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Halifax Regional Council
December 7, 2004

TO: Mayor Kelly and Members of Halifax Regional Council

SUBMITTED BY: _____
Joe O'Brien, Chair, Regional Planning Committee

DATE: December 7, 2004

SUBJECT: Regional Plan Preferred Alternative - the Proposed Plan

ORIGIN

Council approved Regional Planning Phase II Action Plan, December 3, 2002
Council appointed Regional Planning Committee, February 25, 2003
Council approved Regional Planning Process, Timeline and Workplan, June 10, 2003
Council approved Regional Planning Principles, June 10, 2003
Council approved Regional Planning Goals and Objectives, January 15, 2004
Council approved Regional Planning Alternatives, Public Consultation Program, April 20, 2004
Council approved Regional Planning Concept Alternatives, April 20, 2004
Information Summary Report - Regional Planning Spring Consultation, November 9, 2004

RECOMMENDATION

It is recommended that :

1. Halifax Regional Council, after discussion at Committee of the Whole on December 14, endorse the recommended alternative- the proposed regional plan, for the purposes of:
 - detailed policy development
 - public consultation on the final level of Regional Plan detail
 - preparation of a detailed regional planning financial analysis

BACKGROUND

The Regional Plan process (Attachment A), begun in June of 2003, outlined an eight step process for achieving the regional plan. The process is currently on time and within budget at step 6 - Recommending an Alternative to Council.

This step builds on considerable work and public consultation completed to date, as listed in the Origins section of the report. A summary of public consultation (Attachment B) identifies the wide variety of opportunities available and the significant investment of time and energy that many members of the community have made in the plan.

The Regional Plan Principles, Goals and Objectives, developed from public input and endorsed by Council, provide clear direction for our future. The proposed plan translates these values to maps, and with Council's approval, detailed policy will follow.

The Regional Planning Committee seeks Council endorsement to proceed to detailed policy development, consultation with the public and stakeholders around the final details of the plan, and preparation of more detailed financial analysis and strategies. The completed proposed Regional Plan will be presented to Council in April of 2005, as outlined in attachment A, to launch the formal adoption process. The current step isn't part of the legal process to adopt a plan, but an incremental step in arriving at that point.

DISCUSSION

Regional Council endorsed the need for a regional plan for a multitude of reasons. Council and community stakeholders recognized the wonderful quality of life we enjoy - a rich cultural life within a historic waterfront downtown, a strong, varied economy, beautiful wilderness and ocean areas and rural communities that inspire dreams of country life. Yet this enviable quality of life is at risk without a regional plan. Well water problems are becoming more common, land consumption per capita for residential development has tripled since the 1960's and its estimated that \$150 million will be needed just to meet roadway demands if our development pattern doesn't change.

Fortunately there is still have time to pro-actively plan our future and determine the destiny HRM citizens and business want - a future by design, not default. The Regional Planning Committee, guided by extensive public in-put, is proposing a plan which protects and strengthens the assets HRM residents and businesses value and significantly reduces the risks we face without a plan.

How the Proposed Plan was Selected and Highlights of the Proposed Plan

The Regional Planning Committee, with the help of public input, developed criteria to measure the effectiveness of the plan in terms of the environment, economy, settlement, transportation and costs. The criteria were attached to the November 9, 2004 Council report (regarding recent consultation results) and the criteria results are provided in Attachment C, Alternatives Comparison Report.

After carefully reviewing the criteria results, regional plan research (Attachment D) and public input, the Regional Planning Committee selected Alternative B, Transit Linked Communities, as the basis for the recommendation. As a reminder, in April 2004 Council approved three regional plan alternatives - alternatives A, B and C for purposes of public consultation. All of the alternatives were based on a strong regional center (the Capital District and adjacent areas), a system of interconnected open space corridors, and a transit focussed solution to transportation needs.

After selecting Alternative B, Transit Linked Communities as the basis of the proposed plan, the Regional Planning Committee created a hybrid plan, pulling in some of the strong points from Alternative A, the most compact settlement pattern, and alternative C, the most dispersed settlement pattern. For example, the size of the two major greenfield sites (Bedford West and Morris/Russell Lake) was increased to be more in line with Alternative A, adding to compact form and ease of servicing, and some smaller rural communities were identified for extensions to transit service, in keeping with alternative C.

The recommended alternative, the proposed regional plan, directs most growth to transit linked centers located along major transit corridors leading to the regional center. In the suburbs and urban core, development in the centers will be on piped sewer and water services. Some rural centers with higher populations will also be designated for municipal piped services and public transit. Other rural centers would use individual wells and some form of small scale shared sewage treatment system. The plan recommends hydrogeological testing where development on wells occurs. Each of the centers will be zoned to include most community services and businesses that people use day to day and will be designed for walking, cycling, etc. The center types are described on the Settlement and Transportation map.

New opportunities for unserviced residential development will be provided between centers. Innovative subdivision design based on clustering and on site shared waste water disposal will be encouraged, a new opportunity which isn't currently enabled. Limited opportunity for conventional large lot subdivision will continue. Development between centers would be subject to meeting appropriate environmental, transportation and financial guidelines. Guidelines will be developed in consultation with stakeholders.

The recommended approach envisions strengthening protection of natural resources and rural resource lands, building on work that exists in community plans. These lands are important to the rural economy, for example forestry, agriculture and mining.

The proposed plan recommends five new regional parks and fourteen new park / open space corridors, linking important cultural, habitat and trail systems. This system is a key aspect of the proposed plan, and is intended to be implemented over time, through a variety of tools. For example, land acquisition, conservation easements, parkland dedication, development agreements, zoning, negotiations with other levels of government and cooperative planning with Nova Scotia Department of Natural Resources and private land owners are some of the implementation tools that can be considered.

The attached maps provide additional information.

Benefits of the Proposed Plan

The recommended plan provides significant environmental, economic, transportation, settlement pattern and financial benefits to HRM. These benefits won't be achieved if we continue past development patterns (base case). Some of the key benefits are outlined below:

Environmental Benefits

- Connected parks/corridors - the proposed regional plan recommends 14 new wilderness and trail corridors, many linked into the regional trail system.
- Reduced greenhouse gas emissions - the recommended plan will reduce green house gas emissions by approximately 10%.
- Protection of watersheds - if past development patterns (base case) continue, it's estimated that 46 watersheds will have over 10% impervious surface area by 2026. The recommended approach will see only approximately 19 watersheds in this category. (10% is the point where signs of watershed degradation may begin).
- The recommended plan provides substantial benefits in land consumed for residential development. By planning where and how to grow approximately 5,000 hectares will be needed for new development instead of the 18,000 needed if past patterns continued, preserving land for other needs such as forestry, agriculture, tourism, mining and parks.

Economy

- The proposed regional plan will identify and protect key marine industrial sites on the harbour. This is critical due to the strong competition for harbour front land and the importance to our economy. For example, the plan recommends approximately 750 hectares of marine industrial land, with adequate buffers, compared to approximately 600 hectares if we do nothing.
- The regional plan enables long term financial planning. The recommended approach enables better use of tax dollars and a competitive tax structure. (See Financial and Service benefits).
- The recommended regional plan provides clarity to investors and developers. Stakeholders repeatedly communicate how important this is to a strong economy.
- The recommended regional plan enables the benefits of a strong central economic cluster (Capital District and adjacent areas), as well as an adequate supply of business/industrial park land and commercial areas in all of the mixed use centers.
- Affordable housing for all levels of income/employment close to major employment areas is an important element of the proposed plan. Stable, livable neighbourhoods are encouraged.
- The recommended plan protects our tourism assets, eg heritage, culture, Capital District and beautiful outdoor recreation sites. These same features facilitate retention and attraction of residents, businesses and employees.

Transportation

- The recommended regional plan provides improved access to employment centers, a factor the business community has identified as important.
- The proposed plan provides improved use of the existing transportation network, reducing congestion and improving transit use. For example, the recommended plan will provide Rapid Transit access to approximately twice as many HRM residents as the status quo approach.
- Costs are reduced and service is improved under the recommended approach. This is outlined graphically in the cost and service section. By identifying a settlement pattern in conjunction with transportation planning a much more effective system is enabled.
- The proposed plan takes advantage of one of our greatest natural transportation assets. A fast ferry system is proposed for the harbour.

Settlement

- The recommended plan calls for walkable, mixed use communities where people can be more active in their daily lives. According to a study on The Cost of Physical Inactivity in Halifax Regional Municipality completed by the Heart and Stroke Foundation of Nova Scotia in August of 2004, a 10% reduction in inactivity could result in savings of \$1.65 million annually plus \$3.1 million in productivity gains.
- The proposed settlement pattern improves access to safe drinking water and waste water treatment by delivering piped service to approximately 85% of new dwelling units. Without the proposed plan this figure would be approximately 62%.
- The proposed regional plan will set the foundation for improved urban and community/neighbourhood design by outlining design guidelines. Streetscaping, community character and pedestrian friendly environments are important to the success of the proposed development approach.
- The recommended plan requires only one third the amount of new local streets as the base case (approximately 500 kilometres compared to approximately 1,600 kilometres).

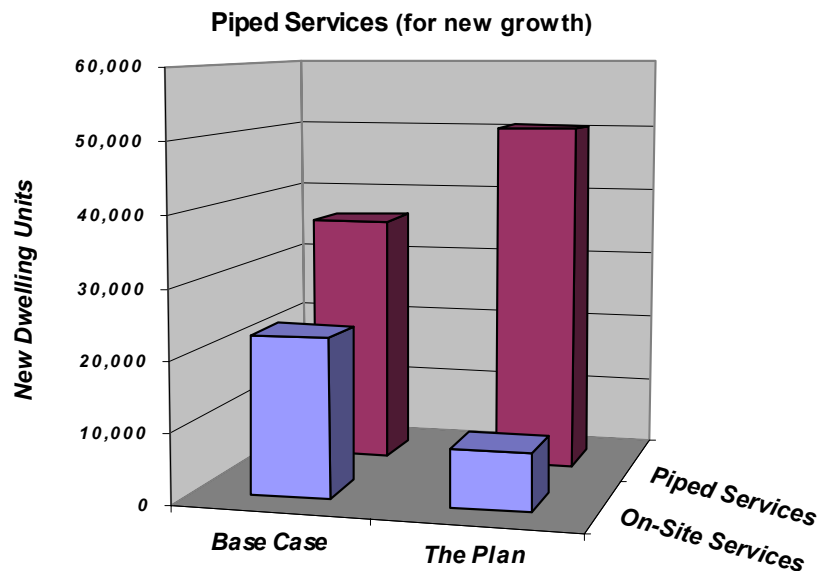
Note: The above benefits are comparisons between the proposed plan and the base case (continuation of current growth pattern over the 25 year life of the plan). To deliver the recommended regional plan effectively performance measures must be developed and included in the implementation section of the proposed plan. Monitoring and reporting through the corporate scorecard would be fundamental to the success of the proposed plan.

Financial and Service benefits

The proposed plan will provide more people with greater access to improved services.

The following chart shows how many more homes would have piped water and sewer under the Plan:

Chart 1



The chart above shows that: more than 85% of new homes will be on piped services (including fire hydrants), compared to less than 62% under the base case. This will be achieved by directing growth to areas which already have services, to areas where services can be provided efficiently such as the two major greenfield sites (Morris / Russell and Bedford West) and by providing services in a limited number of rural centers which have the population to support piped service investment.

Transit service will be expanded 30% over the base case, through a combination of more routes, greater frequency and lower travel times (i.e. Rapid Transit). As well, people will have greater access to transit - more than 81% of HRM residents will be within 500 meters of a transit route or stop (compared to less than 69% under the base case). Please see Settlement and Transportation map for proposed service information.

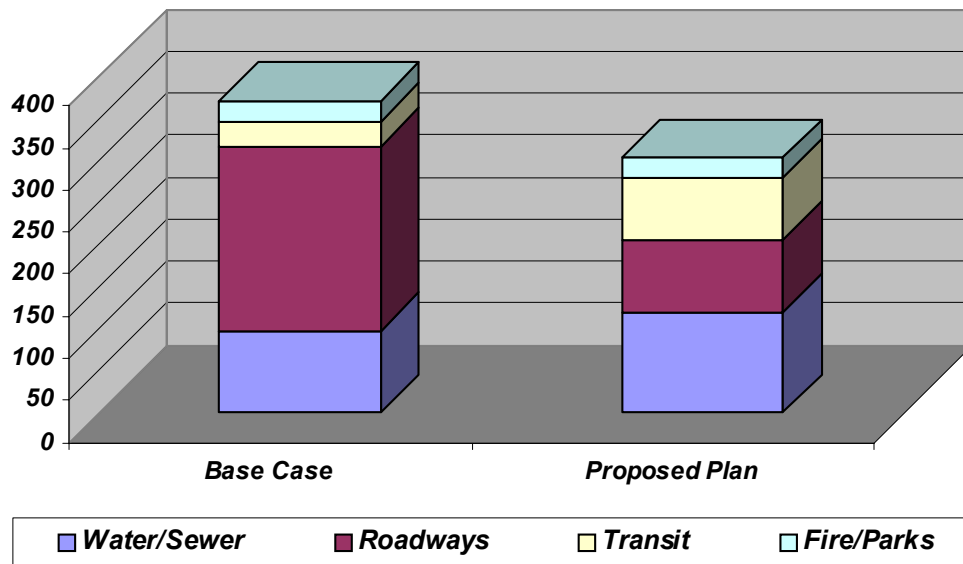
Average police response times will be faster, and more people will live within five minutes of existing fire stations.

Green house gas emissions will decrease by approximately 10%, and protected open space will increase by 125%.

A greater capital investment in transit, water and wastewater services will be needed to support these higher levels of services, but the overall life-cycle costs will be less, because of lower operating costs associated with a more efficient community form.

Chart 2

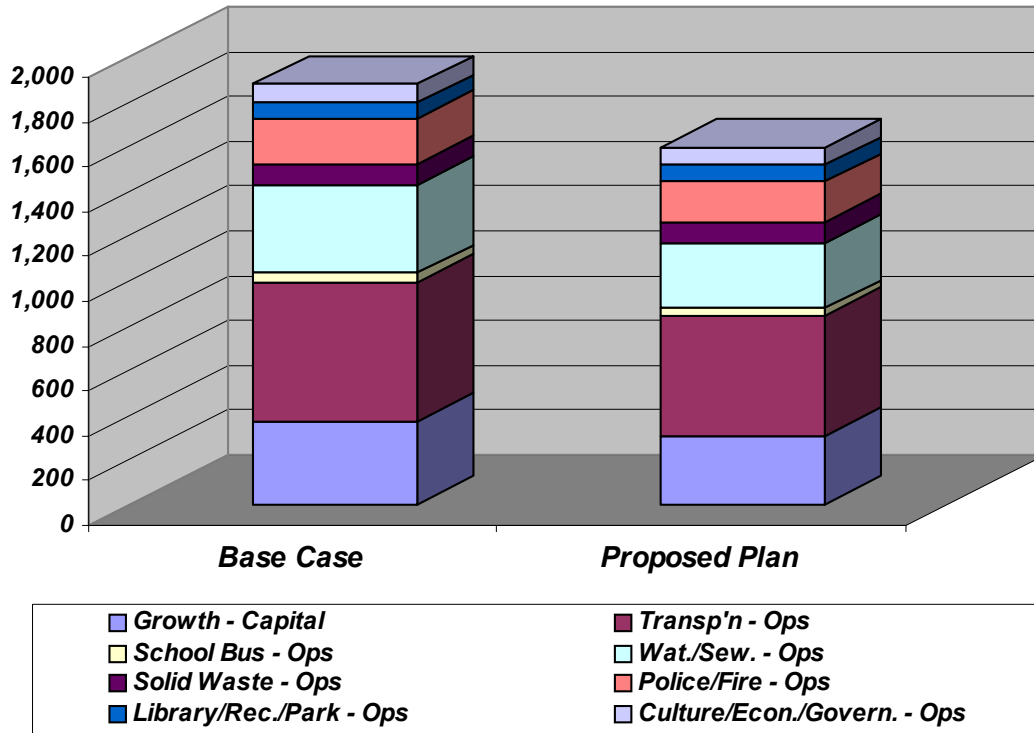
Major Growth-Related Infrastructure Requirements



The capital costs shown above are for regional infrastructure related to new growth. The capital costs identified in the base case assume that Master Plans would be in place to provide some guide to investment. Staff estimate capital costs could easily be \$75 million higher under the base case than is shown on the graph to accommodate pressure to extend services in the absence of a regional plan.

Chart 3

NPV of Growth Related Costs, 25 Years



The estimated operating costs that are shown on Chart 3 include maintenance, repairs, and replacements for the following services:

- transportation and transit
- school bussing (provincial)
- water and sewer services (public and private)
- solid waste management
- fire and police services
- parks, recreation and library services
- tourism/culture, planning and governance.

Approximately \$250 million in savings is projected in comparing the proposed plan to the base case.

Relationship to Community Plans

HRM has a total of 32 municipal planning strategies and secondary municipal planning strategies that were prepared over the past 30 years to address land use and servicing issues on a community wide basis. The recommended regional plan is generally in keeping with the goals and objectives of most of the existing community plans and in many cases will enhance their vision for future growth. A brief outline on how the proposed regional plan will achieve community plan goals and objectives within the urban, suburban, rural commutershed and rural areas is outlined below. Its important to keep in mind that the services outlined in conjunction with the proposed regional plan are a goal to achieve over the 25 year life span of the proposed plan.

Urban Plans

- will ensure the provision and maintenance of diverse and high quality housing in adequate amounts and in safe residential environments to meet the needs of a wide range of citizens;
- will accommodate growth at strategic locations within the urban area that are capable of accommodating a mix of land use activities at a range of densities through high quality building form, street scape design, urban amenity and service;
- will enhance and update urban design performance standards within the urban plans;
- will ensure the efficient utilization of services and infrastructure;
- will support vibrant mixed use areas and strengthen the function of the Capital District and the economic generators that sustain employment within the region;
- will enhance walkability within the urban area and within the downtown areas of Halifax and Dartmouth;
- will create new neighbourhood within master planned areas;
- will enhance transportation systems and in particular provide an efficient and affordable transit system that is within walking distance of most citizens;
- will provide all-day transit service to District Centres and throughout the Urban Core; and
- will enhance the natural environment by minimizing the impact of vehicle emissions and reducing the impact of development on valuable open space and environmentally significant areas.

Suburban Plans

- will maintain and enhance the residential environment of suburban areas while allowing for mixed use development in designated centres;
- will create or enhance existing urban design performance standards within the suburban plans;
- will support the continued development of strong community centers capable of meeting the needs of suburban residents;
- will enhance walkability within suburban communities;
- will enhance transportation systems and in particular provide an efficient and affordable transit system that is within walking distance of all citizens;
- will provide higher-order transit to other Suburban District Centres within the suburban area and to the Urban Core;

- will provide peak hour bus service from Rural Commutershed Local Centres; and
- will enhance the natural environment by minimizing the impact of vehicle emissions and reducing the impact of development on valuable open space and environmentally significant areas.

Rural Commutershed and Rural Plans

- will enable the retention of resource lands and open space areas as intended by rural commutershed and rural community plans;
- will enable the use of cluster subdivision design that will preserve open space, enhance rural character and ensure that development occurs on those portions of a site that are environmentally capable of supporting the development;
- will support the continued development of strong community centers capable of meeting the needs of local residents.
- will provide express bus service from Rural Commutershed District Centers to other District Centres and the Urban Core;
- will provide basic bus service from Rural District Centres to the nearest Rural Commutershed District Centre;
- will provide peak-hour bus service from Rural Commutershed Local Centres; and
- will provide basic bus or shared taxi service from Rural Local Centres.

Other common elements of the proposed regional plan and the existing community plans relate to heritage protection, environmental protection and fostering a strong economy.

The Regional MPS will be implemented through the Regional Land Use By-law and through community planning strategies that will become secondary plans. Following the adoption of the Regional MPS, community design charrettes and visioning exercises will be undertaken for designated growth areas, not currently undergoing a master planning exercise, to allow local communities to have input in how they want the principles and policies adopted under this plan to work. The Regional MPS will also set the schedule and priority for the delivery of infrastructure to meet anticipated growth needs.

Implementation

The Regional Planning Committee (a Committee of Council) is benefiting from the advice of a Sub-Committee, the Implementation Working Group, comprised of key community stakeholders, including the development industry, business, health, tourism, heritage, rural economic, affordable housing, environment, and rural resource, eg mining, forestry. The Implementation Working Group is reviewing tools needed to implement the proposed regional plan and providing solid advice regarding workable solutions. They are focussed on advising how the plan goals and objectives can best be achieved. For example, the Implementation Working Group has discussed how affordable housing units can be integrated successfully within residential developments rather than segregated in a separate location.

Subject to Council approval, the proposed plan complete with policy is scheduled to begin the legal plan adoption process in April 2005. The complete proposed plan will include an Implementation / Action Plan which outlines tools, phasing, investment triggers and a financial strategy.

The adoption process includes months of extensive public consultation. This is the step where the public has a final recommended package of maps and policy for their review and feedback. Modifications and improvements can be made during this step, to ensure the best plan possible.

Flexibility is another important element when determining the best approach to implementing the proposed plan. The Regional Planning Committee recognizes the need for flexibility and response to opportunities and a changing environment. The regional plan will be monitored on an on-going basis and reviewed every five years.

Conclusion

The Regional Planning Committee has succeeded in bringing Council a strong proposed regional plan, on time and within budget. Significant savings (approximately \$250 million), service improvements and environmental benefits can be realized by the proposed plan. Council is asked to endorse the recommended approach for the purposes of detailed policy preparation, public consultation on the final level of regional plan detail and preparation of an accompanying financial strategy.

BUDGET IMPLICATIONS

The financial information in this report represents costs related to the regional plan, at a level of detail suitable for evaluation purposes.

When the complete proposed Regional Plan is brought to Council in April of 2005 a more detailed financial analysis will be provided. As always, budgets will be decided by Council on a yearly basis. Endorsement of this plan for purposes of detailed policy development and public feedback doesn't represent a budget commitment to the outlined costs.

The recommended approach enables savings of approximately \$250 million over the 25 years of the plan compared to continuing with our past growth pattern.

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

Regional Council could direct the Regional Planning Committee to produce a different plan. This alternative isn't recommended.

ATTACHMENTS

- A - Regional Planning Process
- B - Public Consultation Summary
- C - Base Case Evaluation with The Proposed Plan
- D - List of Research

Maps

- Settlement and Transportation
- Economy
- Economy Inset
- Harbour
- Proposed Regional Parks and Corridors
- Existing Natural Resources and Open Space - current protected 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.

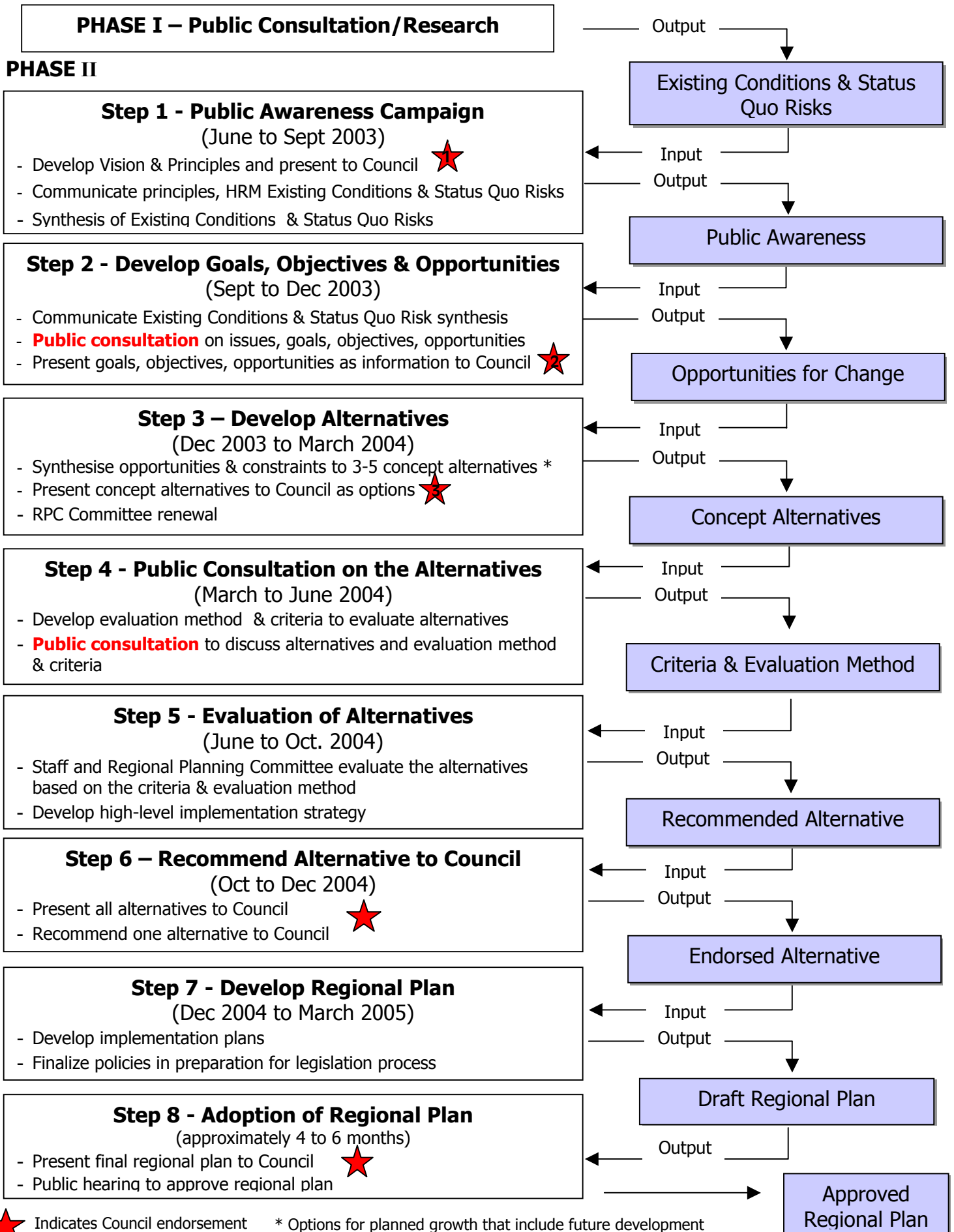
Report Prepared by: Carol Macomber, Maureen Ryan, Cathryn Steel, Andre MacNeil, Tim Burns, Marcus Garnet

Council Report Sign-Off Sheet

Subject:					
Meeting Date:		9 Regular Council 9 Information Report		9 COW	9 In Camera
Prepared by:					
_____				_____	
Name & Business Unit				Date	
9	First Draft for Information Only 9 Consultation 9 Approval				
/	Stakeholder -Internal	Approved By	Date & Time	Revised Date	Initial
	Not Required (Issue unique to originating Business Unit)				
	By-Law Rationalization				
	EMS				
	Finance				
	Fire				
	H R				
	Legal				
	P & D				
	Police				
	PWT				
	RPAM				
	RTC				
	Regional Planning				
	Shared				
	Library				
	RCMP				
	Water Commission				
	Stakeholder - External				

Actions

Inputs/Outputs



★ Indicates Council endorsement opportunity

* Options for planned growth that include future development patterns, community forms, employment centres, a transportation system, and environmental protection.

Regional Council Endorsements To Date

- 1 Regional Council approved the vision & principles on June 10, 2003
- 2 Council endorsed in principle the goals & objectives on January 27, 2004
- 3 Regional Council endorsed in principle three concept alternatives on April 20, 2004

Attachment B

Public Participation Summary

Phase I of the Regional Planning process was a public consultation and research phase. This included a citizen's survey, case studies, position papers, a workbook and a Capital District visioning process.

As the Regional Plan entered its second phase in June 2003, staff and the Regional Planning Committee focused on getting information about the plan to various stakeholder groups and the residents of HRM. This was done primarily through a series of newsletters, public displays and newspaper articles.

In the Fall of 2003, residents were consulted about what trade-offs they would be willing to make to preserve the things they value. More than 1000 *Directing the Action* workbooks were completed by HRM residents, both individually and in groups. Urban, suburban and rural focus groups were also conducted.

Staff and the Regional Planning Committee took the information from this consultation and developed goals, objectives and opportunities. The goals and objectives were presented for public comment in a series of open houses throughout the region in December 2003. The goals and objectives and the public comments on each are available on the Regional Planning website at www.halifax.ca/regionalplanning.

From the goals and objectives, staff and the Regional Planning Committee designed three *Alternatives for Growth*. Public consultation on the Alternatives in May and June 2004 involved a series of 12 open houses throughout the region. More than 700 residents participated. They commented on the three alternatives and gave their views on the future of HRM. There were four separate surveys, including questions on the alternatives, the evaluation of the alternatives, Halifax Harbour and the preservation of open space. Over 200 questionnaires were returned.

With this feedback and a detailed evaluation process, staff and the Regional Planning Committee developed the preferred alternative. In January and February, this preferred alternative (the proposed Regional Plan) will be presented to the Regional Planning stakeholder groups and the public for their review. This will be primarily to outline the details of the proposed Regional Plan and to ensure that it is in line with what residents and stakeholders have told us they want.

In Spring 2004, the completed plan will be officially presented to Council for approval. This process will include a series of public information meetings and a formal public hearing.

Attachment C

Base Case Evaluation with The Proposed Plan - 23 NOV. 2004 DRAFT

		Base Case	Proposed Plan approx.	Base Case	Proposed Plan
Environment					
1	Number of watershed that will have more than 10% impervious area	Low is Best	46	19	35% 84%
2	Hectares used for natural resource uses	High is Best	143,037	143,558	99% 100%
3	Hectares protected as open space	High is Best	238,006	535,062	44% 100%
4	Hectares of land consumed for residential purposes	Low is Best	18,285	5,239	24% 85%
5	Hectares (less than 2ha) of wetlands consumed	Low is Best	209	0	0% 100%
6	Hectares designated for riparian buffers	High is Best	36,182	59,675	61% 100%
7	Hectares of new parks to serve future residents	High is Best	190	274	69% 100%
8	Sq kms of connected open space (not fragmented by major roads)	High is Best	1,095	2,955	37% 100%
			Average:		46% 96%
9	Cost of new parks & wildlife corridors (\$ millions)		\$11	\$18	
Economy					
10	Population added within existing service areas	High is Best	36,700	66,100	49% 87%
11	Hectares of land allocated for harbour/marine industrial uses	High is Best	592	748	79% 100%
12	Increased hectares designated for mixed use	High is Best	1,524	2,742	44% 79%
			Average:		57% 89%
13	Cost of major growth-related infrastructure per capita		\$792	\$627	
Settlement					
14	Hectares of developable land in a designated centre.(gross)	High is Best	230	6,630	3% 78%
15	Percent of future rural devel't in compact nodes (clustered, small lots)	High is Best	0	61	1% 92%
16	No. of people accommodated thru "in-fill" devel't in urban core (supply)	High is Best	21,047	25,550	82% 100%
17	Average number of new units per acre (net density) - RURAL	High is Best	0.4	1.7	8% 31%
	Average number of new units per acre (net density) - R. COMMUTER	High is Best	0.5	1.1	40% 85%
	Average number of new units per acre (net density) - SUBURBS	High is Best	8.3	15	41% 74%
	Average number of new units per acre (net density) - URBAN CORE	High is Best	17.5	30	58% 100%
18	# of dwelling units added within the urban core	High is Best	6,290	15,025	41% 98%
19	Kms of new local piped services to serve future growth	Low is Best	461	272	54% 91%
20	Kms of new local streets to serve future growth	Low is Best	1,610	540	30% 89%
			Average:		36% 84%
21	Future cost of local municipal services per capita for new growth		\$1,504	\$1,122	
Transportation					
22	Kg/day of CO2 generated by auto travel	Low is Best	59,948	53,083	87% 98%
23	Kg/day of NOx generated by auto travel	Low is Best	11,117	11,350	100% 98%
24	Kg/day of hydrocarbons generated by auto travel	Low is Best	10,324	9,837	95% 99%
25	Vehicle trips per day (millions)	Low is Best	1.85	1.68	90% 99%
26	Average vehicle trip distance (km)	Low is Best	4.9	5.1	100% 96%
27	Population within 500 metres of public transportation	High is Best	305,493	356,958	70% 81%
28	Population within 1 km of high capacity transit service	High is Best	51,718	103,511	46% 92%
29	Annual transit ridership	High is Best	19	25	76% 100%
30	Peak vehicle kilometres	Low is Best	686,946	664,123	97% 100%
31	Number of collisions per day	Low is Best	15	14	97% 100%
			Average:		86% 96%
32	Private travel costs (car & transit) - per person, per year		\$2,850	\$2,725	
33	Transportation cost per capita (public capital & operating costs) *		\$50	\$46	

NOTES:

ALL NUMBERS ARE ESTIMATES FOR COMPARISON PURPOSES ONLY, AND SHOULD NOT BE USED IN ISOLATION.
DRAFT SUBJECT TO CHANGE.

Criterion...	Why it matters and How it was measured...
1. Number of watershed that will have more than 10% impervious area	When more than 10% of the land area in a watershed is paved or built up, contaminated stormwater can threaten lakes. This criterion represents the total number of watersheds that have greater than 10% impervious surface.
2. Hectares used for natural resource uses	Rural economies depend on natural resources that require large areas of land. This criterion includes areas zoned or used for agriculture, forestry or minerals.
3. Hectares protected as open space (natural areas)	Natural open space provides wildlife habitat, protects watercourses and supports recreation and tourism. The Foundation Strategy underlying each Alternative and the proposed Regional Plan would retain Crown lands, floodplains, wetlands, water supply areas, riverbanks, lakefronts and natural resource lands as public or private open space.
4. Hectares of land consumed for residential purposes	As more land is consumed for residential development, people have to travel further and services have to be provided over a wider area at greater cost. This criterion measures the total hectares of land likely to be consumed by residential development based on net density, after deducting a percentage of land for roads, parks, conservation and commercial uses.
5. Hectares (less than 2ha) of wetlands consumed	Wetlands provide a filter and storage area for stormwater, and support a diversity of wildlife. Wetlands greater than 2 hectares are already protected by legislation. This criterion, however, considers wetlands that are less than 2 hectares, which are not currently protected. The total includes wetlands both outside and inside the centres.
6. Hectares designated for riparian buffers	Riparian (stream/riverbanks and lakeshore) buffers are needed to protect water quality and moderate stormwater flow. A 20m buffer is currently legislated for forestry lands (private and crown). Existing and proposed buffers along and around water courses were calculated. These may be public or private.
7. Hectares of new parks to serve future residents.	Parks provide a respite from daily routines and an opportunity to be closer to nature. Parks required to serve population growth were calculated using the HRM Parkland Guidelines which call for district, community, and neighbourhood parks to serve specified population catchments.
8. Sq kms of connected natural areas (not fragmented by major roads)	Continuous natural areas enable wildlife to travel long distances in a minimally disturbed environment without being disrupted by major roads. Crown land makes up the majority of these corridors with some private lands providing further linkages. Currently only the Crown land is protected through legislation. An increase in designated natural areas will increase the likelihood of effective connectivity.

9. Cost of new parks and wildlife corridors (\$ millions)	Acquiring, developing, operating and maintaining parkland and wildlife corridors incurs costs which need to be considered in the light of the benefits to recreation, tourism and the environment. The cost estimates refer to parkland required to serve new growth, and recognize that some parkland is acquired directly from subdividers without financial outlay.
10. Population added within existing service areas	It is more cost effective to the municipality if new residents can be serviced by current infrastructure. The population estimated to locate within the current service boundaries was calculated.
11. Hectares of land allocated for harbour/marine industrial uses	The future of our port and marine industry is dependant on adequate land close to the water. Existing and potential port and marine industrial sites were identified for the Harbour Plan. The total area of the lands identified as priority was calculated.
12. Increased hectares designated for mixed use	When appropriate goods and services are located close to the people that need them, people are more likely to walk or cycle for some trips. The areas of land that would have a mixed use zone applied was calculated. Parkland and roads percentages were not included.
13. Cost of major growth-related infrastructure per capita	Efficient use of tax dollars is an important reason for planning regional growth. It is more costly to serve dispersed development with pipes and roads, or to add them later as an afterthought. The average cost per person to provide these facilities to serve new development was estimated.
14. Hectares of developable land in a designated centre.(gross)	Costs are reduced, convenience is served and the environment is spared when development is focused into appropriately selected centres. Calculations were based on vacant land in the Urban Core for the baseline. For the Alternatives and proposed Regional Plan, vacant lands within the proposed centres were also included.
15. Percent of future rural development in compact nodes (clustered, small lots)	A more compact form of settlement translates into more efficient use of land and better protection of the environment. This criterion considers the proportion of new dwelling units at net densities of 2 units per acre or more in the Rural and Rural Commutershed Subareas.
16. No. of people accommodated thru "infill" devel't in urban core (supply)	Redeveloping vacant or derelict lands within already built-up areas can accommodate some growth which would otherwise have required expanding services beyond existing limits. Such "infill" opportunities sites were identified, an acceptable density was applied, and the potential population capacity was calculated.
17. Average number of new units per acre (net density)	With good design and attention to the surrounding context, higher densities can reduce municipal costs while encouraging more people to walk, cycle or use transit. The average density was calculated for each Subarea, after deducting roads, parks, conservation and commercial uses.

18. # of dwelling units added within the urban core (demand)	Projections suggest there will be a continuing strong demand for new housing units within the Urban Core. This demand could be satisfied through redeveloping vacant or derelict properties, subject to zoning restrictions. A baseline analysis of existing zoning and a consideration of alternative densities provided the data for this criterion.
19. Kms of new local piped services to serve future growth	The length, and therefore the cost, of new pipes can be reduced when development is clustered into compact centres. This criterion is based on patterns of development sampled from existing HRM communities and applied to centres where similar net densities are proposed.
20. Kms of new local streets to serve future growth	The length and cost of new streets can be reduced when development is clustered into compact centres. This criterion is based on patterns of development sampled from existing HRM communities and applied to centres where similar net densities are proposed.
21. Future cost of local municipal services per capita for new growth	Local municipal services include not only pipes and streets, but also recreation programs, emergency services, waste disposal and other functions. The table shows the lifecycle cost (operating, repair and replacement) of local services, based on anticipated densities for future growth and per-unit cost assumptions.
22. Kg/day of CO ₂ generated by auto travel	Motor vehicle use contributes to carbon dioxide emissions, which trap heat in the atmosphere and are believed to contribute to global warming. This criterion is based on traffic modelling which considers likely origins, destinations and trip characteristics.
23. Kg/day of NO _x generated by auto travel	Nitric oxides pollute the air we breathe, and are associated with respiratory health problems. This criterion was calculated based on traffic modelling, as for CO ₂ above.
24. Kg/day of hydrocarbons generated by auto travel	Hydrocarbons are unburned fumes from petroleum products which pollute the air and are associated with cancer risk. As for No _x above, this criterion was calculated based on traffic modelling.
25. Vehicle trips per day (millions)	Lower levels of traffic can reduce congestion and postpone or eliminate the need for costly road expansion. This criterion was also calculated based on traffic modelling.
26. Average vehicle trip distance (km)	Shorter trips save time and energy consumption. This criterion was also calculated based on traffic modelling.
27. Population within 500 metres of public transportation	People are typically willing to walk up to half a kilometre to use a local bus. This criterion calculates the existing and projected number of people within 500 meters of an existing or proposed local transit route.

28. Population within 1 km of high capacity transit service	People are generally willing to walk further (up to 1 kilometre) to a higher-order transit service offering shorter trip times, frequent service and comfortable vehicles and stations. This criterion calculates the population within one kilometre of an existing or proposed ferry or bus rapid transit (BRT) station.
29. Annual transit ridership	Growth in public transit ridership is partly due to people switching from private vehicles, thus reducing traffic congestion. Ridership growth also improves farebox revenues, improving cost recovery. This criterion draws from the traffic model, and takes into account the type and extent of transit services in relation to where people live and where growth is likely to occur.
30. Peak vehicle kilometres	The number of vehicles on the roads and the distance driven during the busiest times of day are taken into account when considering road expansion. Peak hour traffic affects the largest number of people on a repetitive basis during daily commutes. This criterion draws from traffic modelling.
31. Number of collisions per day	Collisions are a public safety issue and generate medical and insurance costs. The transportation model was used to determine this criterion.
32. Private travel costs (car & transit) per person, per year	When people have to spend less on transportation, they can spend more on other things. The table shows what an average HRM resident pays each year to use a private vehicle and/or transit service.
33. Transportation cost per capita (public costs) *	The costs of operating, repairing and replacing transit and road systems are a significant element of the municipal budget. The costs shown are annual lifecycle costs, and for transit the farebox revenues have been factored into the calculation.

Attachment D

List of Research

Land Use Opportunities for Sustainable Development

Rural Community Form and Land Use Suitability

Greenfield Areas Servicing Analysis

Brownfield Analysis

Urban Core Residential Capacity Analysis

Housing Projections Study

Municipal Land Use Policy and Housing Affordability Study

Cost of Servicing Analysis

Transit and Land Use Form

Transit Oriented Development (TOD)and High Capacity Transit (HCT)

Opportunity Analysis

Transportation Demand Management Options

parking Supply Management Strategies

Water Resource Management Study

Options for On-Site and Small Scale Wastewater Management

HRM Economic Potential

Capital District Urban Design Study

Cultural Heritage Protection

Harbour Plan

Summaries of the research can be accessed at:

http://www.halifax.ca/regionalplanning/documents/SummaryofResearch_002.pdf