morgan dated 3 August 2004 regarding the Governor Lake North Master Planning Study.
 2. fax transmittal from Maurice Lloyd to Paul Morgan dated 2 September 2004 regarding the Greenfield Study.
- IV Correspondence from Tom Swanson of Summit Rock Developments Ltd. to Paul Morgan, Planner, Halifax Regional Municipality, dated 20 September 2004, re: Greenfield Areas Servicing Study, Requested Corrections to Projected Infrastructure Charges in the Dartmouth East/Port Wallace Area
- V Potential Future Demands on the Halifax Sewage Treatment Plant
- VI Potential Future Demands on the Dartmouth Sewage Treatment Plant
- VII Opportunities and Risk Analysis
- VIII Evaluation of Regional Planning Principles by Master Plan Study Area
- IX Conceptual Land Use and Transportation Plan for the Morris/Russell Lake Master Plan Area.
- X Transportation Plan for Bedford West
- XI East Dartmouth/Port Wallace Study Area - Proposed Servicing Upgrades
- XII Proposed Transportation Improvements and Implementation Costs from the SGE Acres Study.

XIII Technical Memorandum from Robert McLure, SGE Acre Limited re: Governor's Lake Alternative Assessment, dated April 27, 2004.

XIV Attachment XIV: Cost of Transportation Improvements Based on SGE Acres Assessment

Additional copies of this report, and information on its status, can be obtained by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

Report Prepared by: Paul Morgan, Planner, tel: 490-4482

Report Approved by: _____
Paul Dunphy, Director of Planning & Development Services

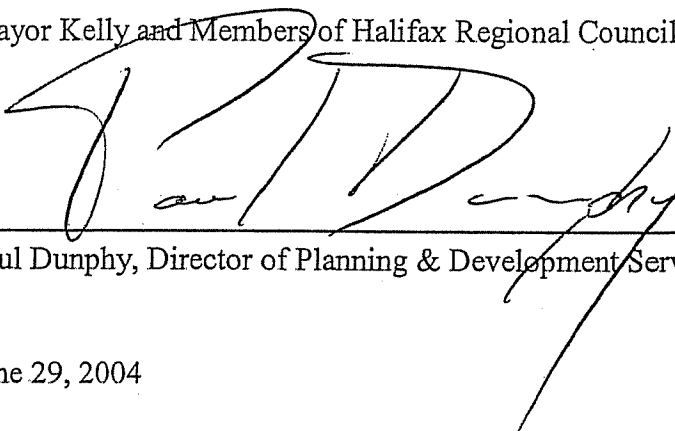


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Regional Council
July 13, 2004

TO: Mayor Kelly and Members of Halifax Regional Council

SUBMITTED BY:



Paul Dunphy, Director of Planning & Development Services

DATE: June 29, 2004

SUBJECT: Master Plan Studies

INFORMATION REPORT

ORIGIN

- December 1, 1998 motion of Regional Council to initiate master planning studies in four areas of the Municipality (Morris/Russell Lake, Port Wallace, Wentworth/Bedford South and Governor Lake North).
- July 2, 2002 motion of Regional Council to initiate a master planning study for Bedford West.

BACKGROUND

In December 1998, Regional Council authorized staff to initiate master planning studies at four greenfield locations around the Municipality:

- Wentworth/Bedford South;
- Morris/Russell Lake;
- Port Wallace;
- Governors Lake North; and

In 2002, a fifth study was initiated for the Bedford West area.

The master plan objectives were to determine:

- the feasibility of developing each site with municipal sewer and water services;
- assuming servicing is feasible, prepare policy guidance for future negotiations with the proponents over development of each site; and
- in a subsequent report for Wentworth/Bedford South and Governor Lake North master plans, the study objectives were further articulated to include the concepts of smart growth.

To date:

- plan and by-law amendments for Wentworth/Bedford South have been adopted and construction has commenced on the first phase (a community of roughly 10,000 persons is expected upon completion); and
- Morris/Russell Lake has received partial approval with the adoption of plan and by-law amendments for Dartmouth, Cole Harbour/Westphal and Eastern Passage/Cow Bay in 1999.

This report has been prepared to provide an update on the status of the four outstanding master plans and to highlight that they have a relationship to the regional planning program. Various specific studies (e.g. traffic, water, sanitary and storm services, community design etc.) have been undertaken with respect to each master plan. The regional planning program has also undertaken larger scale studies which may have a bearing on which master plan areas should be given approvals. Most notably:

- the Greenfield Study of ten areas (Attachment III identifies the areas studied) has a fundamental bearing on the master planning objective respecting servicing feasibility;
- the four remaining master plan areas have been included within the ten greenfield study areas; and
- the specific and comparative information from the Greenfield Study will therefore have direct relevance to the master plans.

DISCUSSION

Staff have reviewed the various studies which have been undertaken for the master plans and regional planning with property owners within each master plan area. Over the summer, further meetings will be held to determine if there are any discrepancies between staff and the property owners in determining the infrastructure needs, associated costs for each master plan area and the application of capital cost charges.

Following these discussions, staff will submit recommendations to Council in early fall on the disposition of the Master Plan areas within the overall context to the Regional Planning project. The key issue to be addressed for each site is whether or not to proceed with Plan and Bylaw amendments concurrently with regional planning or to postpone any further action until after the regional plan is complete. Capital cost charge implications will also be addressed at that time.

The Morris/Russell Lake area is unique in that Plan and Bylaw amendments are already in place giving direction to proceed with additional amendments following resolution of a major transportation issue in the east Dartmouth/Cole Harbour area. As construction of a new interchange on Highway 111 appears imminent, community planning work should proceed in the Morris/Russell Lake Master Plan area to resolve outstanding issues respecting community form, scale of the overall development and infrastructure financing.

It is evident that the Municipality does not need all ten greenfield areas developed in order to meet future growth needs within any reasonable planning horizon. In addition, it may not be necessary to develop all four master plan study areas to accommodate projected growth. Caution will have to be exercised when approval requests are brought before Council for master plan areas since in some cases selection of one site will necessarily infer that other sites cannot be developed.

Growth Projections and Land Requirements

Council will ultimately have to review the merits of the master plan study areas within the context of the information obtained from the regional planning greenfield study and any other factors or values which are deemed relevant such as community form etc. It is clear however that the amount of land identified in the master plan areas and greenfield study exceeds the Region's growth requirements over the next 25 years.

Full build out of all ten greenfield sites could accommodate approximately 273,000 people. This represents a supply of 4.5 to 5.5 times the Region's expected needs for suburban growth over the next 25 years. It has been estimated that by 2025, the region's population will grow between 55,000 to 125,000 under low and high growth scenarios respectively¹. Approximately 50,000 to 60,000 people would be accommodated within greenfield/master plan areas, with the remainder located within established urban service boundaries or developed in suburban/rural areas with on-site sewer and water services.

Summary of Preliminary Analysis

Preliminary analysis indicates that:

- development of all of the ten greenfield study areas are not needed to satisfy regional needs for the next twenty-five years, even under a high growth scenario;
- the capital cost of extending basic municipal services (roads, sewers, water) to each study area varies considerably, both in aggregate and based on per developable acre;
- the potential scale of development within each study area is of such a magnitude that approval of one implies that other sites may not be developed due to service capacity constraints-particularly for sanitary sewage treatment; and
- approvals may limit the Municipality's capacity for infill development within established urban boundaries.

¹ *Employment, Population and Housing Projections: Halifax Regional Municipality (Revised)*. Prepared by Claxton

Summary of Activities for Each Master Plan

The following information summarizes the extent of work completed to date on each master plan area.

1. Morris/Russell Lake

- Griffiths Muecke and Associates was commissioned by the Municipality to prepare a watershed management plan. *Morris Lake Watershed Management Plan: Final Plan* was submitted in May 1998.
- A public participation committee was formed and guided policy development which culminated with adoption of amendments to the Municipal Planning Strategies for Dartmouth, Cole Harbour/Westphal and Eastern Passage/Cow Bay in June 1999. The amendments established comprehensive guidelines to accommodate future development within the Morris and Russell Lake watersheds. Undeveloped lands were zoned comprehensive development district to implement this intent
- The public participation committee prepared a master development plan report with a series of recommendations pertaining to land use, transportation, environmental protection and implementation. The report featured a conceptual land use and transportation plan. Harbour East Community Council approved the committee recommendations in principle, with amendments, in May 2000.
- Dillon Consulting was retained by the Municipality to prepare a design and cost estimate for the proposed interchange with the Circumferential Highway and connector road extending from the interchange to the Caldwell Road. The *Cole Harbour Arterial Corridor and Interchange Study* was submitted in November, 2001.
- Revised development proposals were submitted by Clayton Developments to the Harbour East Community Council in 2002. A revised transportation plan was referred to the public participation committee. Canada Land Company was given representation on the committee in light of its interest in developing lands deemed surplus to the Shearwater National Defence Base.
- Jacques Whitford was retained by the Municipality to prepare a stormwater management plan. The final document *Morris Lake Stormwater Management Plan*, dated December 2003, has recently been presented to the public participation committee and the Dartmouth Lakes Advisory Board. The public participation committee has reviewed the study and recommended further changes to the master development plan.
- Atlantic Road & Traffic Management have been retained by the Municipality to review a number of options for the design of the proposed Circumferential Highway interchange and connector road to Caldwell Road. The final report is expected to be submitted in the near future.
- At the March 9, 2004 session, Regional Council approved a motion to support the interchange and connector road on the 2004/05 list for funding under the Canada - Nova Scotia Infrastructure Program.

- On May 20th 2004, a news release stated that the federal and provincial governments will contribute \$2.4 million towards the proposed interchange, subject to completion of an environmental assessment study.

2. Port Wallace

A preliminary evaluation undertaken through the master planning program found a significant development constraint in the sanitary sewer system. The sanitary sewer main along the Waverley Road does not have the capacity to service the Port Wallace area, thereby necessitating construction of a new main along the west side of Micmac Lake to service Port Wallace.

More recently, consultants have been retained to study the sewersheds that discharge into Dartmouth Cove. The study is expected to provide insights into the significance of downstream capacity constraints which could further affect the financial viability of developing this area.

3. Bedford West

- An open house session was held in the fall of 2002, followed by a meeting with property owners to review the proposed boundary.
- In February 2003, Regional Council approved the study area boundaries, the study terms of reference and a public participation program. A public participation committee, comprised of citizens from the three polling districts in which the study area is located, has been appointed to oversee the process. The committee has reviewed development proposals of landowners and has hosted three public meetings to date.
- Annapolis Group, the major land owner within this study area and proponent of this study, has submitted design briefs pertaining to a conceptual development plan of its property as well as servicing proposals for sanitary and water services for the entire study area. The design briefs have been presented to staff and the public participation committee and at a public meeting.
- Delphi - MRC has been retained by Annapolis to prepare a transportation study. The most recent draft *Bedford West Master Plan: Transportation Study (December 2003)* is under review by a steering committee with staff representation from the N.S. Department of Transportation & Public Works and the Municipality. The study has been presented to the public participation committee and at a public meeting.
- SGE Acres was retained by Annapolis Group to undertake a structural study of the dams owned by Annapolis at the outfall of Paper Mill Lake, Kearney Lake and Quarry Lake to fulfill provincial licensing requirements. The study, entitled *Bedford Dams Comprehensive Review (final report: October, 2003)* has been reviewed by staff, the public participation committee and Bedford Waters Advisory Board and presented at a public meeting. SGE Acres also prepared a supplementary document, entitled *Bedford West Stormwater Management Pre-Design Brief (March 2004)*, which outlined a proposal to introduce gated structures at each of the dams to control water levels on the lakes and manage stormwater.

- The Dalhousie University Centre for Water Resource Studies (CWRS) prepared *Water Quality Impact Assessment of Water Bodies Contained in the Bedford West Planning Area using a Phosphorous Loading Model Approach (R.S. Scott and W.C. Hart, April 28 2004)*
- Jacques Whitford has prepared *Bedford West Planning Area Subwatershed Management Plan (May, 2004)*. This study, the CWRS study and the SGE Acres study are being reviewed by a steering committee comprised of four municipal staff and three staff members of the N.S. Department of the Environment and Labour. The studies have also been presented to Bedford Waters Advisory Board and at a public meeting.

4. Governor Lake North

- An open house session and two public meetings have been held in the community.
- The *Master Plan for Governor Lake Area and Development Plan for Governor Village (June 2000)* was prepared by Atlan Plan for review by staff.
- Delphi Systems was commissioned by Parkdale Developments to prepare a traffic impact study. The document entitled *Governor's Run: Traffic Impact (May 2001)* has been reviewed by municipal and provincial staff.
- The *Nine Mile River Assimilation Study (February, 2003)* was prepared by Dillon Consulting Ltd. for the Municipality.
- SGE Acres prepared the *Governor Lake Area Transportation Study (January 2003)* for the N.S. Department of Transportation & Public Works and the Municipality to determine transportation improvements needed to allow for future developments throughout the area. Future developments included the Governor Lake North and Ragged Lake study areas and the Westgate Community.
- SGE Acres prepared the *Capital Cost Contribution Determination of the Transportation System for Governor Lake North Master Plan (July, 2003)* for the Municipality based on the recommendations of the Governor Lake Area study and in conformity with the Municipality's Infrastructure Charges policy document. A supplementary investigation was undertaken by the consultant to determine the impact of an alternative scenario²
- CBCL prepared the *Governor Lake North Sanitary Servicing Master Plan (August 2003)* for the Municipality to provide an estimate of the capital cost contribution estimate for the sanitary sewer system. CBCL has also been retained by the Regional Water Commission to estimate the water distribution system component. A draft report has been submitted to the Commission.

² Technical Memorandum to David McCusker, HRM Public Works & Transportation

BUDGET IMPLICATIONS

None associated with this report.

FINANCIAL MANAGEMENT POLICIES / BUSINESS PLAN

This report complies with the Municipality's Multi-Year Financial Strategy, the approved Operating, Capital and Reserve budgets, policies and procedures regarding withdrawals from the utilization of Capital and Operating reserves, as well as any relevant legislation.

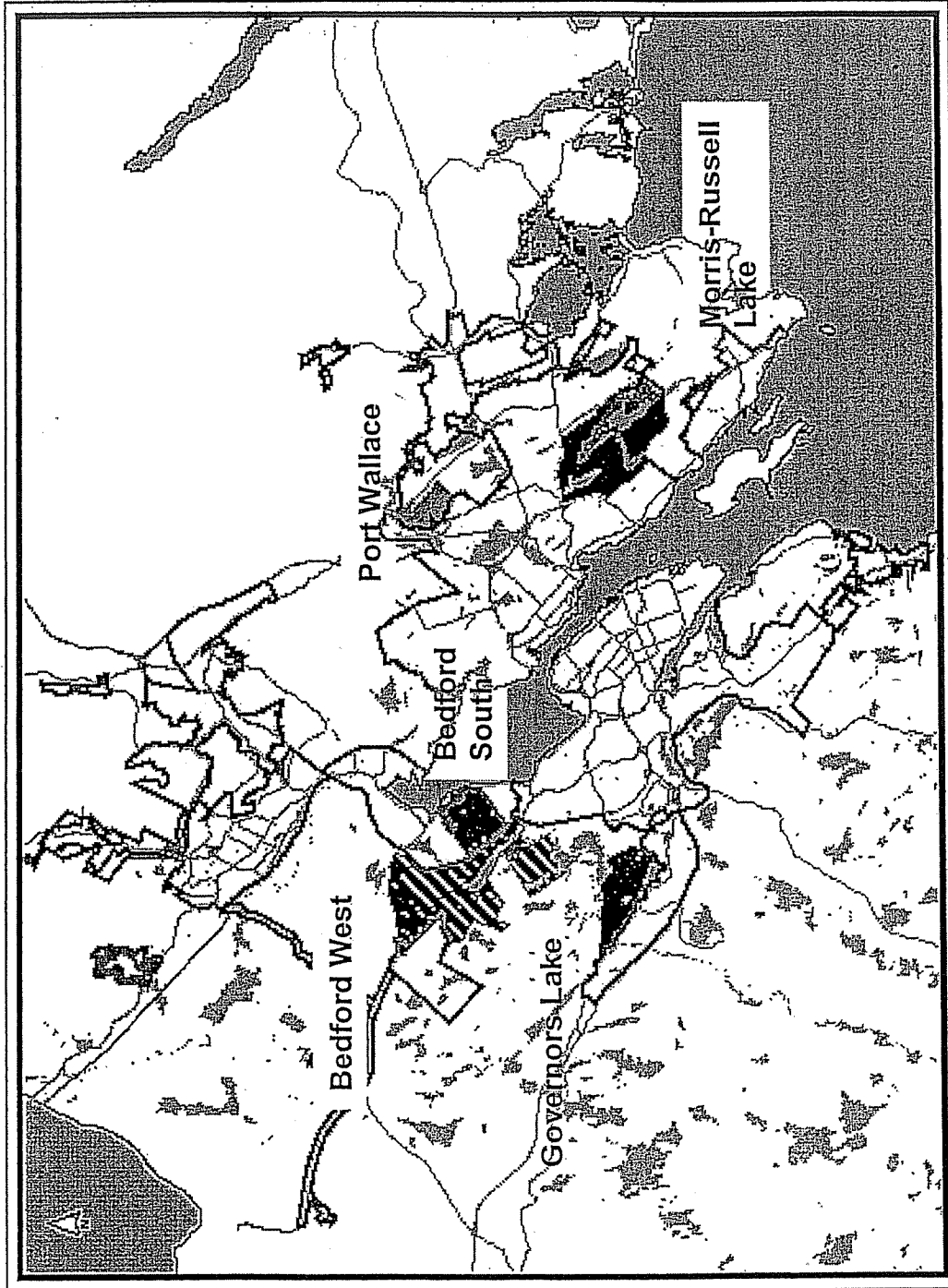
ATTACHMENTS

- I Location Map: The Five Authorized Master Plan Study Areas
- II Planning Activities that have Influenced the Master Plan Studies
- III Location Map: Greenfield Study Areas

Additional copies of this report, and information on its status, can be obtained by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

Report Prepared by: Paul Morgan, Planner, tel: 490-4482

Existing Master Plan Areas



Attachment II: Planning Activities that have Influenced the Master Plan Studies

The Capital Cost Contribution Policy

With provincial adoption of the *Municipal Government Act* in 1999, municipalities in Nova Scotia were granted the statutory authority to recoup certain infrastructure costs associated with new development through the imposition of infrastructure charges. HRM had sought such authority shortly after amalgamation as a means of compensating for diminished federal and provincial financial support for new infrastructure projects.

In July 1992, Regional Council adopted *Infrastructure Charges Best Practice Guide: A Capital Cost Contribution Policy* which presented the Municipality's role, guiding principles, policies and administrative procedures in financing new infrastructure for new development. The document contemplated that the Municipality would take a lead facilitation role in determining infrastructure needs, apportioning costs among benefiting parties, and collecting and payment of funds. However, it also stated that the Municipality was to balance its financial responsibilities with its ability to pay through approved capital budget expenditures and to do so without assuming developers' risk.

Amendments to community planning strategies were approved concurrently with this policy document and in February, 1993 the first charge area was established for the Wentworth/Bedford South master plan area through amendment to the Bedford and Halifax subdivision by-laws.

The Regional Planning Program:

In November 2001, the Municipality initiated a regional planning program. Phase I, completed in December 2002, primarily involved undertaking various consultation processes and preparation of discussion papers to help identify planning themes well as a vision and principles. Under Phase II, five focus themes were selected to drive the program: economy, environment, settlement pattern transportation and Halifax Harbour. Principles, goals and objectives were drafted for each theme in consultation with the Regional Planning Committee and were approved in principle by Regional Council in January of this year.

In 2002, Council authorized a green field study in support of the regional planning program to investigate the feasibility of developing serviced communities on ten greenfield sites around the metropolitan area (the location of each is shown on attachment II). The study was to provide a commentary regarding the opportunities and constraints for development of each site and to estimate the capital costs of upgrading municipal services (transportation, water, sanitary sewer, and stormwater systems) to accommodate several development scenarios. With the exception of Wentworth/Bedford South, the four outstanding master plan study areas were included in the greenfield study to gain further knowledge and to allow for a comparative analysis³.

³ The Morris/Russell Lake Master Plan Area formed part of a larger study area identified as Eastern Passage/Shearwater under the greenfield study. Similarly, the Governor Lake North

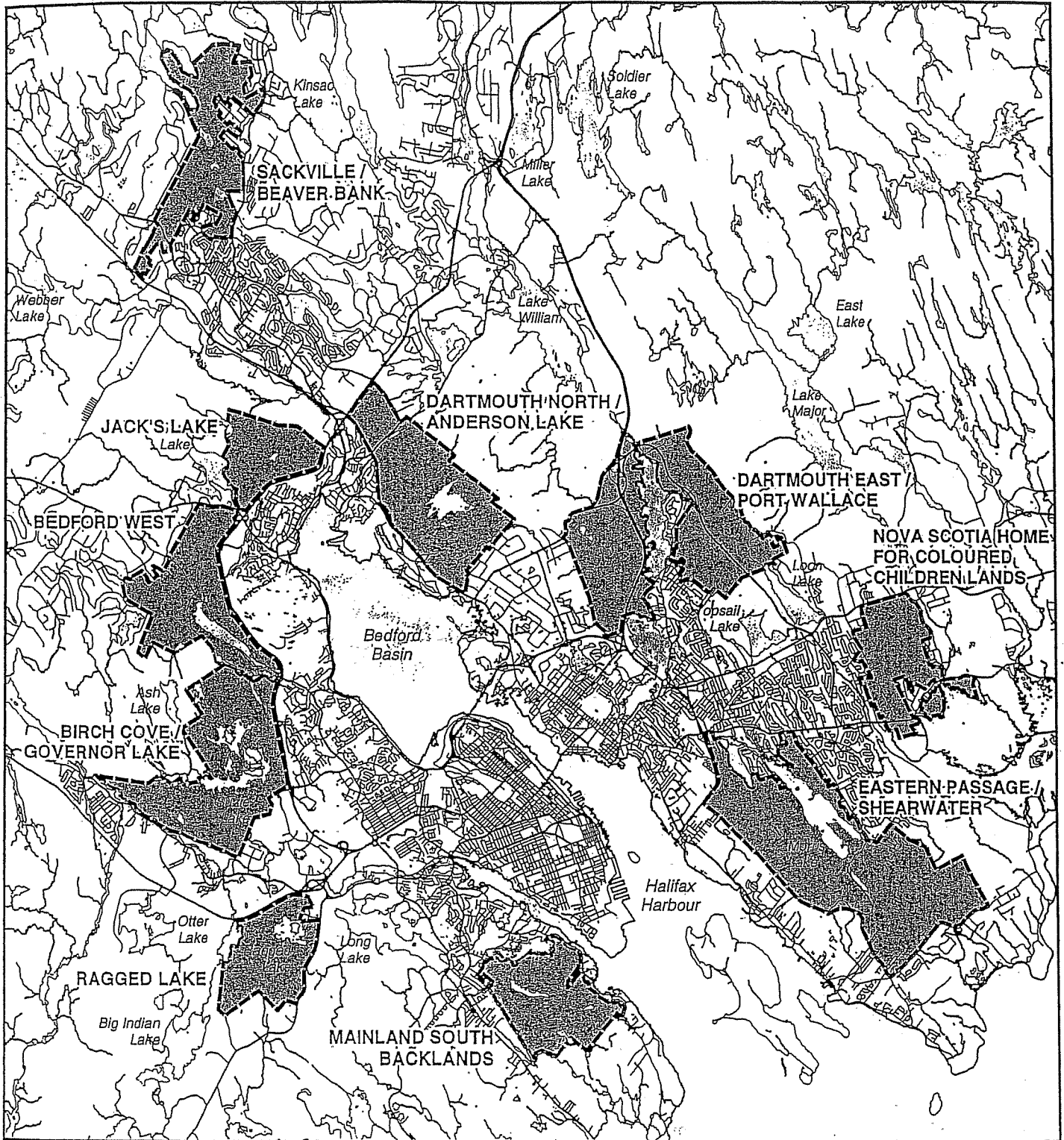
Attachment II: Planning Activities that have Influenced the Master Plan Studies (continued)

CBCL Limited in association with Marshall Macklin and Monaghan were selected for the study. To date, two draft documents have been prepared for review by staff: *Greenfield Areas Servicing Analysis: Opportunities and Constraints Report (January 2003)* and *Greenfield Areas Servicing Analysis Report (October 2003)*. Consultations of the findings have been held with affected property owners. An executive summary has been reproduced as attachment IV.




At the April 20th, 2004 session of Regional Council, four alternative growth strategies were adopted for public consultation. A kick off event was held on May 15th followed by a series of open houses and presentations in May and June. Each growth strategy has differing implications for a variety of planning issues such as community form, service provision, energy consumption, and environmental protection.

III Location Map: Greenfield Study Areas

STUDY AREAS



Base Features

-  Study Areas
-  Major Roads
-  Minor Roads

1:150,000



Figure Number :	1.1
Scale :	1:150 000
Issue Date :	January, 2003
Cartography By :	Shiju Mathew



CBCL LIMITED
Consulting Engineers

Final Report 021022

Prepared for:
Halifax Regional Municipality

**Greenfield Areas
Servicing Analysis**

EXECUTIVE SUMMARY

Servicing Analysis Report

June 2004



ISO 9001
Registered Company

CBCL LIMITED

Consulting Engineers

In Association



**Marshall
Macklin
Monaghan**

PROJECT MANAGERS • ENGINEERS • SURVEYORS • PLANNERS

Executive Summary

SECTION 1 Background

The Halifax Regional Municipality (HRM) has undertaken a long-term regional planning initiative which, throughout the next 25 years, will guide its physical development in a way that promotes healthy, vibrant, sustainable communities.

Part of the planning process includes the **Greenfield Areas Servicing Analysis Study**. The study's key objective is a comparative analysis of land use and servicing opportunities and constraints for residential development in areas which have not been previously urbanized.

The ten Greenfield Study Areas are:

- Eastern Passage / Shearwater
- Nova Scotia Home for Coloured Children
- Dartmouth East / Port Wallis
- Dartmouth North / Anderson Lake
- Sackville / Beaver Bank
- Jack's Lake
- Bedford West
- Birch Cove North / Governor Lake
- Ragged Lake
- Mainland South Backlands

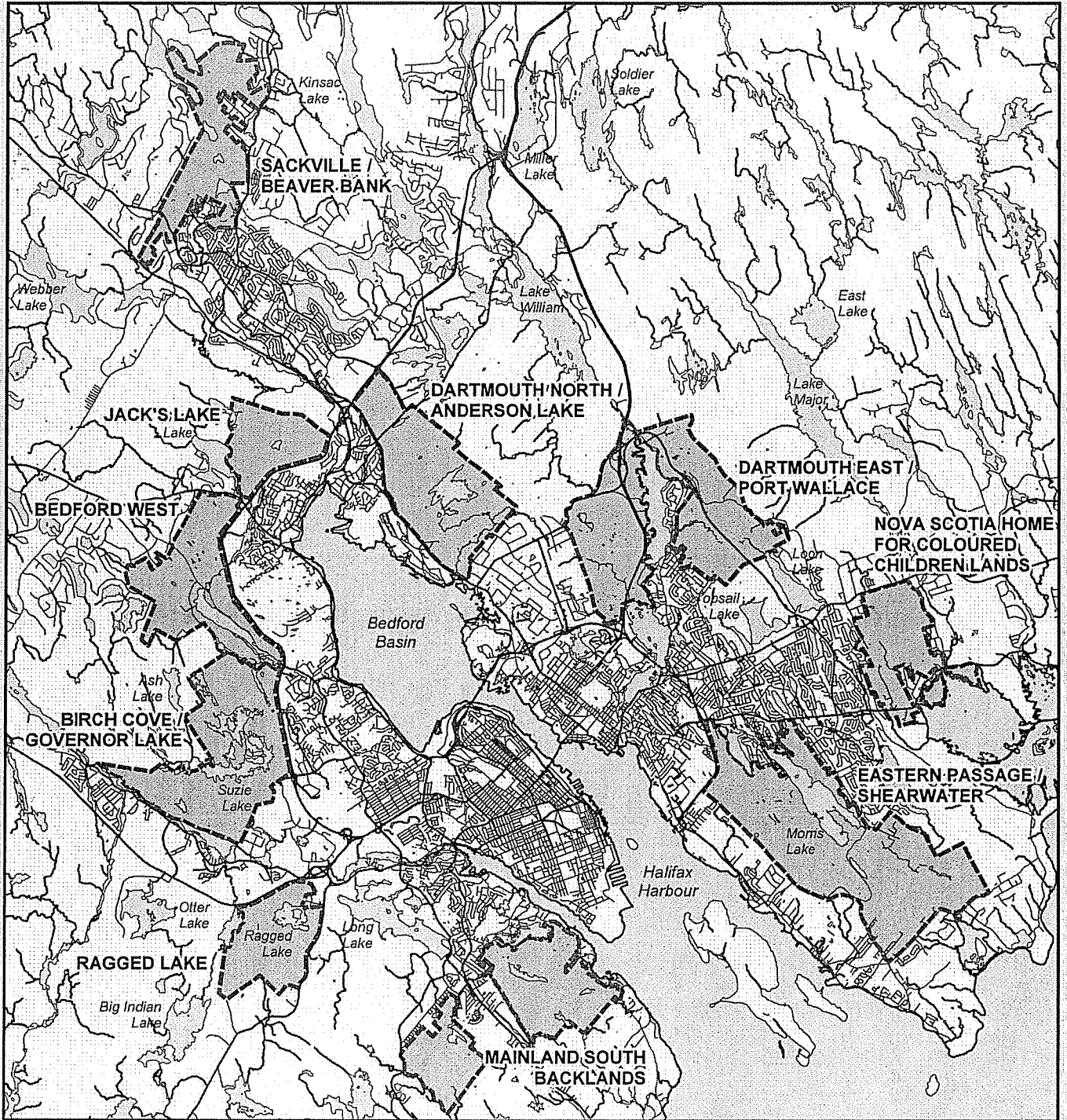
The study areas are shown on Figure 1.1.

Boundaries for each of the ten Greenfield Sites were set in consultation with HRM Planning and Engineering Staff, taking into account the following:




Criteria for Setting Greenfield Site Boundary

- Presently undeveloped land
- Major watercourses (rivers and lake shorelines)
- Watershed boundaries
- Property Ownership
- Location of highways, roads, railways
- Location of Federal Crown Lands and Parklands
- General locations of lands where interest has been expressed in the past by private developers regarding development feasibility.

STUDY AREAS



Base Features

-  Study Areas
-  Major Roads
-  Minor Roads

1:150,000



Figure Number :	1.1
Scale:	1:150 000
Issue Date :	January, 2003
Cartography By:	Shiju Mathew.



SECTION 2 **Determining Net Developable Land**

Once the study boundary for the Greenfield Sites were established, an evaluation was carried out to determine the area of land that could be developed, including land that was designated as developable with constraints. Lands deemed not available for development were determined based on issues of land ownership, land use, or environmental concerns, including:

Lands/Features Not Available for Residential Development

- Watercourses, and shorelines (with 15-metre non-disturbance vegetative buffers)
- Wetlands (with 15-metre non-disturbance vegetative buffers)
- Designated Municipal, Provincial and Federal Parklands
- Provincial and Federal Crown Lands
- Exiting 100 Series Highways (with 155-metre ROW buffer from ROW centreline)
- Planned Highways No. 113
- Quarries/Active Gravel Pits (100-metre buffers). If there was a question as to whether a pit was inactive, it was considered active.

Specific land use and environmental constraints documented for the land areas described “Available for Development with Constraints” are presented in the “Opportunities/Constraints and Servicing Summary” Report for each of the Greenfield Sites.

SECTION 3 **Development Population Projections**

Once the total developable area was determined for each of the Greenfield Sites, population projections were calculated based on the following criteria:

- Full build-out of the developable land to achieve the total projected population based on a population density of 45 people per hectare (19 people per acre):
- A baseline population growth for the HRM estimated at between 50,000 and 60,000 people which were distributed to the Greenfield Sites under several development Scenarios:

<i>Scenario #1</i>	Shearwater/Eastern Passage; N.S. Home for Colour Children; Dartmouth East-Port Wallace
<i>Scenario #2</i>	Dartmouth North/Anderson Lake; Sackville/Beaver Bank
<i>Scenario #3</i>	Bedford West; Birch Cove Lakes/Governor Lake; Ragged Lake
<i>Scenario #4</i>	Mainland South Backlands
<i>Scenario #5</i>	All Greenfield areas

For each of the Scenarios, a projected population of 60,000 people was distributed to the Greenfield Sites in proportion to their net development area.

Table 1.0 presents the results of the population projections:

Table 1.0 Greenfield Areas – Population Projections

DEVELOPMENT SCENARIOS	GREENFIELD SITE	TOTAL STUDY AREA	UN-DEVELOPABLE AREA	TOTAL DEVELOPABLE AREA		PROJECTED POPULATION	
		ha	ha	ha ⁽²⁾	(%)	Full Build-Out	Baseline ⁽¹⁾
						45 PPha	Year 2026
Scenario #1	Shearwater-Eastern Passage	1,913	597 ⁽³⁾	1,250	65%	56,250	31,250
	N.S. Home for Coloured Children Lands	593	132 ⁽⁴⁾	438	74%	19,710	10,950
	Dartmouth East-Port Wallace	1,478	728	712	48%	32,040	17,800
	TOTAL	3,984	728	2,400		108,000	60,000
Scenario #2	Dartmouth North-Anderson Lake	1,035	501	507	49%	22,815	21,620
	Sackville-Beaver Bank	752	142	579	77%	26,055	24,691
	Jack's Lake	419	81	321	77%	14,445	13,689
	TOTAL	2,206	724	1,407		63,315	60,000
Scenario #3	Bedford West	849	227 ⁽⁵⁾	591	70%	26,595	20,568
	Birch Cove Lakes-Governor Lake	1,200	459	704	59%	31,680	24,501
	Ragged Lake	545	93	429	79%	19,305	14,930
	TOTAL	2,594	552	1,724		77,580	60,000
Scenario #4	Mainland South Backlands	642	83	531	83%	23,895	60,000
Scenario #5	Shearwater-Eastern Passage	1,913	597 ⁽³⁾	1,250	65%	56,250	12,372
	N.S. Home for Coloured Children Lands	593	132 ⁽⁴⁾	438	74%	19,710	4,335
	Dartmouth East-Port Wallace	1,478	728	712	48%	32,040	7,047
	Dartmouth North-Anderson Lake	1,035	501	507	49%	22,815	5,018
	Sackville-Beaver Bank	752	142	579	77%	26,055	5,731
	Jack's Lake	419	81	321	77%	14,445	3,177
	Bedford West	849	227 ⁽⁵⁾	591	70%	26,595	5,850
	Birch Cove Lakes-Governor Lake	1,200	459	704	59%	31,680	6,968
	Ragged Lake	545	93	429	79%	19,305	4,246
	Mainland South Backlands	642	83	531	83%	23,895	5,256
TOTAL	9,426	2,087	6,062		272,790	60,000	

Notes:

- (1) Based on 60,000 Projected Population distributed proportional to Development Areas.
- (2) Total Developable Area includes further 5% deduction for parklands.
- (3) Total Undevelopable Area includes transfer of portions of the CFB Shearwater Lands to Canada Lands.
- (4) Undevelopable Area for NSHCC Lands includes 60 acres (24 hectares) set aside for sports/recreation facilities as recommended in Land Use Study (eBASE, September 1996).
- (5) Undevelopable Area includes 500-foot (155-metre) ROW for new planned Highway No. 113 connecting Highways No. 102 and No. 103.

SECTION 4 Municipal Services

A key component of the Greenfield Study was to determine the present and future capacities of the water, sanitary sewer and stormwater infrastructure within HRM. The following is a summary of the capacity analysis for the key regional infrastructure.

Table 2.0 Water Supply – Water Treatment Plant Population Growth Capacity

	<i>Water Treatment Plant</i>	
	Pockwock (Serving Halifax-Bedford-Sackville)	Lake Major (Serving Dartmouth-Cole Harbour)
Present Population Growth Capacity	83,100 people	59,900 people
Ultimate Population Growth Capacity with Expansions	278,100 people	127,600 people

Table 3.0 Sanitary Servicing – Existing Sewage Treatment Plant Population Growth Capacity

	<i>Sewage Treatment Plant</i>		
	Mill Cove (Serving Bedford-Sackville)	Eastern Passage (Serving Eastern Passage-Cole Harbour)	Lakeside-Timberlea (Serving Beechville-Lakeside-Timberlea)
Present Population Growth Capacity	13,076 people	884 people	1,100 people
Ultimate Population Growth Capacity with Expansions	32,306 people	34,000 people	9,900 people

Table 4.0 Sanitary Servicing – Halifax Harbour Solutions Project Population Growth Capacity

	<i>Sewage Treatment Plant</i>		
	Halifax)	Dartmouth	Herring Cove
Population Growth Capacity to Year 2021	31,000 people	38,000 people	22,000 people
Population Growth Capacity to Year 2041 with Expansion to Treatment Plans	55,000 people	64,000 people	66,000 people

The following are additional comments regarding the results of the capacity analysis for municipal servicing.

Water Servicing

- The existing Pockwock and Lake Major Water Treatment Plants have ample existing capacity for servicing the projected populations, without a requirement to expand the plants.
- The existing Pockwock Water Transmission mains supplying Halifax have the capacity to service the projected populations.
- Some Greenfield Sites will require watermain extensions and reservoirs.

Sanitary Servicing

- Expansions to the existing sewage treatment plants will be required to service the projected development under most of the development scenarios.
- Receiving water quality issues with the Nine Mile River is limiting ultimate expansion capabilities at the Lakeside-Timberlea Sewage Treatment Plant.
- Availability of land at the Mill Cove and Eastern Passage Sewage Treatment Plants is limiting ultimate expansion capabilities.
- The Halifax Harbour Solutions Project includes a sewage interceptor system, pump stations and outfalls to be constructed to provide service for the year 2041 project populations. However, the Halifax, Dartmouth and Herring Cove Sewage Treatment Plants are to be constructed to provide service for the 2021 projected populations, with expansion capabilities to year 2041 being allowed for but not included in the present Halifax Harbour Solutions Project.
- Trunk sewer extensions and pump stations will be required on many of the Greenfield Sites.

Stormwater Servicing

- Most of the Greenfield Sites contain large lakes and many rivers, streams and wetlands. As a result, future development will require close attention to stormwater quality and runoff flows and volumes.
- The recent “HRM Water Resource Management Study” Report (Dillon, Dec. 2002) recommends:
 - Present stormwater runoff flows on undeveloped land be maintained to the extent practical when developed.
 - Peak stormwater runoff flows be reduced with source, conveyance, and end-of-pipe control measures to reduce the risk of flooding and stream bank erosion.

SECTION 5 Transportation

Development of most of the Greenfield Sites is constrained by existing road systems that are primarily comprised of one or two major roads or expressways. An analysis was carried out to determine the effect development within the Greenfield Sites will have on the existing and proposed regional transportation network.

Each of the development scenarios (as listed in Section 3) were studied using an updated and calculated computer transportation model with several dwelling unit densities and various percentages of the traveling population who use non-auto means of transportation (i.e., bus, ferry, walking, etc.) herein referred to as Transit Modal Split.

Public transit services, ferry services, and commuter rail services were integral components of the transportation study.

5.1 Present Road Capacity

The existing reserve or unused road capacity of the current road network was evaluated as a measure of the ability of the road network to absorb growth in travel demand generated by new development. The analysis is based on travel volumes across six key transportation linkages or screenlines. The screenlines are shown in Figure 3.1 and results of the analysis are summarized in Table 5.0.

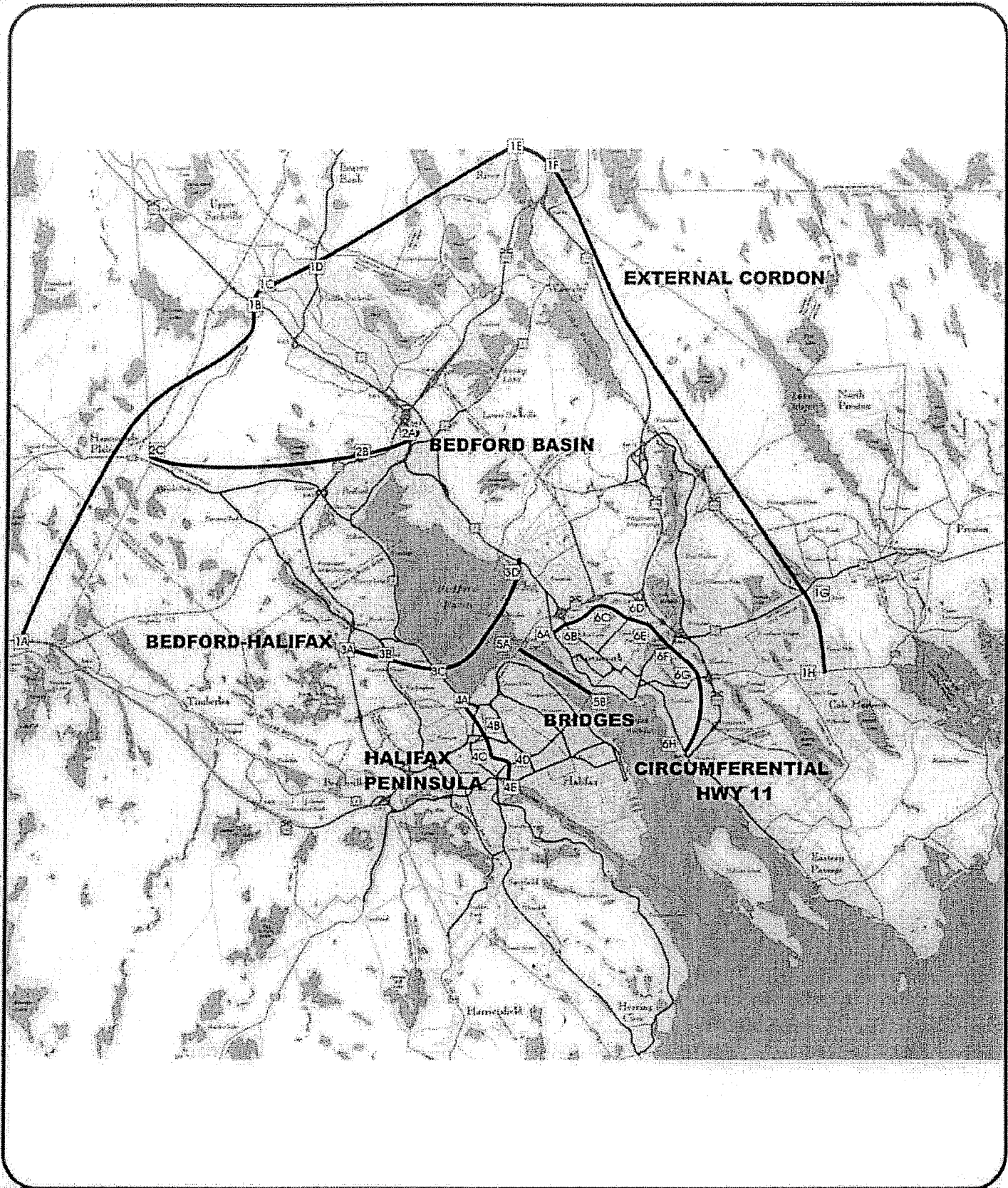


Table 5.0 Existing “Current” Transportation Conditions

<i>Screenline</i>	<i>Capacity Comments</i>
Screenline 1 External: Hammonds Plains Road to Fall River to Lake Loon	<ul style="list-style-type: none"> • Large amount of reserve capacity
Screenline 2 Hammonds Plains Road @ Lucasville to Hwy. 101 turnoff to Sackville	<ul style="list-style-type: none"> • Large amount of reserve capacity
Screenline 3 Hwy 102 South of Keamey Lake Road to Bedford Hwy to Akerley Boulevard @ Windmill Road	<ul style="list-style-type: none"> • Most reserve capacity on west side of Bedford Basin • Windmill Road northbound approaching capacity
Screenline 4 Fairview Overpass to Bayers Road @ Halifax Shopping Centre to Armdale Rotary – Peninsula side	<ul style="list-style-type: none"> • Outbound reserve \pm 20% of total • Quinpool/Chebucto at capacity • Significant constraint @ Armdale Rotary • Terminus of Hwy 102 limits capacity
Screenline 5 A. Murray MaKay Bridge Angus L. MacDonald Bridge	<ul style="list-style-type: none"> • Little remaining reserve capacity
Screenline 6 Harbour side of Circumferential Hwy	<ul style="list-style-type: none"> • Substantial capacity, some collectors will limit opportunity for improvements • Woodland Avenue/Braemar Drive Extension approaching capacity outbound

- Note: Volume/Capacity (V/C) 0.8 to 1.0 Approaching Capacity

The primary existing constraints on the road network relate to the Halifax Peninsula and the Bridges. Travel to and from the Peninsula dominates travel patterns throughout much of the City. This is borne out by observations of congestion along the Halifax waterfront during the p.m. peak hour, when congestion becomes severe on some links. Outbound demand to the suburbs west of the Peninsula also strains the capacity of the available roads. As the peak demands travel further out during the p.m. peak period, congestion is observed on Bedford Highway and Highway 102. Other areas of congestion include the Burnside Industrial Park access roads, Bedford Highway, Windmill road and Highway 7.

5.2 Year 2026 Background Analysis

An analysis was carried out to assess the capacity of the road network in the Year 2026 with no development in the Greenfield Sites and an increase of 40,000 people added to the 2001 population. This provided a benchmark for review of the other forecasts which did include development in the Greenfield Sites. Results of the analysis are summarized in Table 6.0.

Table 6.0 Background 2026 Scenario with No Greenfield Development

SCREENLINE	CAPACITY COMMENTS
Screenline 1 External: Hammonds Plains Road to Fall River to Lake Loon	<ul style="list-style-type: none"> No Major Congestion
Screenline 2 Hammonds Plains Road @ Lucasville to Hwy. 101 turnoff to Sackville	<ul style="list-style-type: none"> No Major Congestion
Screenline 3 Hwy 102 South of Kearney Lake Road to Bedford Hwy to Akerley Boulevard @ Windmill Road	<ul style="list-style-type: none"> Windmill Road north of Akerley over loaded outbound Bedford Hwy overloaded outbound
Screenline 4 Fairview Overpass to Bayers Road @ Halifax Shopping Centre to Armdale Rotary -- Peninsula side	<ul style="list-style-type: none"> Bayers Road, Chebucto Road and Kempt Road heavily loaded Capacity across screenline is limited by Armdale Rotary
Screenline 5 A. Murray MaKay Bridge Angus L. MacDonald Bridge	<ul style="list-style-type: none"> Bridges overloaded inbound v/c = 1.04, outbound v/c = 0.81
Screenline 6 Harbour side of Circumferential Hwy	<ul style="list-style-type: none"> Satisfactory v/c ratios, however Woodland Avenue, Portland Street and Braemar Drive extension will be close to or over capacity outbound
Various Road Links	<ul style="list-style-type: none"> Road links projected to be at or over capacity <ul style="list-style-type: none"> - Hammonds Plains Road - Forrest Hills Parkway - Trunk 7 - Herring Cove Road - St. Margaret's Bay Road

* Note: Increase of 40,000 people to 2001 population with no development on Greenfield Sites

* V/C = Volume/Capacity Ratio, (i.e., Estimated Traffic Volume versus Road Capacity)

SECTION 6 Results of the Greenfield Areas Servicing Analysis

6.1 Transportation Conclusions

The overall results of the Transportation and Transit analysis have shown that, irrespective of the development level or auto/non-auto modal split targets, the road requirements can be expected to be substantial. For some of the Greenfield Sites, the road network thresholds needed to accommodate development are significant – for example, the introduction of the Jack’s Lake Interchange on Highway 102. Many of the sites are also somewhat isolated from the urban fabric of the City. The tendency of developers of such sites is to create a minimal number of road links, to create just the access to the network of highways and major arterials. However, the experience of numerous municipalities across Canada is that this form of development is not supportive of transit. Transit needs to be part of an overall transportation strategy that is focused on the pedestrian and closely spaced, smaller road linkages.

Estimated costs to provide the required Transportation Services for the Greenfield Sites for the 5 Development Scenarios are presented in Table 7. Table 7 includes an estimated percentage of cost for transportation infrastructure upgrades that would be attributable to the specific Greenfield Sites.

6.2 Servicing Conclusions

Each of the ten Greenfield Sites have servicing constraints that will require extensions to or new infrastructure. In some cases, expanding an existing service boundary to include the Greenfield Site will be very difficult and will require careful consideration of servicing other lands. Estimated costs for water and sanitary servicing for each of the Greenfield Sites are presented in Table 8. Estimates are for extensions of services to the Greenfield Sites and expansions to existing treatment facilities. Also included is servicing located within the Greenfield Sites that are sized to servicing future development beyond the Greenfield Sites. They do not include local trunk and collection/distribution serving. The following are key findings and conclusions that came out of the Servicing Analysis Study.

Water Supply

- All of the Greenfield Sites can be served adequately by extending existing distribution and transmission mains and constructing water storage reservoirs.
- The water infrastructure requirements are more extensive for some sites, notably Dartmouth North/Anderson Lake, Sackville/Beaver Bank and Birch Cove Lakes/Governor Lake. The later Greenfield Site would require appreciably less infrastructure when land around the Birch Cove Lakes is designated for other activities.

Sanitary Services

- The feasibility of servicing the ten Greenfield Sites depends on the capacity of the existing and proposed sewage treatment plants. Development in several Greenfield Sites will be limited by the STP capacity. The following applies:
 - Nova Scotia Home for Coloured Children Lands is outside the Eastern Passage STP service boundary. The STP has a limited ultimate capacity.
 - The Sackville/Beaver Bank and Jack's Lake Greenfield Sites will require most of the reserve capacity of the Mill Cove STP.
 - Because of capacity restrictions at the Lakeside Timberlea STP, sewage from the Governor Lake lands of the Birch Cove Lakes/Governor Lake Greenfield Site may have to be redirected to the Harbour Interceptor Tunnel.
- The Halifax Harbour Solutions Project design capacities is based on populations projections derived in 1991 and projected to 2021 and 2041. To determine future population capacities of the Greenfield Sites, the actual 2003 populations for each of the pertinent sewersheds should be confirmed in order to determine where future development can occur and meet the ADWF design flows presented in the HHCI documents.
- Most of the Greenfield Sites result in sewage flows to existing major trunk sewers. The trunk sewers include the Lake Banook/Mic Mac/North Dartmouth Trunk Sewer, the Sackville Trunk Sewer and the Northwest Interceptor Trunk Sewer. Before finalizing available capacities to provide sanitary services to the Greenfield Sites, each of the trunk sewers should be studied to confirm today's existing flows and reserve capacities at several key points along the trunk line. For example, the actual volume of sewage from the Bayers Lake Commercial Park should be confirmed in order to establish the actual reserve capacity of the Bayers Lake Pump Station.

- Locations of future sanitary flows to an expanded Mill Cove STP has yet to be determined. The size and location of future in-fill populations within the existing Mill Cove STP service boundary should be confirmed.

Stormwater Management Services

- Each Greenfield Site contain lakes and watercourses that will require careful consideration of stormwater runoff and potential pollutants during and after development. The new HRM Water Resources Management guidelines will be useful for proposed development in the Greenfield Sites.

6.3 Greenfield Site Development Potential – Conclusions

The preceding sections present a summary and conclusions of the servicing requirements for the ten Greenfield Sites under the various development scenarios and population densities. This section presents a development potential comparison based on the following grouping criteria:

- 1. Greenfield Sites Not Recommended as Having Development Potential**
- 2. Greenfield Sites with Some Constraints to Development**
- 3. Greenfield Sites with Minimal Constraints**

A brief description of the primary constraints, servicing costs and per acre costs are presented for each of the Greenfield Sites within the three groups. A detailed breakdown of combined transportation and servicing costs and resulting costs per hectare (acre) is presented in Table 9. Transportation and Servicing costs were estimated based on the methodology described within the study document and are presented for a comparative analysis only and to provide an indication of the total expenditures they may be required if development proceeds. The costs do not reflect possible Capital Cost Contribution rates they may be applied to development areas.

6.3.1 Greenfield Sites Not Recommended as Having Development Potential

Nova Scotia Home for Coloured Children

- Sanitary Servicing requires expansion of Eastern Passage STP service boundary in lieu of an expanded STP providing service to the presently undeveloped lands in the southern part of Eastern Passage and Cow Bay Road area.
- Development growth on the site will require widening of Main Street. Widening of the lower section of Main Street, parallel Lakecrest Drive, would be extremely difficult. This would require expropriation of many commercial lots.
- The Highway 107 by-pass from Cherry Brook to the Forest Hills Parkway Extension would help alleviate traffic congestion, however, it is expensive (\$35 million) and increasing development growth in the rural areas (Lake Echo, Porters Lake, Preston) would have to be large enough to warrant the by-pass.
- Total servicing and transportation costs for the site is \$28.6 million, (including \$16 million for the Sewage Treatment Plant Upgrade), equal to \$26,400 per acre.

Sackville -- Beaver Bank

- Sanitary servicing will require connection to the existing Sackville trunk sewer. The trunk sewer is presently over capacity and requires upgrading and remediation work to address high infiltration and inflow of water. The proposed work should be carried out first, and then the trunk sewer capacity confirmed.
- Sanitary servicing will result in the Greenfield Site requiring a large portion of the ultimate capacity of an expanded Mill Cove Sewage Treatment Plant. Future planning activities should confirm what lands should be serviced by the Mill Cove STP when fully expanded.
- The transportation cost of the Beaver Bank By-Pass are high (\$29.8 million).
- The site requires the longest transit routing to the metro core area.
- Total servicing and transportation costs for the site is \$48.7 million, equal to \$34,000 per acre.

Jack's Lake

- The Jack's Lake Greenfield site is bounded by Highway 102 to the south, the Bedford Rifle Range to the east, non-developable land to the north, and existing "narrow street" residential land to the west (adjacent Hammonds Plains Road). A required interchange on Highway 102 (cost \$6.5 million) would provide only one prime entrance to the site and would be required at the beginning of any development.
- Similar to the Sackville – Beaver Bank Greenfield site, sanitary servicing would require a significant portion of the Mill Cove STP ultimate capacity.
- The land is primarily HRM owned and there has been talk of a large portion of it may be designated as parkland and/or made available for recreational complexes.
- The total servicing and transportation cost for the site is \$13.7 million, equal to \$17,300 per acre.

6.3.2 Greenfield Sites with Some Constraint to Development

Dartmouth East – Port Wallace

- Sanitary servicing will require an extension to the North Dartmouth Trunk Sewer at the commencement of development (sanitary costs = \$15 million)
- The downstream capacity of the North Dartmouth Trunk Sewer requires confirmation.
- The total servicing and transportation cost for the site is \$27.8 million, equal to \$15,800 per acre.

Dartmouth North – Anderson Lake

- The site is west bounded by the Bedford Magazine complex, with a significant portion being owned by DND and containing unexploded ordinances.
- The development feasibility will be dependent on the construction of the Highway 107 By-pass (cost \$30.5 million). Access to the Magazine Hill Road (Hwy. #7) is not likely feasible.
- The total servicing and transportation cost for the site is \$25.7 million, equal to \$20,500 per acre.

Birch Cove Lakes / Governor Lake

- Sanitary servicing requires pumping across high land (i.e., outside of existing watershed) to the Halifax Interceptor System. Infrastructure will be required at the commencement of development.
- Sanitary servicing requires on-site storage or staged pumping.
- Transportation infrastructure costs is, \$5,72 million for Governor Lake and \$30.6 million for the total surrounding area.
- Total sanitary and transportation costs for the site is \$15.2 million, equal to \$8,750 per acre when Birch Cove Lakes area is included and equal to \$15,400 per acre without the Birch Cove Lake area.
- Transportation upgrades will be required along Bayers Road and at the Armdale Rotary.

Ragged Lake

- Greenfield Site land owned primarily by HRM, therefore is not available to developers unless HRM Council pursues other arrangements.
- Requires significant transportation infrastructure (\$15.36 million for Ragged Lake and \$30.6 million for the general area).
- Total servicing and transportation costs for the site is \$16.3 million, equal to \$15,300 per acre.

Mainland South Backlands

- Development on this site will negatively affect traffic at the Armdale Rotary, which is on the prime travel route to and from Peninsular Halifax. Development on other Greenfield Sites will also affect Rotary traffic, however, there is an alternate route through the Fairview Overpass.
- Total servicing and transportation costs for this site is \$16.3 million, (including a portion of upgrade cost for the Armdale Rotary), equal to \$12,400 per acre.

6.3.3 *Greenfield Sites with Minimal Constraints*

Shearwater / Eastern Passage

- Central portion of site in close proximity to an operating airport.
- Immediate development will require construction of the Circumferential Highway Interchange (Cost \$5.6 million)
- A collector road will be required between the Interchange and the south end of Morris Lake
- Sanitary service for the south portion of the site will require an expansion to the Eastern Passage Sewage Treatment Plant (Expansion Cost \$18.9 million).
- Total servicing and transportation cost for the site is between \$32.8 and \$34.4 million, (including Sewage Treatment Plant Expansion), equal to between \$10,600 and \$11,100 per acre.

Bedford West

- Total Servicing and transportation cost for the site is \$12.9 million, equal to \$8,800 per acre.

TABLE 7 Transportation Costs (Per 10 Greenfield Sites)

Scenario #	Description	Item Cost	Total Cost	Estimated Share of Total Transportation Cost Per Greenfield Site																	
				Shearwater-Eastern Passage	N.S. Home for Coloured Children Lands	Dartmouth East-Port Wallace	Dartmouth North-Anderson Lake	Sackville-Beaver Bank	Jack's Lake	Bedford West Lake	Birch Cove Lakes-Govnor Lake	Ragged Lake	Mainland South Backlands								
Scenario #1	Sher-East Pass, NSHCC, Dart East-Port Wall Main Street Widening (Lower portion Caledonia to Hwy 111 may not be feasible) Circumferential Hwy 7 Morris Lake Interchange Rel. Cole Harbour Arterial Corridor and Interchange Study Cole Harbour Arterial Wright Ave. Extension Highway 107 (Cherrybrook) Bypass (Option to Main St. Widening)	2 Lanes - Ross Rd to Hwy 111 (6,600m)	\$13,000,000																		
		Simple Diamond (First Phase)	\$5,600,000	\$5,600,000																	
		Circum. Hwy to South End of Morris Lake	\$5,600,000	\$5,600,000																	
		4 Lane Divided Arterial (2,600m)	\$5,200,000	\$5,200,000																	
		Hwy 118 Interchange	\$6,500,000	\$6,500,000																	
		Burnside Dr. Interchange	\$600,000	\$12,300,000			\$9,840,000														
		4 Lane Divided Arterial (6,600m)	\$17,000,000																		
		Hwy 107(Main St.) Interchange	\$6,000,000																		
		Hwy 107(Forrest Hill Ext.) Interchange	\$6,000,000																		
		3 Road and 1 Salmon River Bridges	\$6,000,000	\$35,000,000																	
		With Main St.	\$36,700,000																		
		With Hwy 107	\$58,700,000																		
Scenario #2	Dart East-Andes Lk, Sack-Beav/Bank, Jack-LK	4 Lane Divided Arterial (6,200m)	\$13,000,000																		
		Burnside Dr. to 107 Extension (1,400m)	\$3,500,000																		
		Dike St. Interchange	\$2,000,000																		
		Burnside Dr/Hwy 107 Interchange	\$5,000,000																		
		Diagonal Interchange for Development	\$5,000,000																		
		RailWay Bridge	\$1,000,000	\$30,500,000			\$7,625,000	\$16,775,000	\$3,050,000												
		4 Lane Divided Arterial (6,300m)	\$15,800,000																		
		Hwy 101 Interchange	\$6,000,000																		
		Hwy No. 1 Overpass	\$2,000,000																		
		Second Interchange	\$3,000,000																		
Beaver Bank Rd. Interchange	\$2,000,000																				
RailWay Bridge	\$1,000,000	\$29,800,000																			
		at Hwy 102	\$6,500,000																		
		at Hwy 102	\$66,800,000																		
Scenario #3	Bed-West, Birch Cv Lks-Govnor Lk, Ragged Lk	Bluewater Road to Bedford Hwy. (3,000m)	\$3,000,000																		
		Serving Birch Cove Lands and Bedford Vw	\$7,000,000																		
		Armidale Rotary to Lakeside (4,800m)	\$4,800,000																		
		As Per Governor Lk Trans Study (SSE)	\$30,600,000																		
				Required Road / Intersection Infrastructure	\$45,400,000																
Scenario #4	Mainland South Backlands	Herring Cove Rd. To Ferguson's Cove Rd (6,300m)	\$6,300,000																		
		Armidale Rotary to Roach's Pond (6,400m)	\$6,400,000																		
		Ply-Cover Bridge	\$16,000,000																		
				Total Shared Transportation Costs																	
			\$7,380,000	\$6,500,000	\$7,825,000	\$16,775,000	\$25,400,000	\$6,500,000	\$3,800,000	\$5,720,000	\$13,280,000	\$15,360,000	\$5,040,000	\$5,040,000	\$3,200,000	\$2,400,000	\$1,400,000	\$790,000	\$5,000,000	\$12,240,000	

Table 8 Servicing Cost Per Capita - Per Hectare - Per Acre

DEVELOPMENT SCENARIOS	GREENFIELD SITE	TOTAL DEVELOPABLE AREA		PROJECTED POPULATION		TOTAL INFRASTRUCTURE COSTS		COSTS PER CAPITA		COSTS PER HECTARE		COSTS PER ACRE		
		ha ⁽²⁾	ha ⁽²⁾ (%)	Full Build-Out	Baseline	Full Build-Out	Baseline	Full Build-Out	Baseline	Full Build-Out	Baseline	Full Build-Out	Baseline	
														45 PPha
Scenario #1	Shearwater-Eastern Passage	1,250	65%	56,250	31,250	\$27,000,000	\$25,400,000	\$480	\$913	\$21,600	\$20,320	\$8,742	\$8,224	
	N.S. Home for Coloured Children's Lands	438	74%	19,710	10,950	\$22,100,000	\$22,100,000	\$1,121	\$2,018	\$50,457	\$50,457	\$20,420	\$20,420	
	Dartmouth East-Port Wallace	712	48%	32,040	17,800	N/A	\$20,200,000	N/A	\$1,135	\$28,371	N/A	N/A	\$11,482	\$11,482
	TOTAL	2,400		108,000	60,000	\$49,100,000	\$67,700,000	\$455	\$1,128	\$20,458	\$28,208	\$8,279	\$11,416	
Scenario #2	Dartmouth North-Anderson Lake	507	49%	22,815	21,620	\$8,900,000	\$8,900,000	\$390	\$412	\$17,554	\$17,554	\$7,104	\$7,104	
	Sackville-Beaver Bank	579	77%	26,055 ⁽¹⁾	24,691	N/A	\$23,300,000	N/A	\$944	\$944	N/A	N/A	N/A	\$16,286
	Jack's Lake	321	77%	14,445	13,689	\$7,200,000	\$7,200,000	\$498	\$526	\$22,430	\$22,430	\$9,077	\$9,077	
	TOTAL	1,407		37,260	60,000	\$16,100,000	\$39,400,000	\$432	\$557	\$11,443	\$28,003	\$4,631	\$11,333	
Scenario #3	Bedford West	591	70%	26,595	20,568	\$9,100,000	\$9,100,000	\$342	\$442	\$15,398	\$15,398	\$6,231	\$6,231	
	Birch Cove Lakes-Governor Lake	704	59%	31,680	24,501	\$9,500,000	\$9,500,000	\$300	\$388	\$13,494	\$13,494	\$5,461	\$5,461	
	Ragged Lake	429	79%	19,305 ⁽¹⁾	14,930	N/A	\$900,000	N/A	\$60	\$2,098	N/A	N/A	\$849	\$849
	TOTAL	1,724		58,275	60,000	\$18,600,000	\$19,500,000	\$319	\$325	\$10,789	\$11,311	\$4,366	\$4,578	
Scenario #4	Mainland South Backlands	531	83%	23,895	60,000	\$3,000,000	\$3,000,000	\$126	\$50	\$5,650	\$5,650	\$2,286	\$2,286	
	Shearwater-Eastern Passage	1,250	65%	56,250	12,372	\$27,000,000	\$25,400,000	\$480	\$2,053	\$21,600	\$20,320	\$8,742	\$8,224	
	N.S. Home for Coloured Children's Lands	438	74%	19,710	4,335	\$22,100,000	\$22,100,000	\$1,121	\$5,098	\$50,457	\$50,457	\$20,420	\$20,420	
	TOTAL	712	48%	32,040 ⁽¹⁾	7,047	N/A	\$20,200,000	N/A	N/A	\$2,866	N/A	\$28,371	N/A	\$11,482
Scenario #5	Dartmouth North-Anderson Lake	507	49%	22,815	5,018	\$8,900,000	\$8,900,000	\$390	\$1,774	\$17,554	\$17,554	\$7,104	\$7,104	
	Sackville-Beaver Bank	579	77%	26,055 ⁽¹⁾	5,731	N/A	\$23,300,000	N/A	\$4,066	\$4,066	N/A	N/A	N/A	\$16,286
	Jack's Lake	321	77%	14,445	3,177	\$7,200,000	\$7,200,000	\$498	\$2,266	\$22,430	\$22,430	\$9,077	\$9,077	
	TOTAL	591	70%	26,595	5,850	\$9,100,000	\$9,100,000	\$342	\$1,556	\$15,398	\$15,398	\$6,231	\$6,231	
Scenario #6	Birch Cove Lakes-Governor Lake	704	59%	31,680	6,968	\$9,500,000	\$9,500,000	\$300	\$1,363	\$13,494	\$13,494	\$5,461	\$5,461	
	Ragged Lake	429	79%	19,305 ⁽¹⁾	4,246	N/A	\$900,000	N/A	\$212	\$212	N/A	N/A	\$849	\$849
	Mainland South Backlands	531	83%	23,895	5,256	\$3,000,000	\$3,000,000	\$126	\$571	\$5,650	\$5,650	\$2,286	\$2,286	
	TOTAL	6,062		195,330	60,000	\$86,800,000	\$129,600,000	\$444	\$2,160	\$14,319	\$21,379	\$5,795	\$8,552	

NOTE (1) Populations not included in Scenario Totals

VISION

Twenty years from now Beechville-Lakeside-Timberlea is a self-sufficient Community with a population of 30,000 people. The Community is adjacent to a major employment centre and linked to the rest of HRM by an excellent transit system as well as adequate roadways. This is a healthy community sensitive to its natural environment with trails and bike paths linking community recreational and other facilities.

How do we make this happen?

Communities require underground infrastructure such as water and sewer systems as well as the visible features of recreational areas, trails and walkways, transit systems, streets and roads, homes, commercial areas, and community facilities. Governor's Village is designed to include all of these features.

Transportation

Discussions are underway with respect to the roadway system and links into the regional network. The Village is designed to be transit friendly.

Water

To quote from an e-mail from the HRWC "With respect to the water system infrastructure, there is no dispute that development of Governor's Lake has the potential to result in cost savings and a much more efficient water system for the area."

Sewage Collection and Treatment

The focus of this submission is on the sewage collection and treatment systems.

The Nine Mile River sewage treatment plant has a current capacity to serve 10,000 people. The current population of the Community is approximately 8,000. The Westgate Development proposes to add an additional 8,000 people.

The next upgrade to the treatment plant, to a capacity of 15,000 persons, is estimated to cost \$10.2M (Dillon Consulting). The next upgrade to a capacity of 20,000 people is estimated to cost \$3.6M (Dillon Consulting). The assimilative capacity of the Nine Mile River system has not been finally established but "upgrade to the ultimate design capacity of 3 MIGD" - 30,000 people - "is not recommended without additional

monitoring and modelling or diversion of influent or effluent." (Nine Mile River Assimilation Study - Dillon Consulting - February 2003). The Dillon Report does not place an absolute limit of 20,000 people as the assimilative capacity of the Nine Mile River system but does caution that other measures may be required if this number is to be exceeded.

Another alternative that has been explored is to pump the effluent from Governors Village into the larger Halifax system and thus to the new treatment plant currently under construction. The cost of pumping out for 10,000 people is estimated to be \$5.25M (Letter from ABL Environmental dated 23 July 2004, attached).

The remaining sewage treatment capacity for the Halifax Treatment Plant is estimated to be 55,000 persons (staff report). The anticipated commitment under current policies and regulations is 34,800 (staff report). This leaves an estimated allocation of approximately 20,000 people for potential future demands. Parkdale Developments Limited, the developers for Governors Village, proposes that an allocation of 8,000 people be reserved for Governors Village subject to review upward once the Halifax Plant is operational and additional flow information is available.

Governors Village is part of a Master Plan area, Known as the Governor Lake Master Plan (GLMP) area. The GLMP area also includes property owned by Kimberley Lloyd and Lordly. It is also propose that, initially, sewage from the GLMP area be directed to the Nile Mile River treatment facility. The procedure of pumping the Governors Village sewage effluent into the Halifax system would be initiated when the population level being served by the upgraded Nine Mile River facility approaches 20,000 people or a decision is made that this number can be exceeded. In other words, direct the sewage flows from Governors Village into the upgraded Nine Mile River treatment plant and leave the options open for the future.

If it is assumed that the population growth in the Community as a whole is in the order of 1,000 persons per year then the decision as to the ultimate means of treating the sewage effluent from Governors Village would not have to be made for 12 years. In the meantime, funds could be accumulating in a reserve fund as development proceeds to be used for the future solution. Alternatively, these funds could be used to finance the cash flow for the Nine Mile River sewage treatment plant upgrades.



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FAX TRANSMISSION

To: AtlanPlan Ltd. **Date:** 23rd July 2004
Attn: Maurice Lloyd **Pages:** 1
From: Julian Haysom, P.Eng. **Fax:** 461 9858
Subject: Governor Village - Sewer Infrastructure

Dear Maurice

This in response to your request to review the Governor Village "pump out" scenario if Governor Village acted entirely independently.

As mentioned to you this morning, with the exception of an update, the cost estimates provided in ABL's 25th June 2003 report titled "Governor Lake Village - Sewershed Infrastructure Planning" should provide an estimate of the probable costs associated with the "pump out" aspects of the project. An updated estimate is provided as follows:

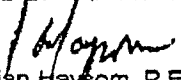
<u>Scenario 1</u> (as described in the above noted report)	
Forcemains	\$ 3,079,000
Northwest Interceptor Gravity Sewers	\$ 257,000
The Village Pump Station	\$ <u>1,039,000</u>
	\$ 4,375,000
Engineering and Contingency @ 20%	\$ <u>875,000</u>
Total	\$ 5,250,000
<u>Scenario 1 - with Storage Variation</u>	
Forcemains	\$ 2,342,000
Northwest Interceptor Gravity Sewers	\$ 221,000
The Village Pump Station	\$ 830,000
Storage	\$ <u>757,000</u>
	\$ 4,150,000
Engineering and Contingency @ 20%	\$ <u>830,000</u>
Total	\$ 4,980,000

As mentioned this a.m., the cost to the "pump out" scenario of having the Armoyan lands included in the Village PS is negligible in Scenario 1. The impact is however, much more significant in the storage variation. For example, if Armoyan went elsewhere (so to speak) then the pump-out forcemain diameter can be 300 mm; with Armoyan in, the forcemain diameter goes to 400 mm. Sizing of the pipe diameter is more sensitive in the smaller sizes. For that reason, the Scenario 1 with storage variation has a lesser benefit than in our 25th June 2003 report where Armoyan was not included.

As you mentioned, the method by which sewage generation is calculated, and in particular infiltration allowances, can make an enormous difference to the end result. For example if I use HRM's current formula, the sewage generation is more than twice that calculated by the NSDOE method. The old City of Halifax formula falls somewhere in between and that is the method we used previously and I have used here.

If you have any questions, please do not hesitate to contact me.

Regards,
ABL Environmental Consultants Limited


 Julian Haysom, P.Eng.

AtlanPLAN Ltd.

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FAX TRANSMITTAL

TO: Paul Morgan **FAX:** 490-5730
FROM: Maurice Lloyd
DATE: 2 Sept 2004
RE: Greenfield Study **Number of pages (including cover):** 7

Paul

Attached are our comments re the "Greenfield" Study.

I believe they are self-explanatory. I would welcome the opportunity to discuss this with you.

Sincerely
Maurice E. Lloyd, P.Eng., FCIP

COMMENTS ON THE "GREENFIELD" STUDY

There is a lot of useful comparative information in the "Greenfield" study. From the point of view of the Governor Lake Master Plan (GLMP) area it would have been preferable to separate it from the Birch Cove North area. The GLMP area is in a different watershed (Nine Mile River) from the Birch Cove North area watershed (Kearney Lake/Moir's Mill Lake), is an expansion of an existing community rather than an isolated area, relates to different components of the transportation system, and has different servicing needs in terms of water and sewer. There is an attempt to separate costs in the report, but the costs are not as clear as they would be if the GLMP area was analyzed separately.

The information presented is not done consistently, particularly in the transportation sector. For example, on the summary pages, (x, xi, xii) the report mentions the requirement for "transportation upgrades . . . along Bayers Road and at the Armdale Rotary" for Birch Cove North/Governor Lake but is silent about the impact of Bedford West on the peninsula screenline: similarly, the Shearwater/Eastern Passage site is shown as requiring a new interchange but there is no reference to the impact on the Circumferential Highway and the harbour bridges. Out of fairness, there is reference to these problem screenlines in other parts of the report but it is not carried through to the summary. Comments should be carried through consistently for all of the "Greenfield" areas.

On the broader scale, for example, traffic demand on Highway 102 from development in Bedford West (26,595 build-out population) when combined with Wentworth/Bedford South (8,300 population) and Royal Hemlocks (3,400 population) is not discussed. The traffic demand generated by a total population of 37,700 people (plus background traffic growth) will exceed the capacity of Bicentennial Drive (Highway 102) even with extensive use of transit, and require the construction of additional lanes. This requirement for additional lanes is not identified in the summary**. There will also be a requirement for upgrading access along the peninsular screenline, but this is not stated in the summary. The point is that the basis for comparison is not uniform and therefor misleading.

**A quick analysis is as follows. Highway 102 capacity at station 3A, Table 3.1, is 4,000 veh/hour with the observed outbound PM volume at 2,574 leaving a capacity of 1,426. The population of 37,700 people results in 11,780 dwelling units at 3.2 persons per household. Using eight (8) trips per household per day with 10% of the trips during the peak hour will add 9,400 trips at the peak hour. Trip distribution indicates that 40-50% of these trips will head towards Halifax. Assuming 20% of these are by transit the additional vehicle trips will be 3,000-3,800 which will far exceed the current excess capacity of 1,426. The numbers used here are conservative.

In another part of Table 3.1 station 1A shows Highway 103 as having a capacity of 1,800 veh/hour. While currently true, this should probably be more correctly stated as 4,000 or 6,000 veh/hour as this section of Highway 103 is now under construction for widening to four lanes rural divided. It should be noted that the observed volume is 545 which leaves a capacity of 3,500-5,500 veh/hour. Station 1A is west of the Otter Lake interchange and the numbers are not included for the section of Highway 103 east of this interchange but the point here is that there is considerable excess capacity on Highway 103 while the capacity of the 102 is more limited. This should lead to the conclusion that development from which the traffic will use Highway 103 should be encouraged versus those developments that will place a traffic impact on Highway 102. All development to the west and northwest of the peninsular will impact on the peninsular screen line whether it's in HRM, Chester, or, to a degree, Windsor so the required improvement to peninsular access along the screen line routes will be required in any event. The requirement for improvements to the trunk highways should, as a matter of principle, be delayed as long as possible.

We note and applaud the thrust in the Regional Planning process to increase people movements via the use of transit. While the comments above have focused on vehicular traffic impacts we are aware of the strong desire to increase the use of transit. The GLMP area is ideally suited for transit usage with, as noted in the report, the possible use of the abandoned rail line as well as conventional routes. The GLMP area is closer to the peninsular than most other "Greenfield" sites which will add to the potential effective use of transit. In addition, there is also a large employment centre adjacent to the GLMP area and this centre can be expanded. Over time, as the transportation system becomes more congested, people will locate closer to employment areas where they are employed or which they use and this stands the GLMP area in high priority as a development area.

We also note the statement in the summary on page xi and elsewhere in the report that "Sanitary servicing requires pumping across high land . . . to the Halifax Interceptor System. **Infrastructure will be required at the commencement of development.**" (bolding added). We have made a separate submission on this, which is attached, which shows that pumping out may not be required for at least 10 years (if ever). HRM is faced with a substantial investment in the Nine Mile River Sewage Treatment Plant (STP) in any event and we have shown that development in the GLMP area will reduce the investment risk for HRM. The statement in bold letters quoted above is not correct and should be removed.

As regards to water service, we quote from an e-mail from the HRWC as follows "With respect to the water system infrastructure, there is no dispute that development of Governor's Lake has the potential to result in cost savings and a much more efficient water system for the area". This fact gets obscured when the GLMP area is combined with the Birch Lakes North area in the "Greenfield" study and this should be clarified.

CONCLUSION

In summary we find that the "Greenfield" study as it relates to the GLMP area is flawed. We respectfully request that the changes and clarifications noted above be made to the study. All comparisons should be on an equitable and fair basis.

We feel that the GLMP area is ideally suited for development immediately:

- Its location in the region will reinforce an existing established community;
- it is adjacent to a major and growing employment centre;
- it is designed to be transit friendly and can be efficiently integrated into the regional transit system;
- the nearby highway system (Route 103) has capacity to accept additional traffic;
- infrastructure requirements result in a more efficient and less costly water system; and
- the HRM investment risk in the Nine Mile River STP upgrade (required in any event) is reduced.

While we have not seen the final proposals of the Regional Plan with respect to urban form we note that this area is shown as either a "New Major Centre" or "Community Hub" in all of the "Alternatives for Growth" in the "Guidebook" released at the kick-off meeting at Mount Saint Vincent University this spring.

SUMMIT ROCK DEVELOPMENTS LTD.

Attachment IV

September 20, 2004

30301A

SEP 20 2004

Halifax Regional Municipality
Regional Planning
PO Box 1749
Halifax, NS B3J 3A5

Attention: Paul Morgan, Planner

Dear Mr. Morgan:

Re: Halifax Regional Municipality, Greenfield Areas Servicing Analysis, Requested Corrections to Projected Infrastructure Charges in the Dartmouth East/Port Wallace Area

On behalf of the Whebby family interest, I would like to thank you for providing us with the opportunity to make this submission in order to provide updated information which we are confident will result in significant reduction to the infrastructure charge projections in the Greenfield Studies Report for the Dartmouth East/Port Wallace Area. As you may know, the Whebby family own or have significant ownership interests in W. Eric Whebby Limited, Blue Chip Development Limited, Frank Whebby Limited and Country View Limited as well as personal land holdings within this area. Taken together I believe they represent the largest private land holding interest within the Dartmouth East/Port Wallace planning area.

I would like to compliment HRM staff and their consultants on the extensive amount of work which they have done in order to assess the offsite infrastructure costs of potential growth areas around HRM with the objective of rationalizing future development and reducing total development related costs. We support the approach but are concerned that the scope of the analysis required has allowed a few critical facts which have a significant bearing on infrastructure costs to be overlooked; specifically, in relation to the capital costs for providing trunk sanitary sewer services in the Dartmouth East/Port Wallace area.

The next several paragraphs of this letter outline what may have happened during your consultants' preparation of capital costs estimates for this aspect of servicing and show how more recent approaches to this servicing will result in this savings amounting to several millions of dollars relative to the budgets which they have provided.

In preparing the attached budget information, I must apologize because of the fact that it is presented in very general terms. I had understood following our last meeting with HRM Staff that you would be providing us with background documentation regarding the budget numbers prepared by your consultant which I had wanted in order to do more precise calculations of realistic trunk sanitary sewer servicing costs for the area; on the same basis as they were carried out by your consultant. We have not received this data. Our numbers are therefore based on several assumptions and the scaling from large scale plans; nonetheless I am certain that you will quickly realize that several millions of dollars in cost savings relative to the initial budget estimates may be realized in regard to this matter and your consultant will be able to quickly analyze and provide you with budget numbers based on the same basis as the original numbers from which the rest of the report were generated, should you require the same.

The reasons why we say that budget numbers for the North Dartmouth trunk sewer are too high are outlined below, together with our estimate as to the potential cost savings, based upon our interpretation of costs developed by HRM's consultant.

1. In Section 10.3.3 of the Greenfield Servicing Analysis, near the bottom of page 10-64, CBCL indicate that they have referred to a "Report on the Conceptual Design for the North Dartmouth Trunk Sewer" by InterProvincial Engineering Limited in 1988 as a basis for a portion of their concept from which pricing was developed. Their text on the top of page 10-65 indicates that they have allowed a combination of forcemain from the Jaybee Drive pumping station to a trunk sewer near Highway 118 and then a 1050 diameter sewer from there to the sewers installed within the Lakeshore Park subdivision. They have also allowed a 525mm diameter sewer on the west side of Highway 118 with a connection to the proposed sewer on the east side of Highway 118 near Lake MicMac.

This general concept as developed by InterProvincial and described again in the CBCL report has been superseded by a concept design developed by AGRA Whitman Benn, under the direction of the author of this letter in 1999 while working on the Lakeshore Park subdivision. This new concept design, which was approved by HRM Engineering after review by John Sheppard, P.Eng., and by HRM Council who provided cost sharing for it through the Lakeshore Park development. Specifically, this new concept, (Reports on the concept of which should be available either through AMEC E&C Limited or from Mr. Sheppard's office) consists of a 900mm diameter sanitary sewer, extending from the end of the Lakeshore Park development, through a portion of the Shubie Park lands to and crossing Highway 118 at a low point just near the end of the ramps to Highway 111. This 900mm sewer would then extend, mainly under future streets within the Country View lands parallel to Highway 118 but on the west side to the point where the forcemains from the east side of Lake Charles will be brought across and connected to it. Above this point the size would be reduced and it would be extended further along the west side of Highway 118 to service the remaining lands of the western portion of the development area.

This design approach has a very significant environmental advantage in that it gets the North Dartmouth trunk sewer out of Lake MicMac which was contemplated in the InterProvincial report and away from the shoreline. It has three very significant advantages cost wise. Specifically, these are:

1. By being further from the lake and on higher ground, the sewer can be slopped to follow the ground surface at a minimum grade of one-half percent and still provide slightly greater capacity than the 1200mm trunk sewer along the west side of Lake Banook. This size reduction will generate significant savings.
2. By extending along the west side of Highway 118 only a single trunk sewer is required to service the lands to the west of Lake Charles as well as the forcemain from the east side of Lake Charles with the only implemental costs being the forcemain crossing of Highway 118 while the savings represent the elimination of twinning of a significant length of pipe.
3. The third advantage is that by locating it through the Country View and HRM lands, the majority of the pipe can be placed under future street right-of-ways thereby fulfilling the dual purpose of being both a trunk sewer and a local service pipe thereby eliminating the requirements for land acquisition for easement, clearing, grubbing and grading of a right-of-way and resulting in shared installation costs.

In the attached tables, we have attempted to estimate potential cost savings due to each of these three features through making assumptions and interpolating based on the costs incorporated in the CBCL report and based on our own experience plus contractor estimates. It may be seen from these tables, the minimum estimated reduction in capital cost for the North Dartmouth trunk sewer due to the change in design concept is estimated to be \$0.35 Million, \$1.05 Million and \$2.6 Million for the 3 elements above respectively.

2. At the top of page 10-65 in the CBCL report, the following statement is made. "The Report (InterProvincial's Report) assumed the existing sewer along Waverley Road could handle the additional flows from new development on the east side of Lake Charles. As previously mentioned, the Port Wallace Sewerage Preliminary Design Report (Dillon, Apr. 1998) indicated the existing sewer does not have reserve capacity. As a result, a new trunk sewer will be required along the Waverley Road in order to service new development on the east side of Lake Charles. The line will consist of 525mm diameter and 600mm diameter trunk sewers, forcemains and pump station that will deliver sewage flows to a new pump station on Jaybee Drive." We respectfully submit that CBCL have misinterpreted the Porter Dillon report and that the only new sewers required to service the new development in the Dartmouth East/Port Wallace area to the east side of the Waverley Road is the pipe from 390 Waverley Road pumping station to the Jaybee Drive pumping station area.

To support this contention, we would refer to Part II Background, page 3 of the Port Wallace/Sewerage Preliminary Design Report by Porter Dillon in which it states. "Commencing at the Montague Road, the trunk system consists of a 450mm diameter gravity pipe which conveys the sewage easterly (actually it should say southerly) for approximately 1300 metres (4300 feet). The system then increases to a 600mm diameter gravity sewer that runs for roughly 340 metres (1100 feet)." This 600 mm diameter sewer terminates at the 390 Waverley Road pumping station. It is not these sections of a trunk sewer along the Waverley Road that Porter Dillon referred to as being overloaded. Rather it is the trunk sewer between Jaybee Drive and the 200 Waverley Road pumping station. As a matter of fact, these existing trunk sewers extending out the Waverley Road beyond the 390 Waverley Road pumping station are 600mm and 450mm compared to the 600mm and the 525mm suggested by CBCL and we would submit that more attention has been paid to the design when these sewers were installed then to CBCL's overview analysis. Supporting this, we would point out that virtually all of the lands towards the No. 7 Highway from Conrad's quarry (near the Montague Road) can drain to the brook (Barry's Run which drains from Lake Loon to Lake Charles). The existing 600mm diameter sewer could then pick up all of these flows near Barry's Run and drain them to the 390 Waverley Road pumping station by gravity. The 450mm trunk sewer beyond that point should be more than adequate for any remaining flows from beyond Conrad's quarry.

The net result of this correction is that the total length of approximately 765 metres of sewer and forcemain will be required to the east of Lake Charles beyond the Jaybee Drive pumping station as opposed to the approximately 2600 metres based on scaling from CBCL Plan S-3 with a resulting cost reduction of approximately \$1.75 Million as detailed from the attached estimates.

3. On behalf of the Whebby interests, we have also previously suggested to HRM Staff a further change which will result in very significant capital and ongoing operating cost savings to HRM in providing trunk sanitary sewer servicing to the lands east of the lakes in the Dartmouth East/Port Wallace area. That is, since the entire undeveloped lands can be drained to the 390 Waverley Road pumping station that this is the only pumping station that should be reconstructed and that the forcemains from it should extend across Lake Charles to the trunk sewer on the western side of Highway 118 thereby eliminating the requirements to build a new large pumping station at Jaybee Drive. The small local drainage area currently draining to the Jaybee Drive pumping station can continue to be pumped from this location back to the existing Waverley Road trunk sewer, or to eliminate overloading on this trunk sewer if required it can be redirected back to the new large pumping station at 390 Waverley Road at minimal cost. This in turn eliminates both the capital and operating costs a major new sewage pumping station at Jaybee Drive. Additional advantages to this approach is that space for a new large pumping station at Jaybee Drive is somewhat restricted. This should not be a problem at 390 Waverley Road where a new large pumping station will be required in any event. Further, the 390 Waverley Road pumping station will have slightly lower head.

The order of magnitude cost saving from this change after allowing for the forcemains crossing Highway 118 will be approximately \$1.5 Million.

Taking all of these elements together from points 1, 2, and 3 above, we estimate the total capital cost savings, relative to that indicated in the CBCL report in relation to the North Dartmouth trunk sewer to be at least \$7.25 Million reducing the total capital cost for trunk sewer services from \$15 Million to \$7.75 Million. Extending these savings to overall infrastructure costs for Dartmouth East/Port Wallace will result in total infrastructure costs being reduced from \$27.8 Million to \$20.6 Million with per acre costs being reduced from \$15,800 to \$11,700. This change will make the Dartmouth East/Port Wallace lands the lowest cost per acre of any of the Greenfield sites with some constraint to development. We also firmly believe that the savings indicated herein, when combined with the importance of the North Dartmouth trunk sewer to the growth of commercial assessments and the desirability of Dartmouth East/Port Wallace as a residential neighborhood, as enlarged upon in the following paragraphs, should make this area a high priority for development.

On a related point it is important to note that the very significant commercial tax revenues from development of a portion of the Country View lands along highways 111 and 118 as well as the ongoing expansion of Burnside Industrial Park will be severely restricted if the North Dartmouth trunk sewer is not extended in the near future.

There is one other area besides the errors in projecting costs for the North Dartmouth trunk sewer where we believe the consultants' report has affected the Port Wallace area negatively relative to other potential development areas. This is on page 11 of the Executive Summary and in Table 11.6.2 in the Summary and Conclusions where the statement is made "Sanitary servicing will require an extension to the North Dartmouth trunk sewer at the commencement of development (sanitary costs = \$15,000,000)." Not only are the numbers incorrect; but, only a small portion of these capital costs for the trunk sewer would need to be expended to allow development to take place on a portion of the Country View lands and although the majority of the balance is required to service land east of the lakes, some phasing as development progresses is still possible. For example, the balance of servicing for the west side beyond the commercial point can still be deferred.

We respectfully request that the sections of the Greenfield Area Servicing Analysis Report be edited to reflect the more realistic costs for the North Dartmouth trunk sewer as developed herein and that the Executive Summary and the comparisons between areas be edited to reflect that the development of the Dartmouth East/Port Wallace area can be carried on an incremental basis. In addition to this request, I would be pleased to meet with HRM or their consultants' staff to discuss the points and issues raised in this letter and to work with them to develop adjustments to the final costs which are consistent with the method of pricing used in developing the initial costs. Please feel free to contact me at any time if I can be of assistance in regard to this.

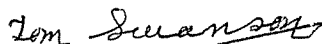
I would also respectfully request on behalf of the Whebby interests that I will be provided with copies of pages edited as a result of the information contained in this letter.

Before closing I would like to briefly touch on a couple of issues other than the North Dartmouth trunk sewer. Specifically, the Port Wallace area and the areas along the Dartmouth chain links are considered by many to be one of the most desirable areas to live in HRM. Our clients have a waiting list of potential future home owners interested in acquiring building sites in this area. We believe that a corrected budget for costs of the North Dartmouth trunk sewer will make the Dartmouth East/Port Wallace area one of the least expensive trunk infrastructure areas to support future population growth. At the present time, with the exception of the Portland Estates area, there is a virtual moratorium on low density residential development in Dartmouth and we believe that the Dartmouth East/Port Wallace is an area where properly planned development should be encouraged. We respectfully request that HRM policies to facilitate such growth be implemented.

On behalf of our client we would also like to address one further request with regard to the information contained in the first paragraph on Page 10-64 of the Greenfield Study. It states "The recent planned upgrades for the existing sanitary sewer infrastructure within the Waverley Road area will increase the excess capacity to serve an additional 3,000 people, all of which will be allocated to infill development within the existing sewer service boundary". Infill to this extent would be approximately equivalent to 900 single family homes or at the allowable development densities in this area, approximately 200 acres. We are very familiar with the land in this area and believe that this is significantly more than the existing undeveloped land within the Waverley Road sewer shed. Further, it is our understanding that HRM have an ongoing infiltration reduction program which should provide for additional excess sewage capacity. We respectfully request that a portion of this capacity be allocated to the Whebby interests, which, as we have pointed out in the past, have been inequitably treated in past servicing boundary realignments.

I would like to apologize for the delay in submitting this letter and accompanying analysis. To avoid any future delays, Whebby's have asked me to request that future contact or correspondence in relation to this matter, which is for their benefit, should be directed to my attention as your earlier notification regarding availability of the Greenfield Report somehow got lost in the transmittal. Please do not hesitate to contact me if I can be of further assistance in clarifying any of the items alluded to herein.

Yours truly,



Tom Swanson, P.Eng
President

Copy: Wayne Whebby

Enclosure

North Dartmouth Trunk Sewer

Estimated Reduction In Capital Costs Relative To July 2004
Greenfield Areas Servicing Analysis Report

Updated information outlined in a letter to Paul Morgan, HRM September 20, 2004.

Item 1.1 Pipe Size Reduction from 1050mm to 900mm

- .1 Approximate length of pipe scaled from Report Plan S-3 from end of Lakeshore Subdivision to end of forcemain = 2200 meters.
- .2 Estimate cost saving per meter to supply and install including all incidentals equals \$160.
- .3 Total estimated saving = $2200 \times 160 = \$352,000$
Rounded to \$350,000

Item 1.2 Pipe Made Redundant By Installing The Trunk Sewer On The West Side Of Highway 118

- .1 Length of pipe made redundant scaled from Plan S-3 = 700 meters
- .2 Total length of 525 mm pipe west of Highway 118 = 2000 meters.
- .3 Estimate cost from Greenfield Study = \$3.0 Million or \$1,500/meter
- .4 Estimated saving $700 \times \$1500 =$ \$1,050,000

Item 1.3 Pipe Through Country View Lands Which May Serve As Both Trunk Sewer & Local Collector

- .1 Length from preferred location of Highway 118 crossing to end of west side trunk sewer on Plan S-3 = 2550 meters. Made up of 1400 meters of 900mm diameter and 1150 meters of 525 diameter pipe.
- .2 As shown in Item 1.2.3 above the 525mm pipe was estimated at \$1,500 meter.
- .3 The Greenfield Study estimated \$8.0 Million for the main trunk sewer to and including the Jaybee Drive pumping station and forcemains. Using an allocation of \$2.0 Million for the Jaybee Drive lift station, \$2,000/meter for the 2200 meters of 1050 trunk sewer and \$600,000 to infill some gaps in the North Dartmouth trunk downstream from the Lakeshore Park Subdivision provides an approximate distribution. (It will be seen later that even if this distribution is off it does not significantly affect the conclusions from this analysis as it is proposed that this pumping station should also be deleted).
- .4 Actual cost to HRM for 611 meters of 900mm North Dartmouth trunk sewer through Lakeshore Park Subdivision in the year 2000 was \$198,036 or \$324.12 meter including HST.

If we allow for a 50% cost increase and add an allowance for HRM staff time this could be up to \$500 at the present time.

- .5 To service the Country View and HRM lands west of Highway 118, it will be necessary to run a collection system more or less parallel to Highway 118. With appropriate planning the trunk sewer can generally be aligned along the same streets and easements as the land developers' internal system so that costs for clearing, grubbing, grading and the local service would be absorbed by the developer as in the case of the Lakeshore Development where HRM made this a condition of approval. However to be very conservative, we have assumed that only 75% of the sewers overlap or that the land owners are reimbursed for other charges made necessary to accommodate the trunk sewer. This will result in the cost per meter increasing to $\$500 \div 0.75 = \667 per meter. It is suggested that this cost be reduced to \$600/meter for 525mm pipe and further rounded up to \$700/meter for the 900mm pipe upon which the comparison to Lakeshore is based.
- .6 Using Greenfield Study costs from subpoint .2 above of \$1500/meter for 525mm pipe and installed cost from subpoint .5 above of \$600/meter indicates a cost reduction of \$900/meter.
- .7 Using the cost of \$2,000/meter for 1050 mm pipe from subpoint .3 above, reduced by \$160/meter to \$1,840/meter to bring it down to a 900mm pipe as outlined in Item 1.1 above and subtracting the \$700/meter net cost for shared pipe from subpoint .5 above generates a saving of \$1,140/meter for the 900mm pipe.
- .8 The cost reduction to the North Dartmouth trunk sewer by the use of limited dual purpose pipes west of Highway 118 will then be:
- | | |
|---------------------------------------|-------------|
| (a) 1,150 meters of 525mm @ \$900 = | \$1,035,000 |
| (b) 1,400 meters of 900mm @ \$1,140 = | \$1,596,000 |
| Total = | \$2,631,000 |
- Rounded to \$2,600,000

Item 2 / Deletion of 600mm & 525mm Forcemains Upstream of 390 Waverley Road Pumping Station from Estimates because they Already Exist

- .1 The proposed sewers east of the Jaybee Drive pumping station as described in the Greenfield Study and scaled from Plan S-3 consist of approximately 700meters of piping to the 390 Waverley Road pumping station, a new pumping station at this location and 1750 meters of 600mm and 525mm gravity pipes beyond this station. In actual fact 1640 meters of 600 and 450 gravity sewers exist upstream of this station so that new forcemains at this location will not be required.
- .2 The Greenfield Study budget for this area is \$4.0 Million. If we apply a price of \$1000/meter to the 2,450 meters of piping this leaves a reasonable number of \$1,550,000 for the new pumping station.
- .3 Eliminating 1,750 meters of new trunk sewer at \$1,000 per meter will result in a saving of \$1,750,000

Item 3 Elimination of Proposed New Jaybee Drive Pumping Station

- .1 Virtually the entire undeveloped area within the proposed servicing boundary extension to the east of the lakes drains by gravity to the brook running from Lake Loon to Lake Charles and the sewers can be drained by gravity to the 390 Waverley Road pumping station. The remainder drains by gravity to Lake Charles further out along the Waverley Road and can be directed to 390 Waverley Road through the existing trunk sewer.

The lands to the west of Highway 118 can be drained to the west trunk sewer trunk.

Since there is no new development to be directed to the Jaybee Drive pumping station by gravity there is no requirement to replace this pumping station.

Instead very significant capital and ongoing operating cost savings can be realized by extending the forcemains from 390 Waverley Road across the lake to the North Dartmouth gravity sewer and only refurbishing the Jaybee Drive lift station to handle local flows back to the Waverley Road trunk.

- .2 In Item 1.3.3 above the Jaybee Drive pumping station replacement was estimated at \$2.0 Million. If an allowance of \$500,000 of this amount is allocated for existing station upgrades, the forcemain across Highway 118 and other upgrades to the new 390 Waverley Road Station this will result in an estimated saving of \$1,500,000.
- .3 An added bonus to HRM from this approach will be a significant ongoing operational savings.

SUMMARY OF PROJECTED COST REDUCTIONS RELATIVE TO GREENFIELD SITE REPORT PROJECTIONS

Item 1.1	Reduction from 1050mm to 900mm pipe	\$350,000
Item 1.2	Deletion of 700 meters of pipe made redundant by placing trunk sewer west of Highway 118.	\$1,050,000
Item 1.3	Cost reduction through dual use of trunk as local sewer over 75% of length west of Highway 118.	\$2,600,000
Item 2	Deletion of budget for 1750 meters of trunk sewer already installed.	\$1,750,000
Item 3	Elimination of Jaybee Drive trunk sewer.	<u>\$1,500,000</u>
	Total	<u>\$7,250,000</u>

Attachment V: Potential Future Demands on the Halifax Treatment Plant

Development Name	Estimated Additional Population to Build-out (persons)	Estimated % Allocation of Available Ultimate Treatment Capacity
Potential Commitments with current development boundaries		
Halifax Peninsula Infilling	14,600	26.5
Waterfront Area	3,800	6.9
Royale Hemlocks	3,000	5.5
Wentworth/Bedford South	8,300	15.1
Motherhouse Lands	2,200	4.0
Clayton Park/Butler Brother lands	3,600	6.5
Subtotal:	35,500	64.5
Potential Future Demands from Greenfield Study Areas:		
Bedford West	25,000	45.5
Birch Cove Lakes lands	20,700	37.6
Governor Lake North	10,000	18.2
Ragged Lake	19,300	35.1
Subtotal:	75,000	136.4
Total:	110,500	200.9

Notes:

1. Remaining sewage treatment capacity for Halifax treatment plant at full build-out estimated at 55,000 persons.
2. Estimate for Governor Lake North includes sewage flow from 8,000 persons from the Fiske property and 2,000 from Kimberly-Lloyd lands.

Attachment VI: Potential Future Demands on the Dartmouth Sewage Treatment Plant

Development Name	Estimated Additional Population to Build-out (persons)	Estimated % Allocation of Available Ultimate Treatment Capacity
Potential Commitments with current development boundary		
Urban Infill	9,200	14.4
Redevelopment sites (Shannon Park., N.S. Hospital lands, Park Ave., King St.)	10,250	16.0
Countryview lands zoned industrial	3,000	4.7
Subtotal:	22,450	35.1
Potential Future Demands from Greenfield Study Areas:		
Shearwater - Eastern Passage	33,700	52.7
Dartmouth East - Port Wallace	29,000	45.3
Dartmouth North - Anderson Lake	19,400	29.4
Subtotal:	82,100	128.3
Total:	104,450	163.4

Notes:

1. Remaining sewage treatment capacity for Dartmouth treatment plant at full build-out estimated at 64,000 persons.
2. It was estimated that 60% of the population within the Shearwater - Eastern Passage study area would be serviced by the Dartmouth treatment plant and the remaining 40% serviced by the Eastern Passage facility.
3. Redevelopment sites assumed 250 acres x 41 persons per acre.

Attachment VII: Opportunities and Risk Analysis by Study Area

1. Morris/Russell Lake

Opportunities:

- The costs of extending municipal infrastructure would appear quite reasonable. CBCL estimated the capital cost at between \$10,600 and \$11,100 per developable acre which ranked second lowest among the ten greenfield sites evaluated under the green field study. Cost estimates ranged from a low of \$8,800 per acre to a high of \$34,000 per acre¹.
- The proposed Hwy. 111 interchange and connector road to the Caldwell Road would provide for better circulation throughout the area which would relieve congestion on Portland Street and allow for a better transit routing system with better utilization of the Woodside/ Halifax ferry service. Access to the interchange might also increase the attractiveness of Woodside Park for new businesses.
- The surplus Shearwater lands offer the potential opportunity for an employment/service centre with strong access to regional transportation system via the proposed connector road and interchange and proximity to harbour related industrial activities. Lands around the interchange may also offer an opportunity for additional commercial activities.
- Proximity to existing municipal services in Cole Harbour and Dartmouth may offer operational efficiencies and hence lower unit costs in such areas as policing, fire protection, recreational programs and utilities.

Risks:

- The watershed and stormwater management studies noted that Morris and Russell lakes are under stress from urban development within in a sensitive watershed. Much of the undeveloped land is on clay soils which are quite erodible and there are areas of relatively steep slope around the periphery of the lakes.
- The study area is in close proximity to sensitive coastal ecosystems.
- Financing to commence construction of the Circumferential Highway interchange needs to be confirmed.
- The operational needs of the DND Shearwater base may place limitations on adjacent development within the master plan area.

¹ The cost estimate in the CBCL Greenfield Servicing Study was for the Shearwater/Eastern Passage study area which encompassed the Morris/Russell Lake master plan area and undeveloped lands to the east.

2. Port Wallace

Opportunities:

- The site offers an attractive natural environment in close proximity to local and regional parks, close proximity to Burnside Business Campus and the Dartmouth downtown area.
- The servicing cost estimates may fall dramatically if a decision is made to extend services to allow for development of lands on the west side of Lake Charles, between Hwy. 118 and Burnside Business Park.

Risks:

- The CBCL study estimated that the cost of infrastructure upgrades to this study area at \$15,800 per acre which ranks it in the middle of the ten study areas (five study areas had a higher per acre cost). It was noted, however, that the downstream capacity of the sewage treatment system needs confirmation. In the event that there are capacity constraints, as suspected by staff, the cost of infrastructure upgrades might be expected to be significantly higher.
- The initial cost of servicing development appears quite high. CBCL concluded that a new trunk sewer would have to be constructed at an estimated cost of \$15 million.
- Servicing of the Port Wallace lands may necessitate locating sanitary sewers through Shubie Park.

3. Bedford West

Opportunities:

- The CBCL study has estimated the cost of infrastructure upgrades that will be required to develop this area at \$8,800 per acre - the lowest cost of the ten greenfield sites reviewed.
 - The site has good access to the regional transportation system with two interchanges to the Bicentennial Highway bordering the study area and a third interchange planned (the interchange approved for the Wentworth/Bedford South master plan).
 - The site location relative to transportation corridors and proposed road layout on the Annapolis lands could allow for good integration with a regional transit service.
 - An employment/service centre could be created with strong connections to the regional transportation system. Annapolis has proposed a joint venture with the Municipality to develop a business campus on lands with access to the Hammonds Plains Road near the
-
-

interchange with the Bicentennial Highway. The Municipality owns a 50 acre parcel originally intended for the blood fractionation plant project.

- The surrounding lakes and undeveloped crown lands offer an attractive setting with opportunities for recreational activities.
- Residents could make use of municipal services provided to surrounding communities resulting in lower operational costs. Similarly, synergies may be available with business in the surrounding communities.

Risks:

- Measures would have to be taken to protect the water quality of Kearney and Paper Mill Lakes in light of the recreational activities established and the extensive urbanized development proposed within the watershed.
- The Municipality may become liable for the operation and maintenance of the three dams on Quarrie, Kearney and Paper Mill Lakes. Annapolis Group, the current owner, has proposed to use the dams for stormwater management and has advised that it is not prepared to assume ownership over the long term. The company favours a public entity assuming responsibility for the dams.
- Full development of the master plan area is estimated to consume approximately 45% of the capacity available for new development at the Halifax sewage treatment plant. Infilling on Halifax Peninsula and development of alternative greenfield sites may be restricted or forgone by full allocation to this master plan area
- The cumulative traffic impacts of development of Bedford West, the remaining undeveloped lands around Paper Mill Lake and the Bedford waterfront at the foot of Hammonds Plains Road may necessitate further upgrades to the transportation system, particularly at the Hwy. 102 interchanges with Hammonds Plains Rd. and Kearney Lake Rd.

4. Governor Lake North

Opportunities:

- The site is in close proximity to a major employment centre at Bayers Lake Business Park.
 - Enhanced transportation links between the communities of Timberlea and Clayton Park offer the potential for sharing of community facilities such as recreational facilities on the Mainland Common.
 - A proposal has been made to divert sanitary sewage from lands within the established servicing boundary for Timberlea from the Nine Mile River treatment facility to the Halifax system. The findings of the Nine Mile River Assimilative Capacity Study would suggest any
-

initiative to reduce loading on the Nine Mile River would likely have a positive environmental impact. The proposal also offers potential cost savings to the Municipality by reducing future costs to upgrade the Nine Mile River treatment facility.

- The Water Commission has advised that a water main could be extended through this development and up the Timberlea Village Collector to service a new storage facility proposed near the Highway 103 interchange which would likely be cheaper and more reliable than an alternative proposal previously considered to upgrade existing distribution mains.
- A community would be created in an attractive setting bordering on Governor Lake and in close proximity to undeveloped lands around Suzie Lake. The community would also border on a regional trail system that has been developed under the Rails to Trails program.

Risks:

- The CBCL Greenfield Study analysis indicates that the capital costs of extending services to this site per developable acres was third highest among the ten greenfield sites at \$22,700 per acre.
- The SGE Acres transportation study estimates that over \$35 million in expenditures for new transportation infrastructure may be needed over the long term to cope with traffic growth from development in this area.
- The sanitary servicing proposal put forward by the proponents is estimated to consume approximately 36% of the remaining available treatment capacity at the Halifax sewage treatment facility. Infilling on Halifax Peninsula and development of alternative greenfield sites may be restricted or forgone by the allocation requested for this master plan area
- Additional sewage from the existing service boundary for Timberlea may have to be diverted to the Halifax treatment system in the event that the Province does not allow further expansions to the Nine Mile River treatment facility.

Attachment VIII: Evaluation of Regional Planning Principles by Master Plan Study Area

Regional Planning Principle	Morris-Russell Lake	Port Wallace	Bedford West	Governor Lake North
<p>1. Ensure opportunities for the protection of open space, wilderness, natural beauty and sensitive environmental areas</p>	<ul style="list-style-type: none"> • proposed 100 foot buffer around lakes with minimum 50% public ownership • potential trail extension to the Trans Canada trail system. • watershed study has concluded that lakes are experiencing stress from development in the watershed • steep slopes and clay soils increases risk of soil erosion into lakes. • site in close proximity to sensitive coastal ecosystems 	<ul style="list-style-type: none"> • new residents could benefit from proximity to Shubie Park 	<ul style="list-style-type: none"> • potential trail connection between existing trail system in Clayton Park and regional open space facility at Jack's Lake • opportunity to create new park along Kearney Lake/ Kearney Lake Run watershed • management study indicates Paper Mill Lake currently experiencing some stress with potential for further deterioration from development within the watershed. 	<ul style="list-style-type: none"> • new residents could benefit from abutting rails to trails project and proximity to Suzie Lake lands • local trail system proposed to link with rails to trails project • development proposal to preserve lands around Six Mile Lake • assimilative capacity study indicates Nine Mile River under stress from development within watershed.
<p>2. Preserve and promote sustainability of cultural and historical assets</p>		<ul style="list-style-type: none"> • trunk sanitary sewer extension may require intrusion into Shubie Park 	<ul style="list-style-type: none"> • potential to preserve Kearney Lake dam and surrounding waterfront lands for public park 	

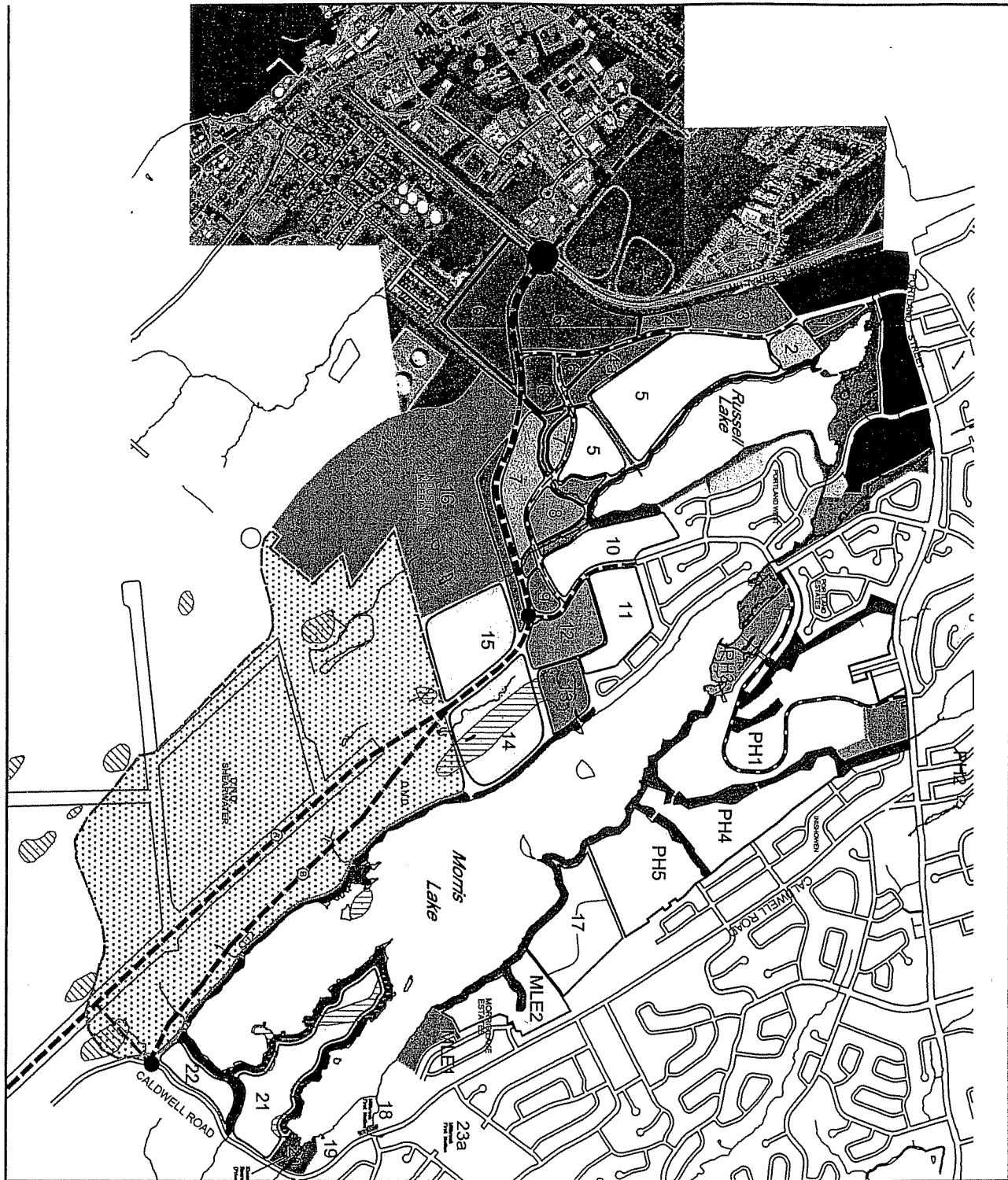
Regional Planning Principle	Morris-Russell Lake	Port Wallace	Bedford West	Governor Lake North
<p>3. Support appropriate roles for the Halifax/Dartmouth central business district (Capital District) as a focus for economic, cultural and residential activities.</p>	<ul style="list-style-type: none"> new Hwy. 111 interchange and connector road could allow for strong transit connection to Capital District via Woodside Ferry Terminal 		<ul style="list-style-type: none"> site location and proposed arterial roads should facilitate excellent connection with regional transit services to Capital District whether high speed ferry, light rail, or bus routes on Bedford Hwy/Hwy. 102 	
<p>4. Support development patterns that promote a vigorous economy</p>	<ul style="list-style-type: none"> opportunities for new commercial lands with good access from Hwy. 111 and new employment/service centre on surplus DND Shearwater lands new interchange may enhance attractiveness of Woodside Industrial Park for business activities 		<ul style="list-style-type: none"> opportunity for new employment/service centre at HRM owned blood fractionation plant site and surrounding lands with good access to Hwy. 102 via Hammonds Plains Rd. interchange good opportunity for new commercial centre off Kearney Lake Rd. which could conveniently service large existing population in Blue Mountain Estates/Kingwood subdivisions 	<ul style="list-style-type: none"> close proximity to Bayers Lake/Lakeside Business Parks may allow for reduction in the length of vehicle work trips. traffic study indicates substantial investment in road improvements needed to support further expansion of Bayers Lake/ Lakeside Business parks

Regional Planning Principle	Morris-Russell Lake	Port Wallace	Bedford West	Governor Lake North
<p>5. Manage development in a way that will make the most effective use of land, energy, infrastructure, public services and facilities and considers healthy lifestyles.</p>	<ul style="list-style-type: none"> • CBCL study estimated that total servicing and transportation costs at \$11,100 per acre (2nd lowest among 10 greenfield sites) • potential major centre with population of 10,000 to 20,000 if abutting surplus Shearwater lands included. • could receive services from neighbouring commercial district on Portland St. • new regional commercial centre could be developed with access from Hwy. 111. • residential development may be limited by operational needs of DND Shearwater base. 	<ul style="list-style-type: none"> • total servicing and transportation costs estimated at \$15,800 per acre (5th lowest among 10 greenfield sites) • high initial cost of development (\$15 million for trunk sewer extension • potential for integration of commercial development may be limited by surrounding context. 	<ul style="list-style-type: none"> • total servicing and transportation costs estimated at \$8,800 per acre (lowest among 10 greenfield sites) • potential major centre with population of 10,000 to 30,000 • commercial centre off Kearney Lake Rd. could serve Blue Mountain/Kingswood Subdivisions and reduce the length of vehicle trips for shopping 	<ul style="list-style-type: none"> • total servicing and transportation costs estimated at \$22,700 per acre (8th lowest among 10 greenfield sites) • substantial investment in new transportation infrastructure needed (\$13 million for this study area and \$31 million for future development within the area) • commercial centre on Timberlea Village Pkwy. extension may benefit existing residents of Timberlea and Lakeside

Regional Planning Principle	Shearwater/Eastern Passage (Morris-Russell Lake)	Dartmouth East/ Port Wallace	Bedford West	Birch Cove Lakes/ Governor Lake
<p>6. Develop integrated transportation systems in conjunction with the other principles.</p>	<ul style="list-style-type: none"> strong opportunity to enhance ferry service from Woodside to Capital District 	<ul style="list-style-type: none"> may be opportunity to provide better transit service to the Port Wallace area. 	<ul style="list-style-type: none"> well located for integration with a high capacity regional transit system 	<ul style="list-style-type: none"> transit capacity may be limited by congestion on St. Margarets Bay Rd.
<p>7. Provide a framework that leads to predictable, fair, cost effective decision making.</p>	<ul style="list-style-type: none"> HRM has previously adopted MPS policies which establish framework for master planning this area HRM has recommended that new interchange be funded under federal/provincial infrastructure program. Conditional approval received. 	<ul style="list-style-type: none"> relatively high servicing costs may burden capital budget planning and preclude better opportunities 	<ul style="list-style-type: none"> ability to use and cost-share in new Hwy 102 interchange approved for Bedford South/Wentworth 	<ul style="list-style-type: none"> relatively high transportation costs may burden capital budget planning and preclude better opportunities

**MORRIS LAKE /
RUSSELL LAKE
CONCEPT MASTER PLAN
AREA 4**

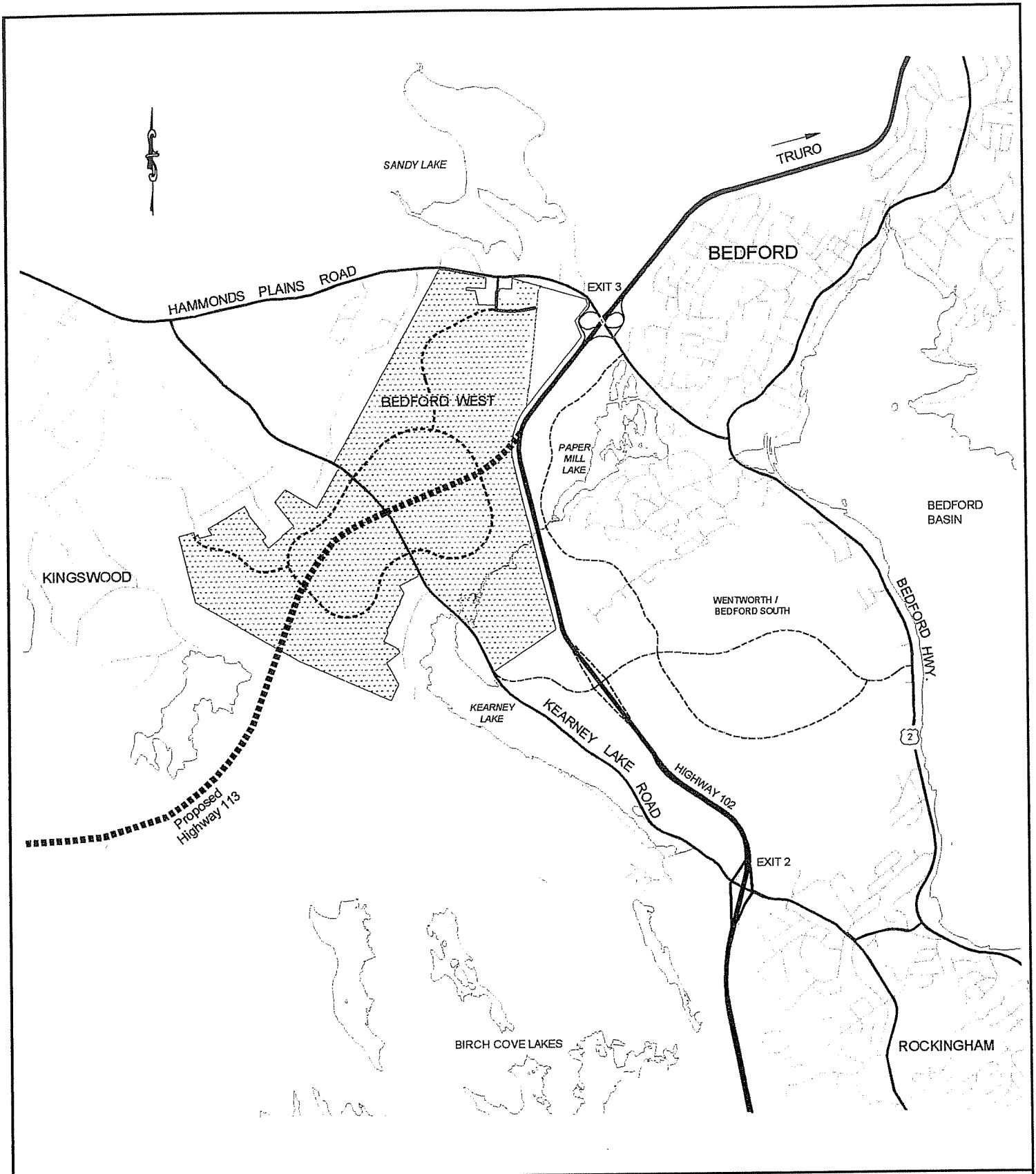
SCALE: NTS
SEPTEMBER, 2004



- SINGLE FAMILY
- SEMI / TOWNHOUSE
- MULTIPLE
- CDD RESIDENTIAL MIX
- CDD (Holding)
- HRM PARKLAND / OPEN SPACE
- ACTIVE HRM PARKLAND
- COMMUNITY COMMERCIAL / RESIDENTIAL
- GENERAL COMMERCIAL
- EXISTING COMMERCIAL
- INSTITUTIONAL
- LAKEFRONT MANAGEMENT ZONE
- INDUSTRIAL LANDS
- WETLANDS
- ENVIRONMENTALLY SENSITIVE



Revised Sept. 15/04

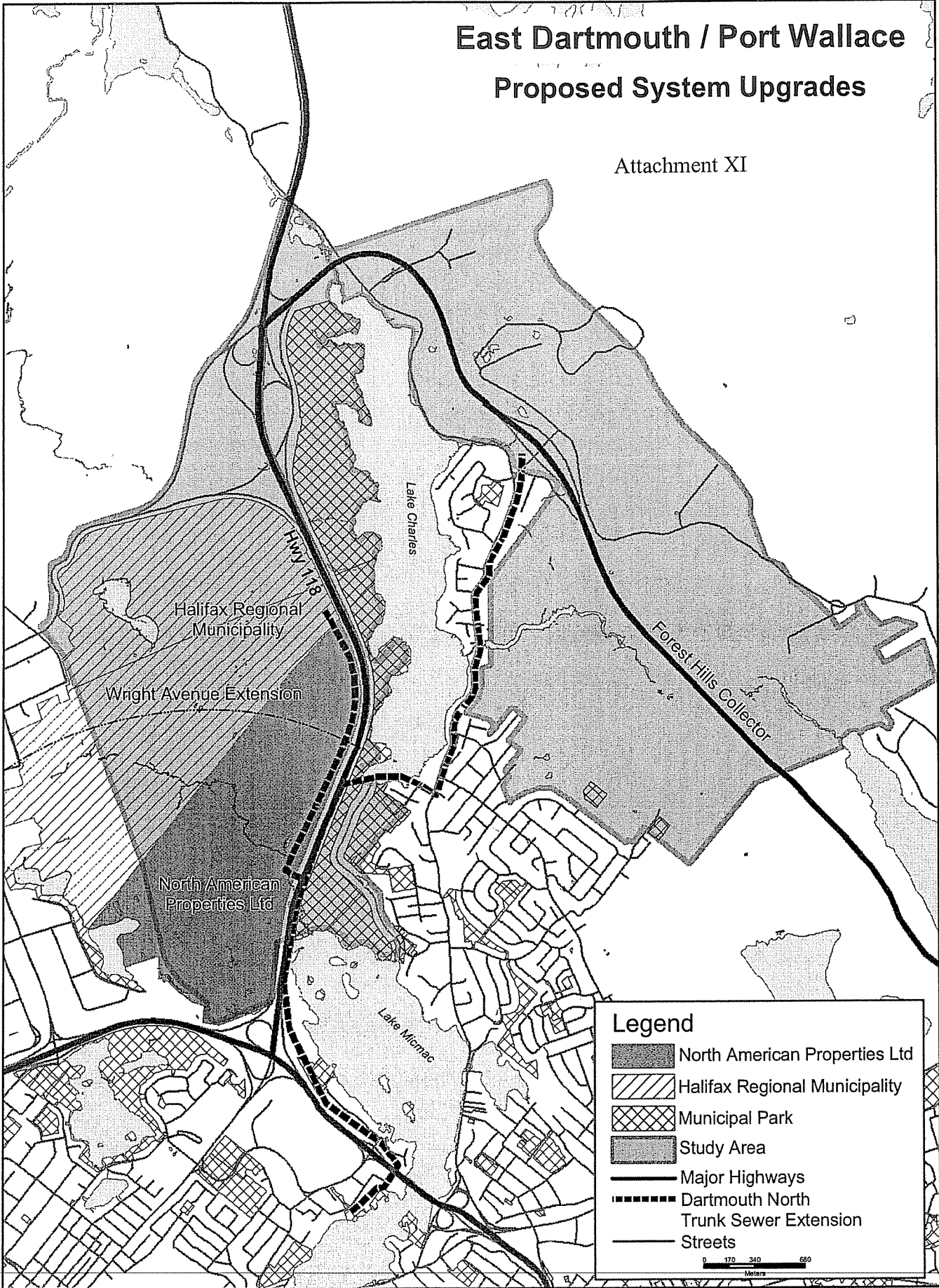


Attachment X

TRANSPORTATION PLAN BEDFORD WEST

East Dartmouth / Port Wallace Proposed System Upgrades

Attachment XI



Project:

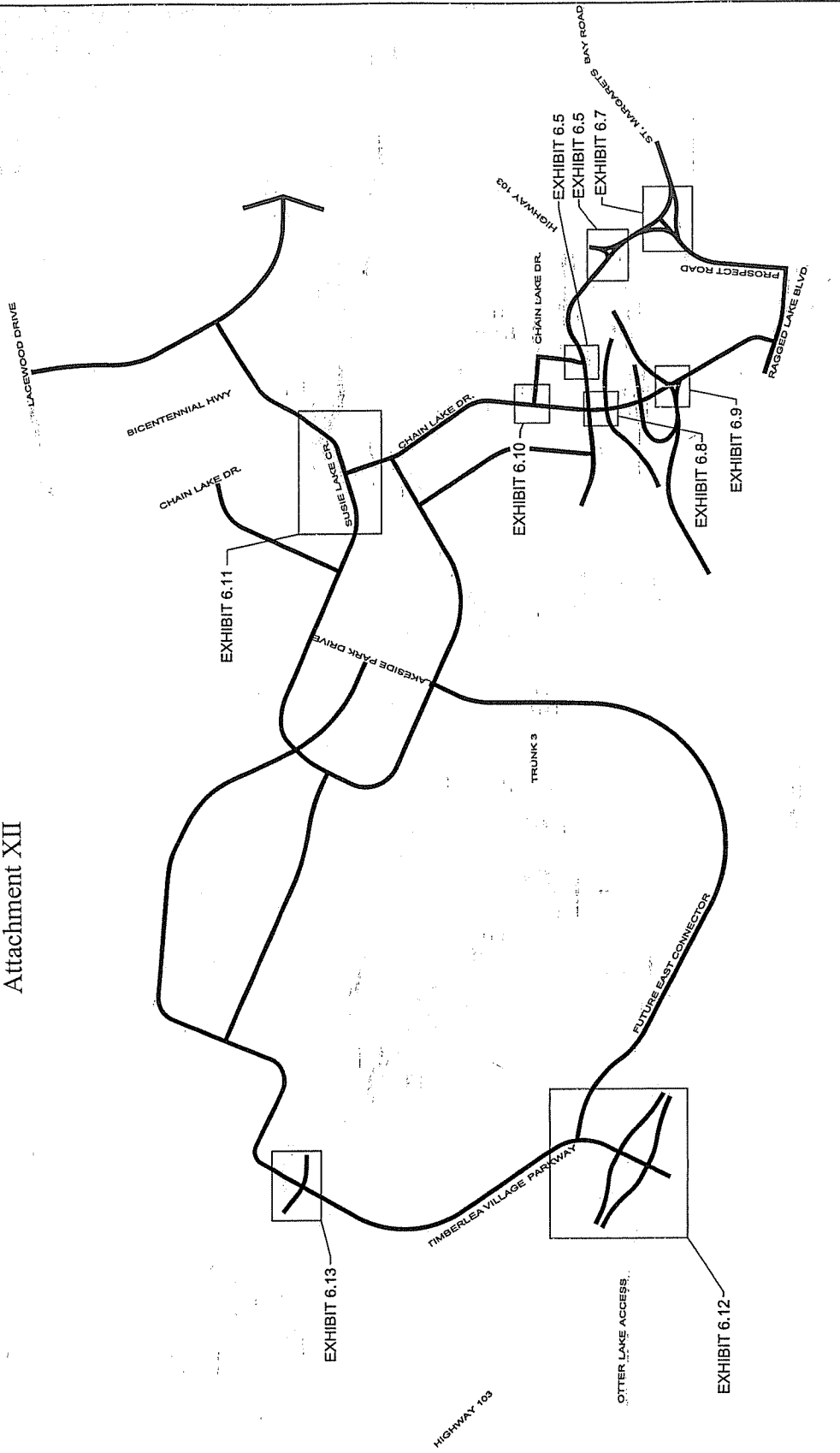
**Governor's Lake Area
Transportation Study**
BEECHVILLE - LAKESIDE - TIMBERLEA

Title: *Exhibit 6.4*

Key Plan (Index to subsequent drawings)



Attachment XII



Project:

**Governor's Lake Area
Transportation Study**

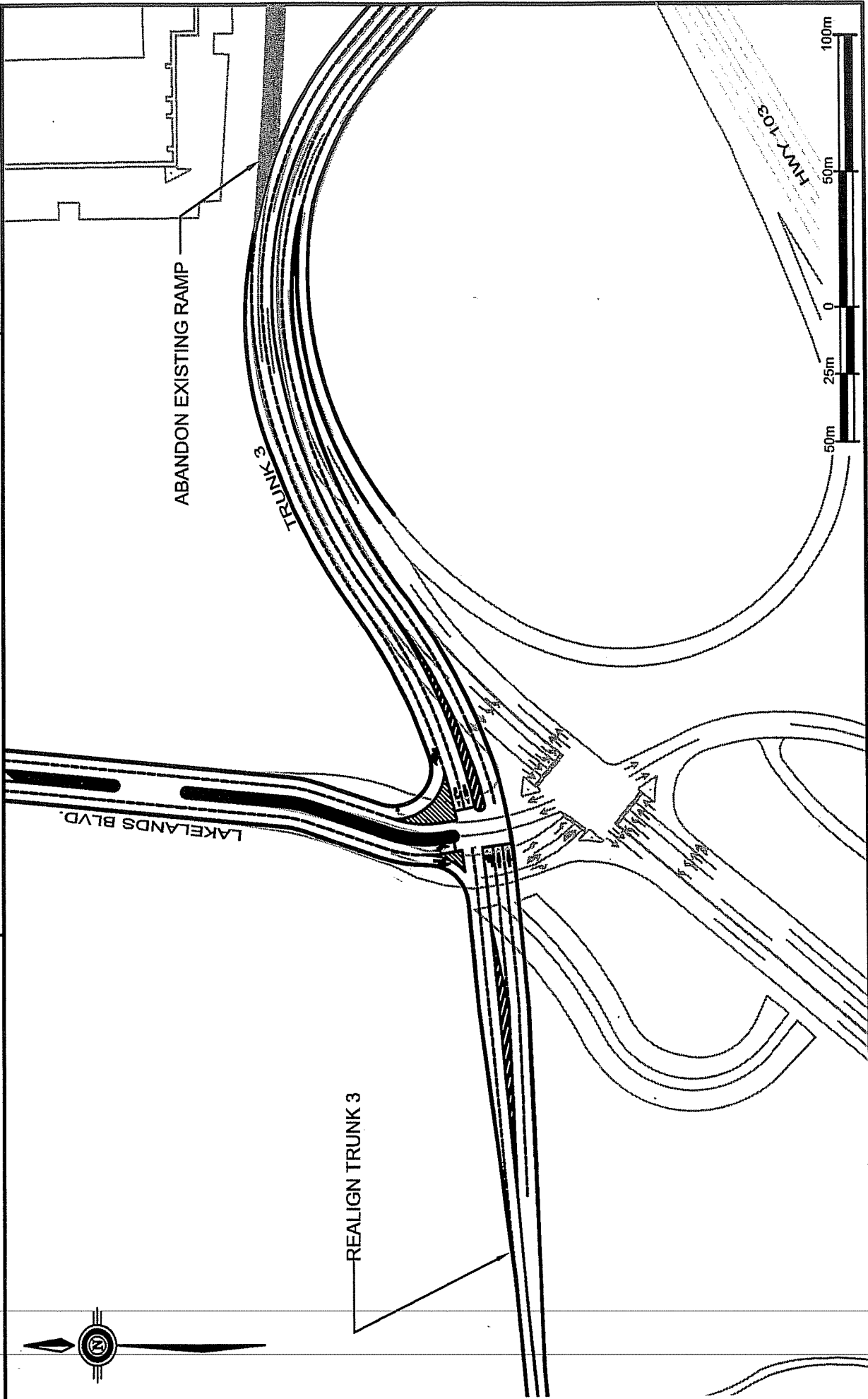
BEECHVILLE - LAKESIDE - TIMBERLEA

Title:

**Exhibit 6.5
Lakelands Boulevard at Trunk 3**



SGE Acres



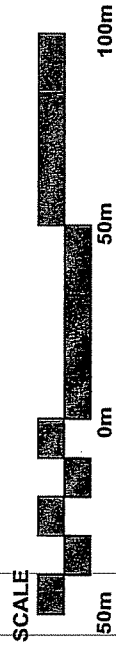
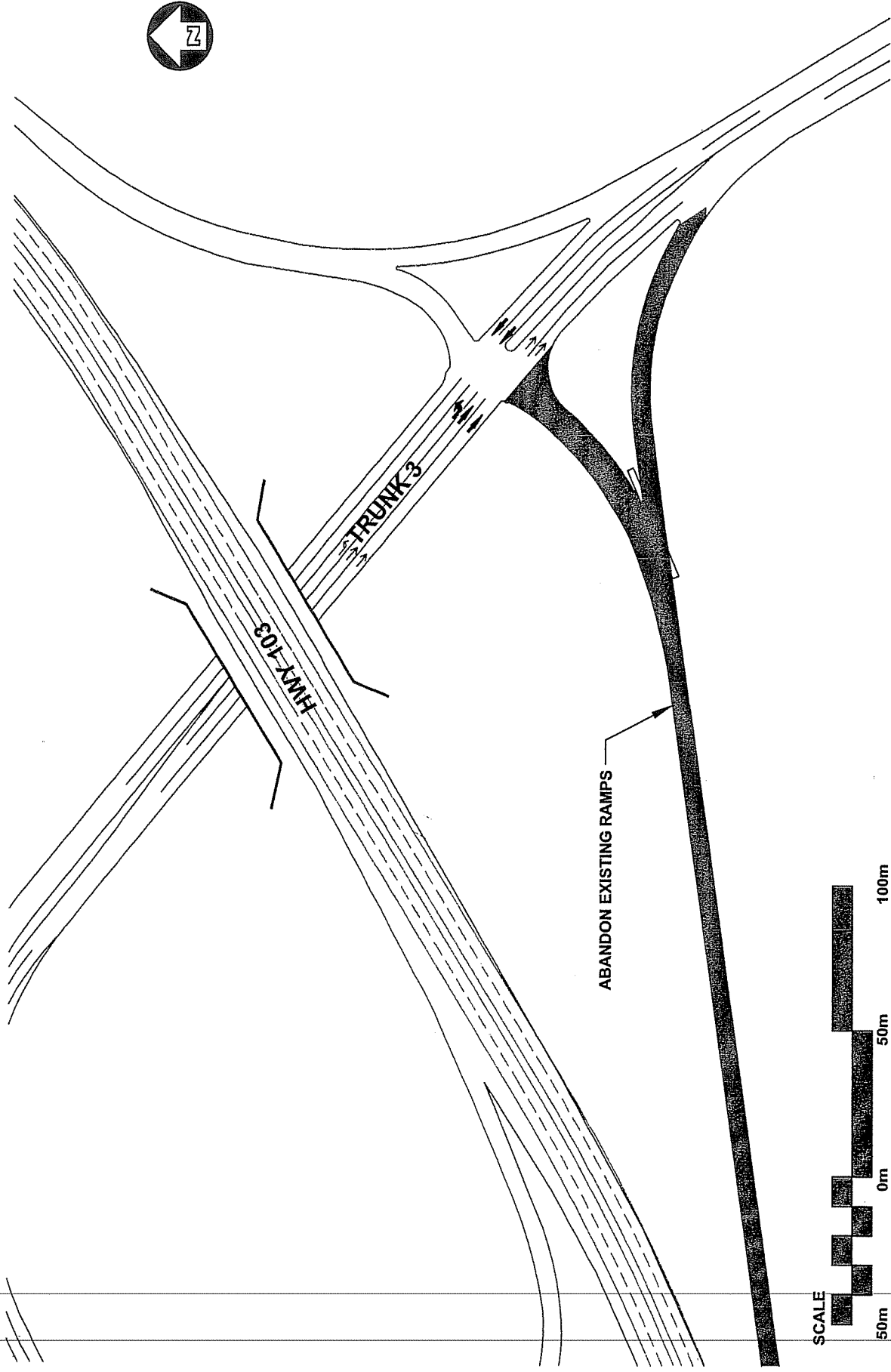
Project:

Governor's Lake Area Transportation Study

BEECHVILLE - LAKESIDE - TIMBERLEA

Title:

Exhibit 6.6 Trunk 3 at Highway 103 Eastbound Ramps



Project:

Governor's Lake Area Transportation Study

BEECHVILLE - LAKESIDE - TIMBERLEA

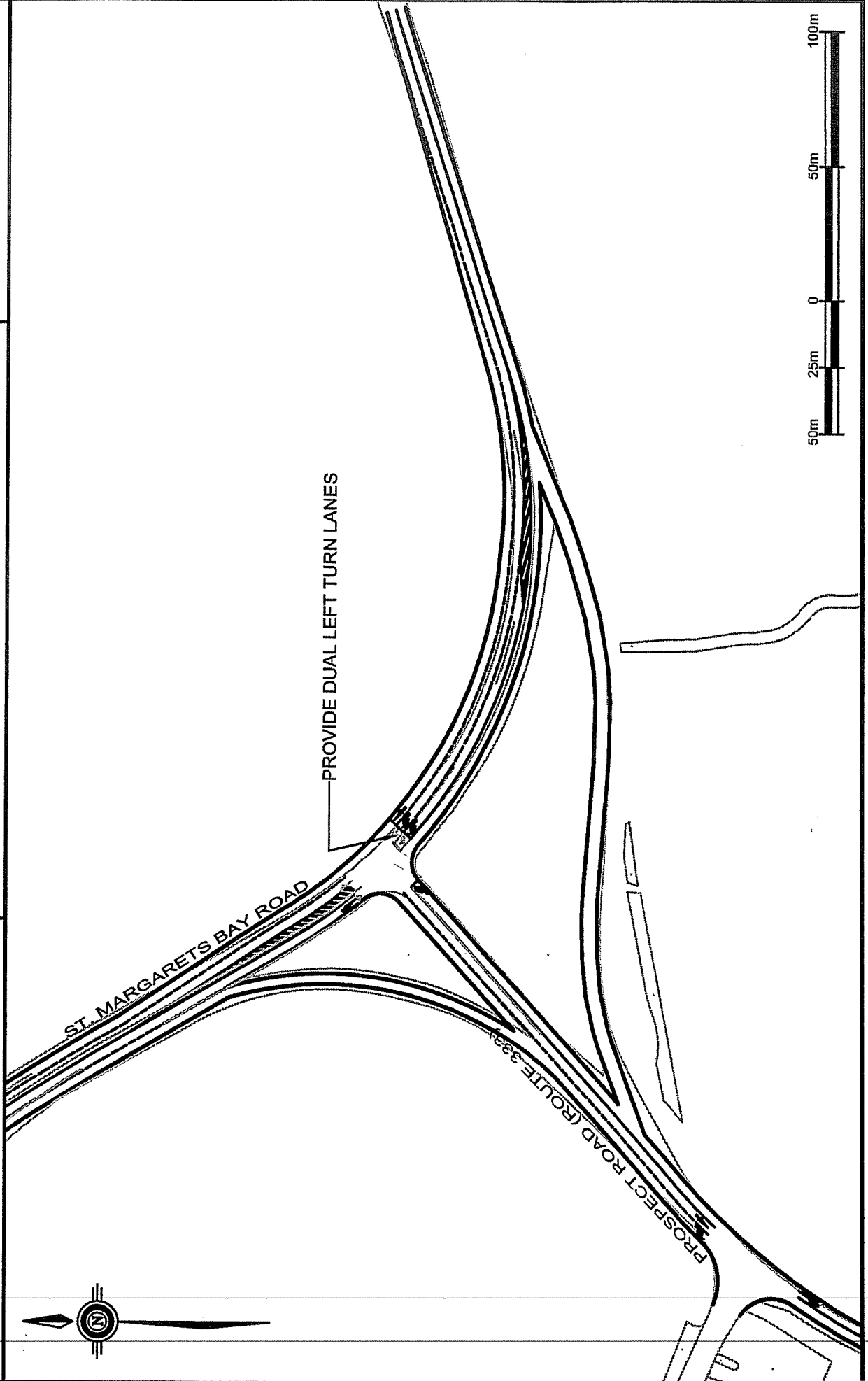
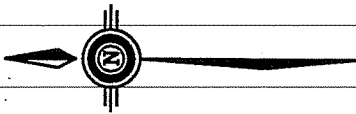
Title:

Exhibit 6.7

Trunk 3 at Route 333



SGE Acres



Project:

Governor's Lake Area Transportation Study

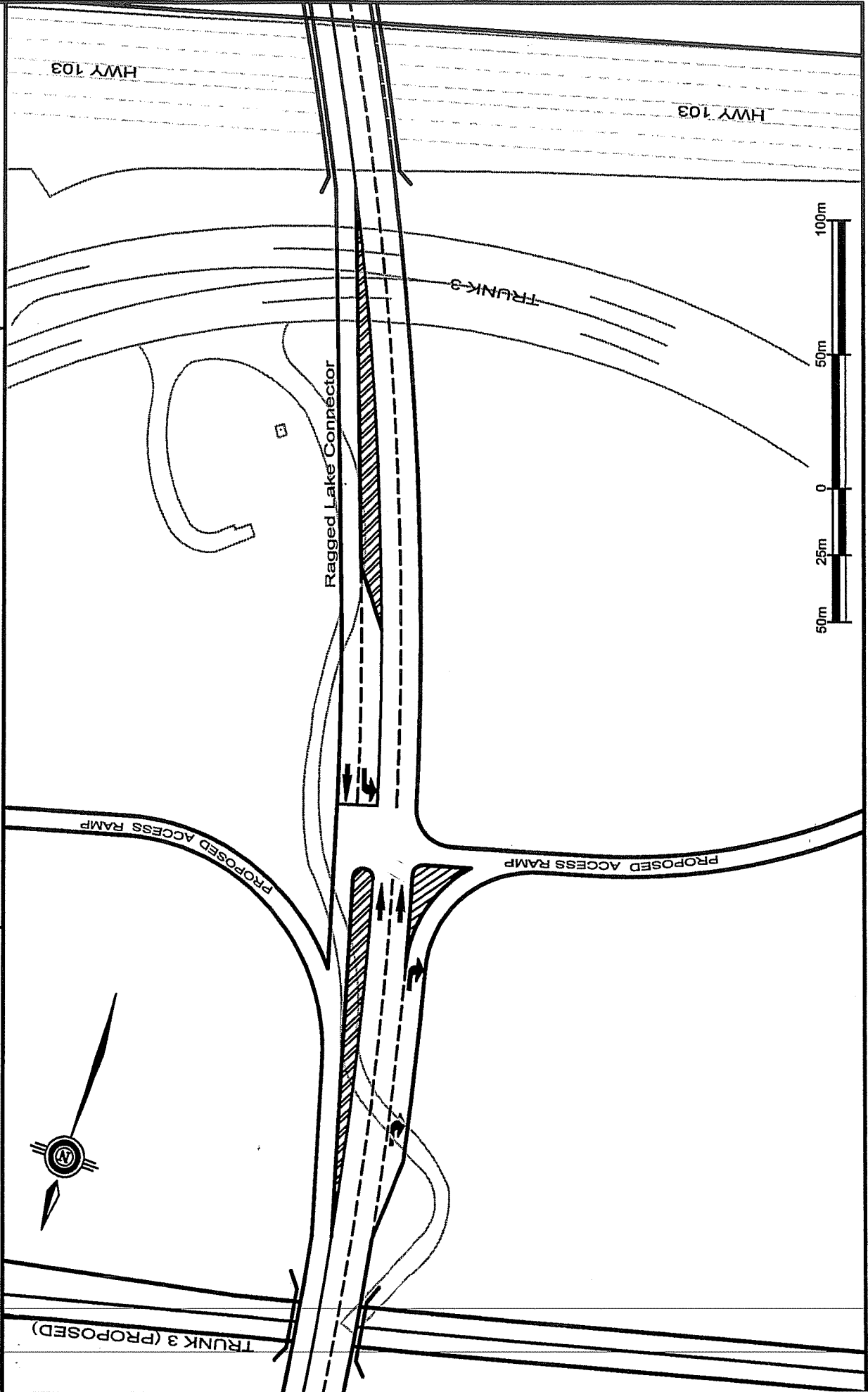
BEECHVILLE - LAKESIDE - TIMBERLEA

Title:

Exhibit 6.8 Ragged Lake Connector at Highway 103 Westbound Ramps



SGE Acres



Project:

**Governor's Lake Area
Transportation Study**

BEECHVILLE - LAKESIDE - TIMBERLEA

Title:

**Exhibit 6.9
Ragged Lake Connector at Highway 103
Eastbound Ramps**



SGE Acres



RAGGED LAKE CONNECTOR



Project:

Governor's Lake Area Transportation Study

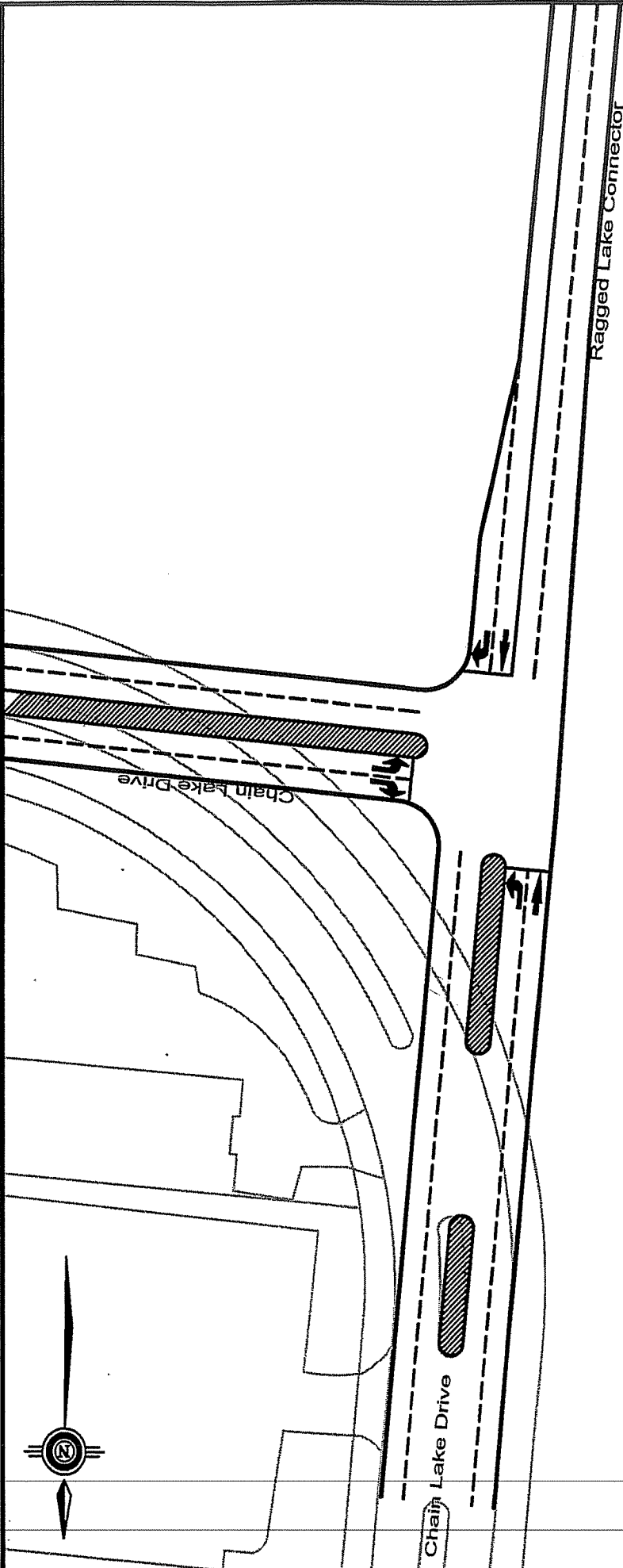
BEECHVILLE - LAKESIDE - TIMBERLEA

Title:

Exhibit 6.10 Chain Lake Drive at Ragged Lake Connector



SGE Acres



Project:

Governor's Lake Area Transportation Study

BEECHVILLE - LAKESIDE - TIMBERLEA

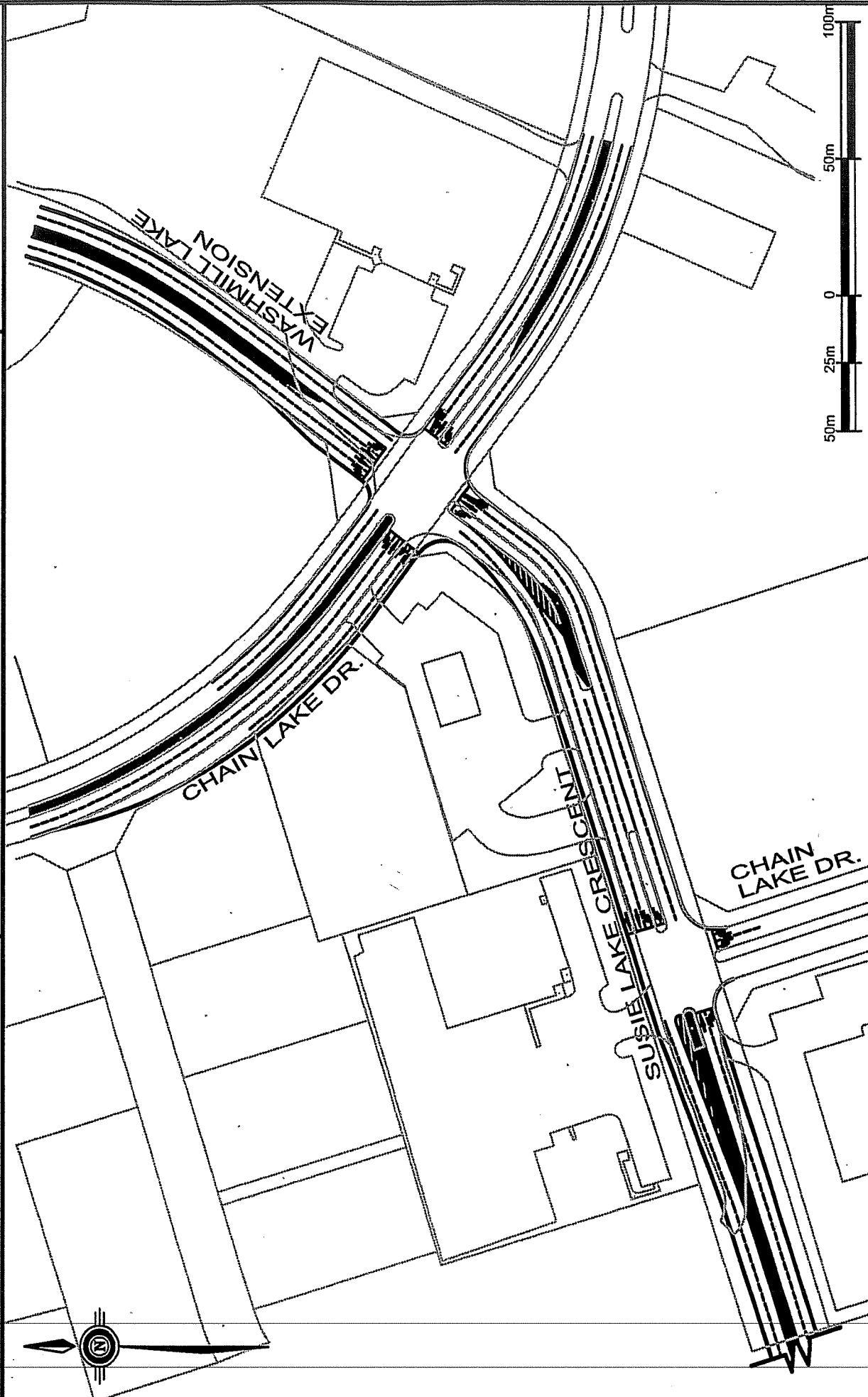
Title:

Exhibit 6.11

Chain Lake Drive at Susie Lake Crescent /
Washmill Lake Court



SGE Acres



Project:

Governor's Lake Area Transportation Study

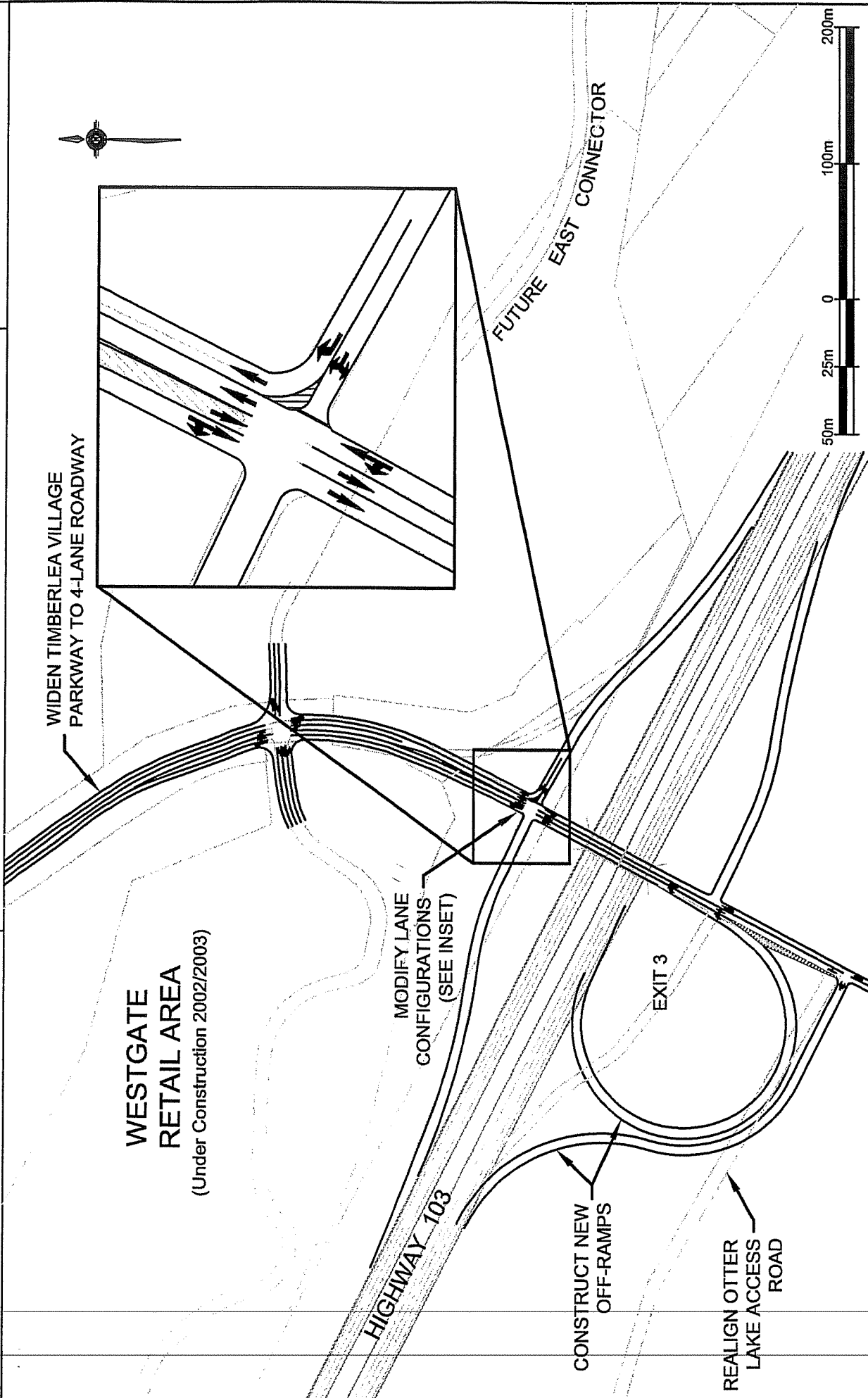
BEECHVILLE - LAKESIDE - TIMBERLEA

Title:

Exhibit 6.12 Timberlea Village Parkway / Highway 103 Interchange



SGE Acres



Project:

**Governor's Lake Area
Transportation Study**

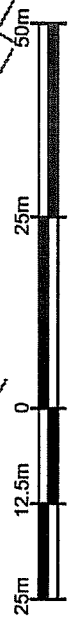
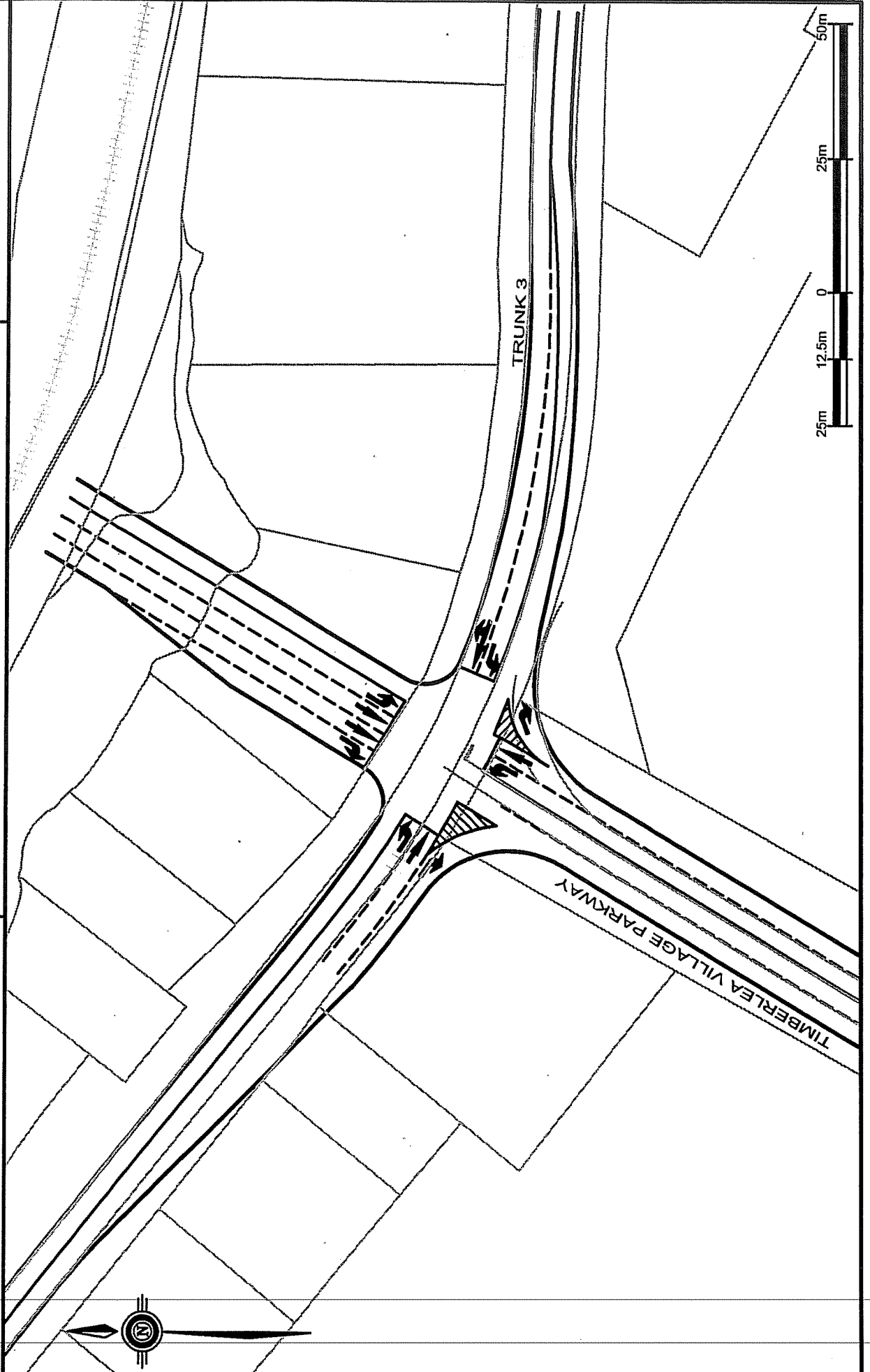
BEECHVILLE - LAKESIDE - TIMBERLEA

Title:

**Exhibit 6.13
Timberlea Village Parkway at Trunk 3**



SGE Acres



<i>Exhibit 7.1 Implementation Costs</i>			
Short-term			
Location	Improvement Element	Development Served	Estimated Cost
Highway 103, Exit 2 Interchange	Widen roadways at the intersection of Trunk 3/ Hwy 333 and adjust signal timing and phasing plan.	Existing Traffic	\$ 213,000
Sub-total short-term Improvements			\$ 213,000
Mid-term			
Timberlea Village Parkway at Trunk 3	Widen intersection approaches and installation of traffic signals.	Governor's Run Westgate	\$ 240,000
Timberlea Village Parkway	Widen Timberlea Village Parkway to 4-lanes	Governor's Run Westgate	\$ 800,000
Governor's Run – Bayers Lake Connector Roads	Construction of roads with 2-lane cross-section	Governor's Run Bayers Lake Expansion	\$ 1,820,000
Highway 103, Exit 2 Interchange	Realign Trunk 3 and Reconfigure the intersection of Trunk 3/ Lakelands Boulevard	Business Park Linkage	\$ 4,900,000
Sub-total mid-term Improvements			\$ 7,760,000
Long-term			
Washmill Lake Court Extension / Chain Lake Drive/ Susie Lake Crescent	Construct new roadway with underpass at Highway 102 Reconfigure and widen intersections: - Chain Lake Drive at Washmill Lake Court - Chain Lake Drive at Susie Lake Crescent	Governor's Run Bayers Lake	\$ 5,830,000
East Collector	Construct the East Collector between the Lakeside Industrial Park and Timberlea Village Parkway	Development of adjacent lands	\$ 1,500,000
Highway 103/ Timberlea Village Parkway Interchange	Provide directional ramp to permit southbound traffic on the Timberlea Village Parkway to access Highway 103 eastbound Install Traffic Signals at intersection of westbound off-ramp and Timberlea Village Parkway	Westgate Governor's Run	\$ 602,000
Highway 103, Exit 2 Interchange	Construct Ragged Lake Connector and associated interchange ramps Traffic Signals: - Chain Lake Drive at Ragged Lake Connector - Ragged Lake Connector at Highway 103 WB On-Ramp	Business Park Linkage Westgate	\$ 10,290,000 \$ 240,000
Highway 103/ Highway 102 Interchange	Construct additional lane on access ramp to serve traffic accessing Highway 102 Inbound from Highway 103 Eastbound	All developments in Study Area	\$ 400,000
Sub-total long-term Improvements			\$ 19,134,000
Total construction costs			\$ 27,107,000
15% Engineering and Contingency			\$ 4,066,050
15% HST			\$ 4,675,958
Total Estimated Cost			\$ 35,385,000 (rounded)



Technical Memorandum

SGE Acres

RECEIVED
 MAY 03 2004
 REGIONAL PLANNING

To David McCusker, P.Eng.
 Halifax Regional Municipality
 Public Works & Transportation

Date April 27, 2004

File No. 1564200.01

From A. Robert McLure, M. Eng., P. Eng.
 Mia Laforge, EIT

cc Paul Morgan

Subject Governor's Lake Alternative Assessment

In response to your request for an additional assessment of Governor's Lake Transportation planning and development study, we have conducted the new analysis. The analysis responds to your email request of January 8, 2004 and assesses the area traffic operations with the implementation of the Washmill Underpass and no modifications to the Highway 103 / Trunk 3 Interchange. The roadway network that was assessed is illustrated in Figure 1.

In your request you identified two questions that were to be answered. One of the concerns was whether the area's roadway system with the Washmill Underpass and without the proposed Highway 103/Ragged Lake interchange upgrading could adequately service the Governor's Run development plus the Bayer's Lake Business Park Expansion. The second question was, assuming this modified network (i.e. not implementing the interchange improvements), how would the future traffic be re-distributed and how would the Governor's Run traffic be re-assigned to the various access points.

In regards to the second question, we first examined the overall traffic patterns for all the planned developments, in and out of the study area, through the four access points, under the two scenarios presented in Table 1. This table provides a summary of the overall estimated traffic re-assignment for each interchange. Using a select link analysis methodology, the percentage of the vehicles being generated by the Governor's Lake development was also determined and is also presented.

Table 1 – Utilization of Access Points & Usage by the Governor's Run Development

	Scenario A With the Proposed Hwy 103/ Trunk 3 Interchange & With Washmill Underpass		Scenario B Without the Proposed Hwy 103/ Trunk 3 Interchange & With Washmill Underpass	
	Overall Development Distribution	Governor's Contribution	Overall Development Distribution	Governor's Contribution
Lacewood Dr	23%	14%	26%	16%
Washmill Underpass	15%	30%	16%	35%
Trunk 3 ¹	38%	16%	32%	17%
Timberlea Village Pkwy	24%	17%	27%	20%
<i>Total</i>	100%	N/A	100%	N/A

Note: Percentages were computed based on average of AM and PM Peak hour volumes

1 Under Scenario A, the percentage includes traffic on both Trunk 3 and Chain Lake Drive. Under Scenario B, the percentage includes traffic on Trunk 3 only.

N/A Not applicable.

The results we obtained are generally as expected in that the loss of Peninsula access capacity causes more congestion and results in a more dispersed (or equal) utilization of the access points by vehicles. Simply said, the lack of capacity at the Trunk 3 interchange area results in more congestion at that location, causing users to make other route choices such as Lacewood Drive, the Washmill Court Underpass and the Timberlea Village Parkway.

For the Governor's Run generated traffic, it appears that the Washmill Court access point becomes the most attractive and convenient route to access the Peninsula when the Trunk 3 interchange is not modified. At this access point, the percentage usage by Governor's Run traffic increases from 30 to 35%. Another interesting trip reassignment does occur though with the traffic produced by the associated developments (with the removal of the interchange improvements). Overall, the increased congestion and the inability of the existing interchange (Trunk 3) to offer broader benefits to the roadway users in the region, results in a reduction in overall trips using the access points. For this reason the share of locally produced trips at each access point increases. In the case of Governor's Run, the usage of all accesses (in and out of the area) increases from 1% to 5%.

In regards to your first question, it must be noted that the Governor's Lake Transportation Study provided recommended improvements at the St. Margaret's Bay Road/ Prospect Road intersection to support the many strategic planning and traffic operational requirements that study identified. However, if the proposed Highway 103/ Trunk 3 interchange is not constructed, it is our opinion that other base improvements in this area (along Trunk 3) will have to be implemented to support the increased demand from development in the area. It must be reiterated that this "minimum improvement approach" was never requested in the original study and for this reason we feel that the improvements noted below tend to be more "band-aid" solutions and do not support good long term regional planning.

However, based on our assessment of the system congestion and capacity issues, the minimal improvements are provided in Table 2 and their locations illustrated in Figure 1.

Location		Problem	Solution	Est. Class "D" Costs
1	Highway 103 Westbound Off-Ramp (onto Trunk 3 WB).	Vehicle queuing at the off-ramp, approximately 300 m; volume increase from 200 to 800 in AM Peak and 200 to 1000 in the PM Peak.	Provide additional westbound lane from off-ramp to Lakeland's Blvd; approximately 270m in length.	\$400,000
2	Trunk 3 at Lakeland's Blvd Intersection	Increased through volumes on Trunk 3, level-of-service from B to D in AM Peak, from C to F in PM Peak.	Increase length of Trunk 3 double-westbound lanes, approximately 250m.	\$400,000
			Widen Lakeland's Blvd approach to separate left-turning vehicles and through vehicles; approximately 100m.	\$200,000
3	Trunk 3 at Highway 103 Eastbound On/Off-Ramp	Increased delays for left-turning vehicles on Trunk 3 (LOS C to LOS D) and for left-turning vehicles on the Off-Ramp (existing LOS F to persist).	Provide traffic signalization of intersection.	\$250,000
4	St. Margaret's Bay Rd at Prospect Rd (Route 333) intersection	Increased through volume, level-of-service B to D in AM peak, from D to F in PM Peak.	Provide two-through lanes on St. Margaret's Bay Rd, in the eastbound direction, approximately 325m in length.	\$500,000
Total				\$1,750,000

Project:

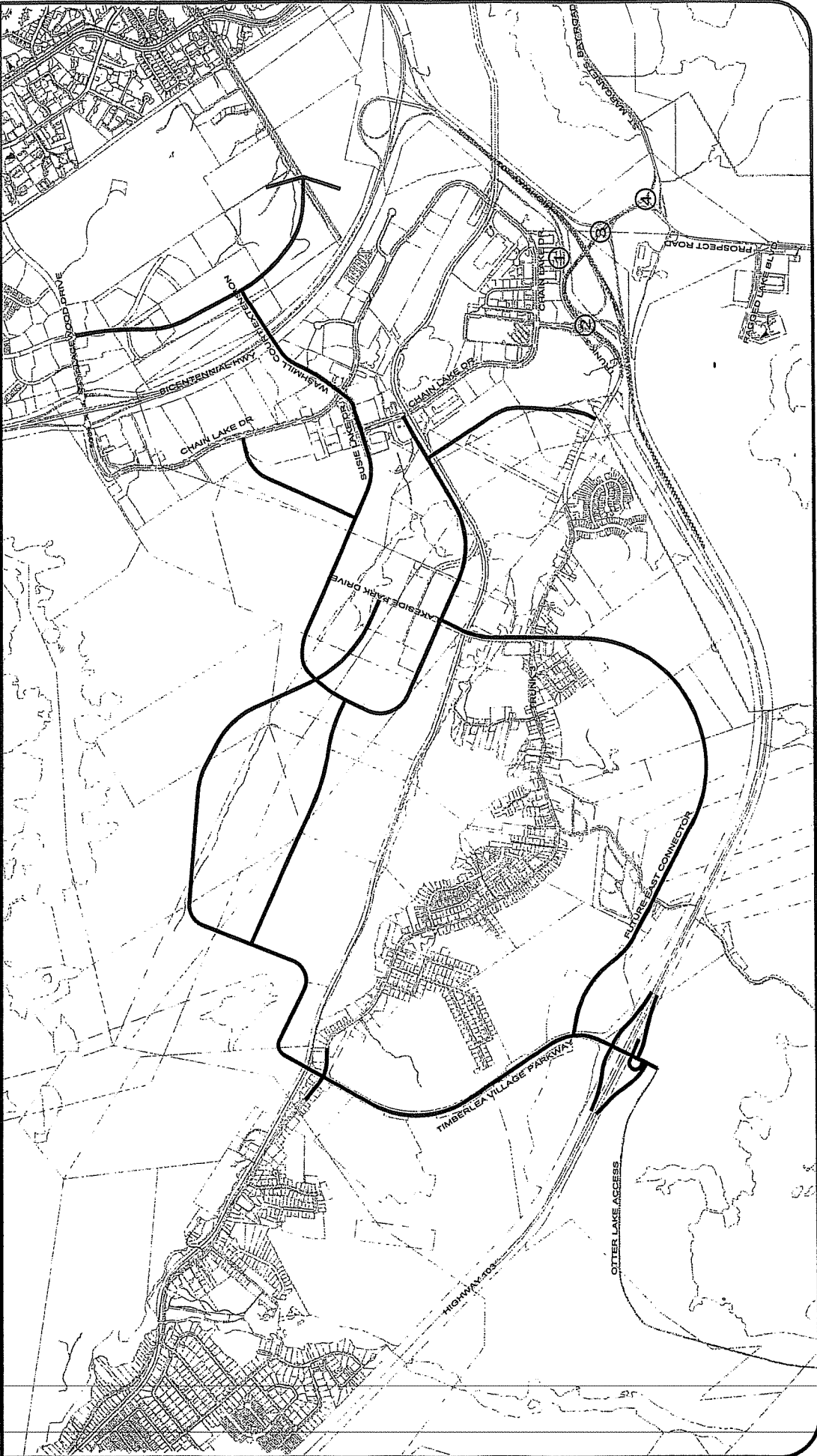
Governor's Lake Development Alternative Assessment

January 29, 2003

Title:

Figure 1 Roadway Plan

Not to Scale



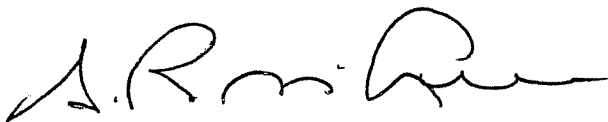
Finally, it must be recognized that because of an increased usage/ reliance on other highway interchanges, additional overall user delays can be expected in the study area. For example, at the Highway 102/ Lacewood Dr Interchange, the Lacewood WB right-turn movements (onto Hwy 102 SB) are expected to increase from approximately 400 to 1000 vehicles during the PM Peak. Also, the Lacewood WB left-turn movements (onto Hwy 102 NB) are expected to increase from approximately 700 to 900 vehicles. While the delay will increase, it is forecasted that, with the already proposed improvements and signal timing adjustments, the overall intersection operations will still be at an acceptable level-of-service C.

At the Highway 103/ Timberlea Village Parkway Interchange, an increase in usage by the Governor's Run Development and especially from Western Common Development is expected. Due to its location on the south side of Highway 103, we note that failure to construct the proposed interchange at Highway 103/ Trunk 3, the Western Common vehicles will be required to utilize this Timberlea Village interchange causing increased delays at the Highway 103 off-Ramp during the PM Peak. At this location, left-turning vehicles could increase from approximately 50 to 650 vehicles and intersection level-of-service would go from B to E.

As a conclusion, we find that;

- If the proposed interchange is not constructed, roadway operations/ intersection performance will continue to deteriorate on Trunk 3 and certain base improvements will be required.
- While minimal improvements have been indicated, these only affect the immediate vicinity of the Trunk 3 interchange; they do not offer any benefits on the operations of Trunk 3 east of the study area, which is a major concern for existing residents of the area. As such the goal of HRM to downplay Trunk 3 will not be realized, unless an interchange is constructed.
- While the cost for the interchange is significant, its original intent was to address many issues in the development of the study area. Governor's Run as well as other developments will obtain benefits from the utilization of the new interchange. However, the analysis indicates that if the interchange is not redeveloped, and only minor fixes are performed this access point tends to serve more local traffic, resulting in the percentage share of the improvements being more attributable to the locally produced trips.

Please contact me at any time if you have any questions.



Attachment XIV: Cost of Transportation Improvements Based on SGE Acres Assessment

1. Minimal Requirements Based on McLure Memorandum of 27 April 2004 with enhanced rails to trails crossing

Component	Total Cost (\$ million)	Governor Lake North Share
Washmill Court Underpass	6.1	2.2
East Collector	1.5 *	0.0
St. Margarets Bay Rd. intersection improvements	1.8	1.8
Upgrade Timberlea Village Parkway to Hwy. 103	1.6 **	0.3
Connector roads - Governor Lake North to Bayers Lake	1.8	1.6
Regency Park Drive Extension to North West Arm Drive	unknown	unknown
Trail Crossing (upgrade from culvert to bridge)	unknown	unknown
Total	12.8	5.9

HRM share: \$6.9 million (* portion of East Collector may be recoverable from abutting undeveloped lands.)

** further expenditures may be required to upgrade the intersection at Hwy. 3.

Total transportation cost per developable acre: \$12.8 million/655 acres = \$19,540

2. Other Potential Transportation Improvements

Component	Total Cost (\$ million)	Governor Lake North
St. Margarets Bay Rd. widening from Armdale Rotary to Lakeside	4.8	0.7
New Hwy. 3/103 Interchange and ramps	24.0	5.0
Total	28.9	5.7

3. Sanitary Sewer Cost based on CBCL Servicing Plan under Scenario 1A (storage at new pumping station but no sewage from Timberlea Servicing Boundary):

Developers Cost: \$4.64 million
HRM \$0.68 million
Total Cost: \$5.33 million

4. Total Transportation and Sanitary Sewer Cost Minimum (1 and 3)

Developers Cost: \$10.54 million (+ unknown cost for Regency Park Dr. extension, trail crossing)
HRM \$7.58 million (+ unknown cost for Regency Park Dr. extension, trail crossing)
Total Cost: \$18.12 million

Total Cost per developable acre: \$18.12 million/655 acres: \$27,664

Note: Water Costs Not Included.