Main Street

Transportation and Streetscaping Study

prepared for

Ottawa-Carleton

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EXECUTIVE SUMMARY

The Main Street Traffic Claming and Streetscaping Study was initiated in Spring 1999 in response to the community's concerns regarding pedestrian and bicyclist safety; traffic speed, volume and congestion; and traffic cutting through on local streets within the study area. The study was conducted by Delcan Corporation and directed by an Advisory Committee made up of representatives from the community, the City of Ottawa and the Region of Ottawa-Carleton (Region).

The study focused on the locations where problems or issues were identified and existed. The goal was to address as many problem locations as possible with a plan that was acceptable to both individual residents and the community as a whole. To this end, the following objectives were established at the commencement of the study:

- involve the public in all phases of the study;
- identify all the relevant issues and problems;
- quantify existing conditions, including the location and magnitude of the problems, through supplementary data collection and analysis;
- identify and evaluate appropriate solutions to the problems; and
- develop a practical and effective staged implementation plan that will provide solutions to the problems (without transferring the problems elsewhere) and will maintain the necessary levels of vehicular accessibility for residences and businesses located within the study area.

Accordingly, the public was involved throughout the study duration, as follows:

- **Advisory Committee:** Provided study direction and included representatives from the entire study area.
- **Focus Groups:** Provided focussed comment and input. There were four focus group meetings in total (one meeting with each group), made up of representatives from the four quadrants of the study area.
- **Public Open Houses:** Provided comment and input at three key points during the study.
- **Public Walk-About:** Provided an opportunity to informally discuss transportation issues and to observe traffic conditions first-hand.

- **Staff and consultant availability:** In addition to the above, Regional staff and the Consultants were available throughout the duration of the study to answer questions.

Approximately 50 transportation-related problems and issues were identified by the community. (These are listed in Table 2: Transportation-Related Problems and Issue Identification in Section 2.5). Following completion of this list, the problems were verified, and where necessary, additional data was gathered.

A list of potential solutions to the problems and issues was developed and the technical feasibility of each potential solution was subsequently assessed. Not all solutions were found to be feasible and not all problems/issues had a solution. A table of the measures was developed that listed the recommended measures to be carried forward to implementation. This table forms the Recommended Transportation Plan for Main Street and is the final product of the study.

Included in the Recommended Transportation Plan for Main Street are approximate capital costs to implement each recommended measure, as well as a relative priority rating defined as follows:

- **Stage 1:** Low cost and highly effective measures that can reasonably be implemented within a 6-month timeframe.

- **Stage 2:** Medium to high cost measures requiring either additional data collection, construction and/or funding approval.

1 INTRODUCTION

Delcan Corporation was retained by the Region in Spring 1999 to conduct the Main Street Transportation and Streetscaping Study. The purpose of the study was to assess the flow of traffic, pedestrians and bicyclists on Main Street and to develop a transportation and streetscaping plan to meet the following objectives:

- reduce the speed of traffic through traffic calming and streetscaping treatments;
- improve the pedestrian accessibility, safety and mobility through reduction of conflicts with motor vehicle flow;
- improve the pedestrian environment by improving street appearance, reducing traffic speed, and reducing pedestrian proximity to traffic; and
- improve the environment for on-road bicycling.

Diversion of traffic to other roadways, particularly local roadways, was not an option.

This report details all aspects of the study, including the process followed, the recommended plan and its implementation strategy.

1.1 Study Area

The primary study area, located in the Ottawa East community, is Main Street from Colonel By Drive to the Rideau River, as well as the adjacent neighbourhood bounded by:

- Colonel By Drive on the west;
- Rideau River on the east;
- Colonel By Drive on the north; and
- Rideau River on the south (George McIlraith Bridge).

The study area, as shown in Figure 1, was divided into four sub-areas to provide a focus within which to discuss issues. The four sub-areas are:

- **Area 1:** *Highway 417* –north of Highway 417;
- **Area 2:** *Lees/Hawthorne* – north of Oblate Ave and south of Highway 417;
- **Area 3:** *West of Main* – west of Main St and south of Oblate Ave; and

- **Area 4:** *East of Main* – east of Main St and south of Oblate Ave.

1.2 Key Problems

There are several factors that influence the volume and characteristics of traffic travelling on the roadways within the study area:

- Main Street has mixed residential-institutional land use adjacent to it;
- Main Street serves as a primary arterial route connecting the downtown area and the southeast area of Ottawa;
- the proximity of the McIlraith (Smyth Road) Bridge across the Rideau River and Hawthorne Bridge across the Rideau Canal; and
- the proximity to Highway 417 (Queensway) interchanges with Nicholas Street and Less Avenue.

These factors contribute to the following general problems that are described in more detail in subsequent sections of this report:

- traffic speed on Main Street during the non-peak periods;
- congestion on Main Street during peak periods, particularly in the Hawthorne - Lees section;
- noise and vibrations from traffic on Main Street;
- accidents on Main Street;
- narrow sidewalks on Main Street;
- the effects of all of the above on pedestrian and bicycle safety and on the quality of life of area residents;
- pedestrian and traffic safety on Greenfield Avenue at Concord Street; and
- cut-through traffic on local streets such as Bower, Mason, McNaughton, Springhurst, Concord, Hawthorne (east of Main), Evelyn and Mutchmor.

1.3 Study Direction

The study was directed by an Advisory Committee comprising of representatives from the following:

- the community;
- the City of Ottawa (Licensing, Transportation and Buildings Branch of the Department of Engineering and Works);
- the Region of Ottawa-Carleton (Environment and Transportation Branch); and
- the consultant (Delcan Corporation).

All key decisions made during the course of the study, and all draft public presentation material, were reviewed at the appropriate Advisory Committee meetings (four) held during the course of the study.

1.4 Study Approach

The study was divided into the following five major activities. These were then further divided into a number of specific tasks.

- Compilation and Review of Background Data and Materials;
- Data Analysis and Confirmation of Community Issues;
- Development and Public Consultation on Alternative Solutions;
- Selection and Refinement of a Recommended Solution; and
- Study Documentation and Approvals.

1.5 Public Consultation

To maximize community buy-in and acceptance of the final plan, significant effort was made to involve the public in the on-going decision-making process. Community member involvement in the Advisory Committee and the Focus Groups, as well as at the Open Houses and the Walk-About, provided key input throughout the study. Community members also assisted in some aspects of the data collection, and played a major role in publicizing, to the community as a whole, both the open houses and the study in general.

1.5.1 Public Meetings

Three public Open Houses were held during this study:

- The first Open House was held on June 23, 1999. Its purpose was to inform the public that the study was under way and to outline the purpose of the study. In addition, the known transportation conditions within the study area were presented and described and the public was asked to identify any other transportation problems and issues. Possible generic solutions that may improve the transportation conditions in the study area were also described as well as the ensuing steps of the study. Approximately 150 people attended.

- The second Open House was held on December 01, 1999. Approximately 120 people attended. Its purpose was to present the preliminary draft plan of measures to address the problems and issues that had been identified and quantified (were possible). It was made clear that the draft plan was not final and measures could be added, removed, or modified.

- The third Open House was held on April 19, 2000 and was attended by approximately 50 people. At the Open House, the *Draft Recommended Transportation Plan* was presented for comment and input from the public.

All three Open Houses were advertised through flyers distributed directly to study area residences and businesses through a combination of volunteers, a commercial distributor and City staff. The Open Houses were also advertised in the *Ottawa Citizen* and the *Mainstreeter – The Ottawa East Community Voice*.

1.5.2 Focus Group Meetings

Focus Groups for each of the four sub-areas were formed. Each focus group was composed of about ten community representatives, City staff, and the consultant. Focus Group meetings, which were held at the Compilation and Review of Background Materials stage of the study, were used as a forum to gather and discuss the transportation problems and issues on a sub-area by sub-area basis. In addition, tentative solutions to some of these problems were discussed. The four Focus Group meetings were held on the following dates:

- **Area 1**: September 09, 1999;

- **Area 2**: August 11, 1999;
- **Area 3**: September 08, 1999; and
- **Area 4**: August 17, 1999.

1.5.3 Walk-About

A two-hour walk-about of the study area took place on June 28, 1999 and had approximately 25 participants. This session provided an opportunity for residents, other community members, the Advisory Committee, municipal staff, and the consultant to informally discuss transportation issues and to observe traffic conditions first-hand.

The walk-about started at Legget Park (at the corner of Main Street and Clegg Street) at 6:30 pm and proceeded through the study area. Residents were also invited to join the walk-about en-route.

2 EXISTING CONDITIONS

Existing data were used as much as possible to maximize the study resources available for public consultation and plan development. The collection of new data was limited to those locations that were considered necessary following the review of the identified problems and the available data. As a result, data collection was not fully comprehensive and gaps remain. For example, peak hour traffic volume counts were not available for every block of every street in the study area. However, sufficient data (either historical or new) were collected to provide the necessary insights into existing conditions.

The following sections discuss the existing conditions from a technical perspective—in other words, they represent physical or operational data. These data would be typically interpreted as either 'acceptable' or 'problematic' through the use of established standards, engineering principles or professional opinion. However, the weight accorded to public input for this study demands that technical interpretation be balanced with public perception and with the opinions of the study area residents who are affected by the conditions described herein.

2.1 Roadway Classifications

The roads in the study area may be classified as follows with respect to jurisdiction:

- Provincial Roads: *Highway 417* (controlled access highway).
- Regional Roads: *Main Street, Greenfield Avenue, Hawthorne Ave (west of Main Street), Lees Avenue.*
- National Capital Commission Roads: *Colonel By Drive.*
- City Streets: *the remaining roads in the study area*.

2.2 Traffic Controls

Along the Main Street corrdior, traffic signals are currently located at Riverdale Avenue, Clegg Street, Hazel Street, Oblate Avenue, Evelyn Street, Lees Avenue, Hawthorne Avenue and Greenfield Avenue. Other measures used to control traffic in

the study area include STOP signs, YIELD signs, ONE-WAY streets and turn restrictions. Road classification and traffic control measures within the study area are illustrated in Figure 2.

The existing volume-to-capacity (v/c) ratio of the most critical movement and the associated level-of-service (LoS) for both the AM and PM peak hours at each signalized intersection are provided in Table 1. The analysis indicates that all intersections are currently operating at LoS D or better in both peak hours, and therefore comply with the Region's v/c guideline of 0.90.

Table 1: Existing LoS at Signalized Intersections

Intersection	AM Peak Hour		PM Peak Hour	
	V/C Ratio	***LoS***	***V/C Ratio***	***LoS***
Main/Riverdale	0.52	A	0.85	D
Main/Clegg	0.71	C	0.78	C
Main/Hazel	0.71	C	0.71	C
Main/Oblate	0.73	C	0.71	C
Main/Evelyn	0.73	C	0.72	C
Main/Lees	0.60	A	0.51	A
Main/Hawthorne	0.74	C	0.76	C
Main/Greenfield	0.79	C	0.76	C

Note: Assumes 80-second cycle length; 1998 volumes

Following the most recent review of traffic on City streets in 1997, peak period turn restrictions were introduced at several locations: Main/Lees, Concorde/Lees Main/Springhurst, Rosemere/Springhurst, Main/McNaughton, Main/Bower, and Main/Mason. The majority of these turn-restrictions were implemented to reduce the volume of cut-through traffic, while the one banning the movement from southbound Main Street onto eastbound Lees Avenue was implemented to ease traffic congestion at the intersection.

2.3 Traffic Volumes and Speeds

Figure 3 illustrates the weekday morning and afternoon peak hour traffic volumes on some study area streets. All traffic volume counts, representing either 1997 or 1998 observed conditions, were provided by the Region from their traffic count program. Speed data gathered at during various periods over the past eight years were also provided by the Region. These data were supplemented by additional speed surveys conducted by area residents using a radar gun provided by the Region.

The peak hour volumes indicate that Main Street generally carries more volume in the morning peak hour than the afternoon peak hour, and that the directional split is slightly greater in the northbound direction than in the southbound direction during both peaks.

Main Street has a posted speed limit of 50 km/h. The traffic speed data indicates that average speeds on Main Street range between 60 and 65 km/h, and that the 85^{th} percentile speeds range between 69 and 73 km/h.

2.4 Collisions

Figure 3 also illustrates the intersection collision history along Main Street. It highlights the number of collisions per location over a three year period from 1995 to 1997. The total number of collisions is characterised by the number involving pedestrians and the number resulting in injuries. It is important to note that only collisions that were reported to the police are shown. Several study area “hot spots” include Main/Riverdale, Main/ St. Paul’s University, Main/Lees, Main/Hawthorne and Colonel By/Clegg.

2.5 List of Problems and Issues

The transportation-related problems and issues within the study area were identified and updated throughout the course of the study. In collecting the data, it was important to confirm, if possible, the identified problem/issue with existing data, or where necessary, by carrying out further data collection. Table 2 was compiled with input from the public via the Advisory Committee, the Focus Groups, the Walk-About, the Open Houses and from City staff, Region staff and the Consultant. It is important to note that the problems/issues listed in this table are those identified by the community prior to being verified (or not) with actual data and in some cases represent public opinion.

Table 2: Transportation-Related Problem/Issue Identification

No.	Problem or Issue
1	**Main Street:** Sidewalks adjacent to Main Street are perceived as unsafe due to proximity of high speed traffic.
2	**Main Street:** Pedestrians often splashed by vehicles as a result of narrow sidewalks and no boulevard on Main Street.
3	**Main Street:** Main Street hostile to cyclists due to high speed traffic and narrowness of lanes.
4	**Main Street:** Traffic volumes on Main Street are too high during peak hours.
5	**Main Street:** Red light "running" is a chronic problem.
6	**Main Street:** Pedestrian crossing of Main Street is dangerous. Residents on either side of Main Street feel isolated from one another because of the barrier effect of Main Street.
7	**Main Street:** High speeds on Main Street (difficult to get out of driveways and intersections, unsafe for pedestrians and cyclists, increased number of collisions)
8	**Main Street at Riverdale Avenue:** Vehicles on Main Street speed through intersection.
9	**Main Street:** Parking on Main Street is problematic because most drivers do not realize that parking is allowed during the off-peak
10	**Main Street at St. Paul's University:** Main Street is often blocked by southbound vehicles turning left into St. Paul's and vehicles parked in the right hand lane. This creates a potentially dangerous situation as impatient drivers have been observed driving erratically to bypass the blockage.

No.	Problem or Issue
11	**Main Street at St. Paul University:** Children walking to Lady Evelyn School from the Brantwood Park area are forced to use the sidewalks on Main Street in the winter. The sidewalk through this section is quite narrow and pedestrians are very close to the traffic.
12	**Main Street at Beckwith Road:** Sight lines for vehicles turning onto Main Street from Beckwith Road are poor due to stone pillars.
13	**Main Street at Clegg Street:** Vehicles turning left from Main Street onto Clegg Street sometimes create conflicts for pedestrians and cyclists on the west side of Main Street.
14	**Main Street at Clegg Street:** The curb cut at Clegg Street and Main Street does not line up with the painted pedestrian crossing and the push button on the SE corner of the intersection is too far from the crosswalk.
15	**Main Street / North of Riverdale Avenue:** Existing median restricts access to adjacent homes.
16	**Main Street at Riverdale Avenue / Mutchmor Road:** Bicycle connection should be formalized to connect Mutchmor Road to Main Street near Riverdale Avenue.
17	**Main Street / Toronto Street Area:** Lack of visibility from Main Street residential driveways, as well as Toronto St (located close to G. McIlraith Bridge; bridge curvature blocks view).
18	**Greenfield Avenue:** There is no sidewalk on the south side of Greenfield Avenue between Montcalm and Concord Street.
19	**Greenfield Avenue:** There is no sidewalk on the south side of Greenfield Avenue between the 417 on-ramp and King Edward.
20	**Greenfield Avenue:** Between Concord Street and Havelock Street: Crossing/merging at Greenfield Avenue is difficult and dangerous for cars, pedestrians and cyclists due to high traffic volumes and speeds on Greenfield Avenue and due to the obstructed views created by the roadway geometry.
21	**Greenfield Avenue:** Westbound traffic often “cuts the corner” when turning left onto Concord Street.
22	**Greenfield Avenue:** There is no official pedestrian route from Greenfield Avenue to Colonel By Drive (previously through the lands that now accommodate a housing development).
23	**Greenfield Avenue:** High traffic volumes and speeds contribute to excessive noise.
24	**Main Street at Greenfield Avenue:** Vehicles do not come to a complete stop when turning right on red signal, which is dangerous for pedestrians and cyclists.
25	**Concord Street at Colonel By Drive:** Pedestrian crossing of Colonel By Drive is difficult due to high traffic volumes during the peak hours.

No.	Problem or Issue
26	**Concord Street at Colonel By Drive:** Vehicles ignore one-way regulation on northern portion of Concord Street and access Colonel By Drive via paved pedestrian path (AM peak).
27	**Main Street - North of Harvey Street:** Lack of parking for commercial properties at the north end of Main Street.
28	**Hawthorne Avenue east of Main Street:** High speeds and volumes of cut-through traffic on Hawthorne Avenue.
29	**Hawthorne Avenue east of Main Street:** The one-way signs are not visible and not always obeyed.
30	**Main Street at Hawthorne Avenue:** The intersection of Main Street and Hawthorne Avenue has bad sight lines as a result of the left turn lanes on Main Street not being aligned face-to-face, as well as trees located on Scotiabank site.
31	**Main Street at Hawthorne Avenue:** High speed of traffic through the intersection.
32	**Lees Avenue at Concord Street:** Motorists disregard the turn restriction signs at Concord Street and Lees Avenue.
33	**Lees Avenue:** High speeds and pedestrian safety on Lees Avenue and at Lees/Main intersection.
34	**Main Street at Lees Avenue and Hawthorne Avenue:** Left turns from Main Street onto Lees Avenue and Hawthorne Avenue are dangerous for pedestrians and cyclists.
35	**Chestnut Street:** Speeding motorists on Chestnut Street (used as access to Lees Avenue and then Hwy 417).
36	**Main Street at Springhurst Avenue:** Right turn from Main Street onto Springhurst Avenue prohibited in the AM. Vehicles must go around the block and access from Main Street southbound (i.e., left turn). Alternatively, several vehicles use entrance and parking of corner lot [141 Main] as passage to Springhurst Avenue.
37	**Main Street at Springhurst Avenue:** Left turn from Main Street onto Springhurst Avenue is difficult.
38	**Springhurst Avenue / Evelyn Avenue Area:** Cut through traffic on local streets in the Springhurst Avenue / Evelyn Avenue area is hazardous to local residents and students attending Lady Evelyn School.
39	**Clegg Street:** High speeds and volumes of cut-through traffic on Clegg Street between Main Street and Colonel By Drive.
40	**Clegg Street:** Speeding traffic on Clegg Street (from Brantwood Park)

No.	Problem or Issue
41	**Echo Drive at Clegg Street:** Cyclists on Echo Drive crossing Clegg Street are at risk of being involved in a collision with vehicles turning from Colonel By Drive onto Clegg Street.
42	**Colonel By Drive at Clegg Street:** Lack of safe pedestrian crossing at Colonel By/Echo and Clegg Street.
43	**McNaughton Avenue:** High speeds of cut-through traffic on McNaughton Avenue
44	**McNaughton Avenue at McGillivray Street:** Intersection of McNaughton / McGillivray is wide and not well defined.
45	**Mount Pleasant Avenue:** Motorists on Mount Pleasant Avenue. Motorists drift into the wrong lane when driving around the sharp curve in the road.
46	**Marlowe Crescent:** Speeding traffic on Marlowe Crescent.
47	**Bullock Avenue at Centennial Boulevard:** Volume of cut-through traffic.
48	**Rideau River Drive:** Speed of vehicles entering from southbound Main Street.
49	**Study Area:** Lack of Rideau Canal / Rideau River crossings.
50	**Study Area:** Potential increase in cut-through traffic on neighbouring streets if Main Street has its capacity and speed reduced through traffic calming.
51	**Study Area:** Curb cuts at many of the pedestrian crossings are not low enough to properly allow people in wheelchairs or people with strollers to mount the curb.
52	**Study Area:** Excessive noise generated from traffic near H417 ramps.
53	**Study Area:** General disobedience of traffic laws.

2.6 Confirmation of Issues

Many of the problems and issues raised had been historically well documented by the City and/or the Region. In other cases, it was necessary to confirm that the problem or issue raised was indeed a problem and not simply perception. Different methods of confirmation were used depending on the problem or issue raised.

3 PROPOSED MEASURES

Measures to mitigate the foregoing problems and issues were developed with input from the public via the Advisory Committee, the Focus Groups, the Open Houses, and through correspondence from residents. In addition, several members of the Focus Groups and Steering Committee organized specific meetings with their neighbours to discuss and suggest measures that were acceptable to a wider range of the residents in their area.

3.1 The Evaluation Process

In many cases a range of measures were brought forward. In those instances, the most appropriate measure was selected as the recommended measure and the others were kept as 'contingency measures' that could be implemented if the preferred measure proved to be unsatisfactory or if there were significant changes in the area's transportation network such that traffic volumes were reduced. In other cases, there were no measures deemed appropriate, due, for example, to measures having high costs with little benefit, to shifting the problem to other neighbouring streets, or if during the confirmation process, the problem or issue was deemed as not being significant enough to warrant remedial action.

All candidate measures were discussed/reviewed with City and Region staff and subsequently included as a component of either; the *Draft Recommended Plan*; considered as *Longer Term Options for Main Street*; or classified as *Measures Not Carried Forward*. An opportunity for public comment and input was provided at Open House 3, following which the *Draft Recommended Plan* was modified as appropriate.

3.2 Types of Measures Found Within the Plan

The recommended plan contains a variety of measures used to address the foregoing problems and issues. These types of measures can be described as one of the following:

- **Traffic Control Measures:** *includes such measures as signage and signals.*

- **Traffic Calming Measures***: includes such measures as curb extensions, speed humps, intersection re-design, pedestrian level lighting and gateway development.*

- **Enhanced Pedestrian and Cyclist Facilities:** *includes such measures as wider sidewalks, protected street crossings, shorter street crossings and delineated bicycle lanes.*

3.3 Priority Rating

A priority rating was given to the measures so that they could be implemented in the most efficient manner:

- **Stage 1**: *Short-term measures that would be carried out within 6 months*. These measures would be highly effective and low in cost, or were deemed urgent.

- **Stage 2**: *Longer-term measures that would be implemented beyond 6 months.* These measures would be higher in cost, may require additional data collection, or would require major construction or other major facilities to be in place first (i.e., implemented when the subject road was scheduled for reconstruction).

The specific implementation of priority of Stage 2 measures will be determined by the Region's staff and the Regional Councillor for the area.

3.4 Costs

The approximate capital costs associated with each recommended measure have been estimated in consultation with appropriate City and Region staff. Some of these will have to be confirmed at the design stage where construction is involved. Other costs, such as maintenance and enforcement have been excluded. A summary of costs, categorized by the above-noted priority rating may be found in Section 4.

3.5 The Recommended Measures

Table 3 lists the recommended measures that form the Transportation Plan for Main Street and the adjacent neighbourhoods. For each recommended measure the following is provided: a brief description of the measure's anticipated impact; an estimated capital cost, where appropriate, to implement the measure; and a relative priority rating.

Sketches of selected recommended measures are contained in Appendix A.

Table 3: Recommended Transportation Plan for Main Street and the Adjacent Neighbourhoods.

No.	Location	Recommended Measure	Cost	Stage
1	**Main Street**	**As a test measure, permit parking in the "non-peak" direction on Main Street during peak hours.** *Parking would be permitted on the southbound curb lane of Main Street at all times except during the afternoon peak period, and on the northbound curb lane of Main Street at all times except during the morning peak period. This measure would buffer at least one sidewalk for pedestrians during peak periods. Given the potential safety and capacity issues, this measure should be implemented on a trial basis and monitored.* *Analysis indicates that this measure may result in deteriorated level of service at several intersections (v/c ratio greater the prescribed 0.90 guideline established by the Region), which could be overcome with an approximately 10% reduction in traffic volume. Also, it is difficult to determine if there is sufficient demand for parking throughout the day to make this measure effective and avoid problematic weaving around the occasional parked vehicle.*	$200 per sign	1

No.	Location	Recommended Measure	Cost	Stage
2	**Main street**	**Consider extending the limits of the existing on-street parking provision southward.** *Currently the bounds for on-street parking along Main Street are defined in the south by the Bower/Beckwith intersection – no on-street parking exists between south of this intersection and the McIlraith Bridge. Consideration should be given to moving this southern boundary to the extent that the safety of northbound vehicles exiting the Bridge, as well as vehicles parked on Main Street, is not comprised.* *On the east side of Main Street, consider extending the southern limit of the on-street parking provision to just north of the Riverdale Avenue intersection. On the west side, consider extending the southern limit of the on-street parking provision to just north of the Mason Terrace (the limit on the west side of Main Street may be extended further south pending the proposed intersection modifications at Riverdale Avenue). The measure should be implemented on a trial basis and monitored for operational and safety implications.*	$200 x 4 = $800 (signs)	1
3	**Main street**	**Paint the parking spaces on both sides Main Street.** *Parking stalls that are clearly defined may encourage drivers to park on Main Street during the off-peak, and also may slow vehicles driving in the curb lane.*	$2,000 (paint)	1
4	**Main Street**	**Construct wider sidewalks along Main Street.** *Existing sidewalk widths range between 1.3m and 1.5m for the section of Main Street between*	$100,000	2

No.	Location	Recommended Measure	Cost	Stage
		Toronto Street and Evelyn Avenue. Where feasible (i.e., clearance from trees, utility poles, etc…), it is recommended that a 2.0m wide sidewalk be provided when portions of the road are reconstructed or when a sidewalk widening program is initiated. *With regards to widening the sidewalk on the private property side of the existing sidewalks, there appears to be greater opportunity for sidewalk widening on the west side of Main Street between Toronto Street and Evelyn Avenue. The available space between the current edge of sidewalk and property line on the west side ranges generally between 1.5 to 2.5m (where widening would be appropriate). The sidewalk is already quite wide in front of portions of the commercial strip (immediately north and south of Hazel Street) and adjacent to the parking lot of Imaculatta High School. There is a space constraint from existing edge of sidewalk to property line, in the area of the Cuban Embassy (i.e., near Mason Terrace).* *On the east side of Main Street, less space is available for sidewalk widening (0.5 to 1.0m) between Toronto Street and Evelyn Avenue. There is very little opportunity for widening south of Toronto Street, and marginally more space along the entire stretch of the east side of Main Street to Evelyn Avenue. Existing placement of utility poles and trees is another issue to be considered.* *The current pavement width of Main Street is 13.4m comprising of two 3.6m curb lanes and two 3.1m centre lanes. Prior to any future sidewalk expansion or road reconstruction program, the*		

No.	Location	Recommended Measure	Cost	Stage
		potential to further reduce these lane widths in order to provide wider sidewalks should be reviewed as widening the sidewalk into the existing roadway may be more feasible than widening back of sidewalk. This option would probably be more appealing to residents fronting Main Street as well.		
5	**Main Street**	**Provide more streetscaping in the form of trees, street furniture, banners and pedestrian-scale lighting where space permits.** *Streetscaping can be used an effective measure to calm traffic by visually reducing the scale of the road. A detailed streetscaping plan, however, is beyond the scope of this study.*	$100,000	2
6	**Main Street**	**Install larger, more visible "Speed Limit" signs along Main Street.** *Over-sized "Speed Limit" signs measure 90cm x 150cm, which represents a 200% increase in area versus a standard maximum speed sign (60cm x 75cm). A Sub Work Order has been issued by the Region for placement of an over-sized sign facing northbound traffic on the McIlraith Bridge (150m south of Toronto Street). In addition, the existing sign facing northbound traffic and located north of Riverdale Avenue will be moved to the hydro pole at 383 Main Street to improve the visibility of the sign. There are currently four speed limit signs per direction on Main Street between the Bridge and H417.*	$200 x 8 = $1,600 (signs)	1
7	**Main and Toronto**	**Make the "Hidden Intersection" sign more prominent.** *The current signage located on the McIlraith Bridge is difficult to read. The recommendation is to replace the sign with a more prominent*	$200 (sign)	1

No.	Location	Recommended Measure	Cost	Stage
		"Curve/Hidden Intersection" sign to be positioned on the lamp standard that is located approximately 115m south of the Main / Toronto intersection. It is important to remind drivers that a hidden intersection is ahead and that they are entering a residential area with a posted speed limit of 50 km/h.		
8	**Main Street**	**Install a "flashing beacon" facing northbound traffic on the McIlraith Bridge.** *This warning may help to slow northbound traffic approaching Main Street from the McIlraith Bridge. The measure could be done in conjunction with the relocation/provision of a more prominent "Curve/Hidden Intersection" sign identified in Item 7 above.*	$2,300	1
9	**Main Street**	**Implement a community "gateway" at the south end of Main Street (between Riverdale Avenue and the McIlraith Bridge) in conjunction with the redesign of the Main Street / Riverdale Avenue intersection as per Item 11.** *This will create an enhanced pedestrian environment and increase driver awareness that they are entering an area where reduced speed is appropriate. Elements could include pedestrian level lighting, pole mounted banners, and additional landscaping/streetscaping.*	$20,000 to $50,000 (depending on the extent of street-scaping and land-scaping)	2
10	**Main Street**	**Consider installing bollards or guiderail in front of the residential properties located on the east side of Main Street between the McIlraith Bridge and Toronto Street as protection from northbound vehicles straying off the road.** *There have been several occurrences of northbound vehicles straying off the road as they*	$2,000 to $5,000	1

No.	Location	Recommended Measure	Cost	Stage
		enter Main Street from the McIlraith Bridge. For example, in the past year outside of 457 Main Street, three trees have been destroyed by two separate out-of-control vehicles. If acceptable to individual residents and space permitting, the bollards or guiderail would help to protect residents and their property.		
11	**Main and Riverdale**	**Remove intersection channelization and bus bay, and introduce landscaping/streetscaping as per Item 9.** *This would reduce the speed at which vehicles could turn onto/off of Riverdale Avenue and provide additional land for development of a gateway, including landscaping, streetscaping, and pedestrian level lighting.* *During the most critical PM peak hour, preliminary analysis has indicated that removing the southbound channelization will impact intersection performance. Assuming existing traffic volumes, a single through lane and a shared through-right turn lane on the southbound approach will adversely affect the v/c ratio of the northbound left-turn movement from Main Street onto Riverdale Avenue (currently v/c = 0.85, projected v/c = 1.30). The provision of a protected phase for this left-turn movement would alleviate the capacity constraint (projected v/c = 0.43) and also negate the need for a separate southbound right turn lane (projected v/c = 0.73) from Main Street onto Riverdale Avenue. The need for a southbound right-turn lane should be reassessed prior to construction.*	$250,000	2

No.	Location	Recommended Measure	Cost	Stage
12	**Main and Riverdale**	**Shorten the north end of the median and shift the southbound lanes towards the road's centreline.** *This would allow for a wider sidewalk on the west side of Main Street south of Mason Terrace. The curb off-set from the adjacent private garage is also increased.*	Included in Item 11 above	2
13	**Main and Riverdale**	**Make the centre portion of the north median mountable, or replace the concrete in the centre area of the median with asphalt.** *This would improve access to some adjacent residences and minimize the "suburban" feel of this intersection.*	Included in Item 11 above	2
14	**Main and Riverdale**	**Introduce a westerly shift of the median of Main Street through the Riverdale Avenue intersection.** *This results in a wider median and also introduces a curve into the roadway which could have a traffic calming effect.*	Included in Item 11 above	2
15	**Main and Riverdale**	**Locate planters on the widened median to reinforce the "gateway" treatment.** *This would require community involvement to plant/maintain the planter during the growing seasons.*	$10,000	2
16	**Main and Riverdale**	**Provide a paved multi-use pathway to connect Mutchmor Road to the reconstructed Main Street / Riverdale Avenue intersection.** *This should be designed in consultation with the City of Ottawa and the appropriate bicycle and pedestrian groups.*	$1,000 to $1,500	2

No.	Location	Recommended Measure	Cost	Stage
17	**Main and Bower/Beck with**	**Provide a pedestrian-actuated traffic signal to allow protected pedestrian movements across this intersection.** *A pedestrian-actuated signal could be installed at this location. A small piece of property (approximately 1m x 2m) may have to be acquired to accommodate traffic signal placement and avoid pillar relocation.* *Prior to implementation, it is recommended that the Region conduct a vehicle and pedestrian count at this intersection to determine which of the north or south legs of the intersection is the most appropriate location for the pedestrian signal.* *There are constraints at both locations due to pillar locations, hydro poles, overhead wires and lack of right-of-way.*	$55,000 (plus possible property acquisition and elevation of overhead hydro line)	2
18	**Main and Beckwith**	**Relocate the pillars presently located at this intersection either to improve safety (visibility), or to accommodate the above-noted pedestrian-actuated signals without the need for property acquisition.** *This may involve moving them back slightly (i.e. east) or to a different site along Main Street. The final home for the pillars may be dictated by the decision to install a pedestrian signal at this location. The pillars, in their existing location, block sight lines and would likely interfere with signal installation unless additional property could be acquired as per Item 15. The historical significance of the pillars should be weighed against the need for pedestrian-actuated traffic signals and the availability of property.*	To be determined	2

No.	Location	Recommended Measure	Cost	Stage
19	**Main and Clegg**	**Add "audible" crossing technology at this location.** *Given the current ranking system used by the Region and the current level of funding, the Main / Clegg intersection should be fitted with an audible signal in approximately three years. This wait time may be reduced if other sources of funding were made available.*	$12,000 to $30,000 (depending on the existing controller and wiring needs)	2
20	**Main and Clegg**	**Across the south leg of Main Street, either relocate the existing crosswalk to line up with the existing curb cut or provide a curb cut on the east side of Main Street at the existing crosswalk location.** *If the crosswalk remains in its current location, investigate the possibility of relocating the pedestrian actuation button at the southwest corner to the pole located closer to the actual crosswalk.* *These modifications would better accommodate pedestrian crossings at this location.*	$500 (paint) Cost of button relocation unknown.	1
21	**Main and Hazel**	**Relocate the driveway to the parking lot at St. Paul University to align with the signalized intersection at Hazel Street.** *This would result in a safer intersection configuration. However, there will be expense involved in this re-alignment based on the current location of trees and signal standards, as well as the need for fill and a new layout for the parking lot.* *With regard to intersection operations, consideration should be given to prohibiting east-west through movements (bicycles excepted) on Hazel Street when this intersection modification is*	$50,000 to $60,000	2

No.	Location	Recommended Measure	Cost	Stage
		implemented.		
22	**Main Street**	**Consider implementing a "Community Safety Zone" from Hawthorne Avenue to Hazel Street.** *A speed survey conducted on Main Street between Hawthorne Avenue and Hazel Street indicated an average vehicle speed of 64 km/h. The 85th percentile speed was found to be approximately 70 km/h.* *Fines for speeders are usually doubled in such a zone. The success of this measure will rely on providing effective enforcement, which is beyond the scope of this study. The Region is currently evaluating the effectiveness of this programme.*	$200 x 4 = $800 (signs) plus enforce-ment costs	1
23	**Main and Oblate**	**Provide a clearer pedestrian walk by using more prominent pavement markings (i.e., piano bar type markings).** *This would result in a better-defined pedestrian crossing.*	$500 (paint)	1
24	**Main and Evelyn**	**Provide a clearer pedestrian walk by using more prominent pavement markings (i.e., piano bar type markings).** *This would result in a better-defined pedestrian crossing.*	$500 (paint)	1
25	**Main and Evelyn**	**Install larger "School Zone" signs.** *There is currently one blue "School Zone" sign in both the northbound and southbound directions.*	$200 x 2 = $400 (signs)	1

No.	Location	Recommended Measure	Cost	Stage
26	**Main and Lees**	**Install optically programmable traffic signal heads facing northbound drivers and focus them to ensure that drivers approaching Evelyn Avenue, a short block south of the Lees Avenue intersection, are not distracted by the displays at this intersection.** *The Region has indicated that if it can be determined that that there is an actual collision problem due to the distance between traffic signals, optically programmable signal heads may be appropriate.*	$5,000 per signal head	1
27	**Main and Lees**	**Provide a clearer pedestrian walk by using more prominent pavement markings (i.e., piano bar type markings).** *This would result in a better-defined pedestrian crossing.*	$500 (paint)	1
28	**Main and Lees**	**Consider providing a separate east-west pedestrian phase at this location.** *Vehicles turning left from Lees Avenue westbound to Main Street southbound tend not to yield to pedestrians crossing Main Street (south leg). Pedestrian safety may be improved by adding a separate pedestrian walk phase (or by delaying vehicle discharge from Lees Avenue during the initial portion of the walk phase). Provision of push buttons at the east-west south side crossing should also be considered so the pedestrian phase may be activated.*	N/A	1

No.	Location	Recommended Measure	Cost	Stage
29	**Main and Hawthorne**	**Install optically programmable traffic signal heads facing northbound drivers and focus them to ensure that drivers approaching Lees Avenue, a short block south of the Hawthorne Avenue intersection, are not distracted by the displays at this intersection.** *The Region has indicated that if it can be determined that that there is an actual collision problem due to the distance between traffic signals, optically programmable signal heads may be appropriate.*	$5,000 per signal head	1
30	**Main and Hawthorne**	**Add and/or lower "ONE-WAY" signs / "DO NOT ENTER" signs at the entrance to Hawthorne Avenue.** *This would more clearly identify Hawthorne Avenue as a one-way street.*	$200 x 2 = $400 (signs)	1
31	**Main and Hawthorne**	**Provide a clearer pedestrian walk by using more prominent pavement markings (i.e., piano bar type markings).** *This would result in a better-defined pedestrian crossing.*	$500 (paint)	1
32	**Main and Lees**	**Consider implementing an advanced stop bar for bicycles to better accommodate southbound cyclists turning left at this intersection.** *The appropriateness/feasibility of this measure should be reviewed by the Region and City in consultation with bicycle groups.*	$200 (paint)	1

No.	Location	Recommended Measure	Cost	Stage
33	**Main and Greenfield**	**Consider implementing a "walk" signal that would be displayed automatically during the westbound green phase.** *Presently, if the pedestrian button is not pressed then a "don't walk" signal is displayed and pedestrians arriving mid-phase are forced to wait another complete cycle. For the "walk" signal to be displayed automatically, the signal would have to operate in a fixed mode, which is possible only when traffic volumes are sufficiently high.*	N/A	1
34	**Main Street**	**Consider implementing raised intersections at key intersections along Main Street from Lees Avenue south to the McIlraith Bridge.** *Key intersections may include Main/Hawthorne, Main/Lees and Main/Clegg. This will be evaluated at a later date pending the findings of a current report commissioned by the Region and City to study the effects of raised intersections and speed humps on emergency and transit vehicles.*	$30,000 per location	2
35	**Greenfield Avenue**	**Construct a sidewalk (2m) on the south side of Greenfield Avenue (between Montcalm Street and Concord Street).** *This would improve pedestrian mobility and safety.*	$7,000	2
36	**Greenfield Avenue**	**Consider widening the existing sidewalks to 2.0m on both sides of Greenfield Avenue (between Concord Street and the overhead bridge structure to the east).** *The existing sidewalks along this portion of Greenfield Avenue are 1.5m. Wider sidewalks would improve pedestrian safety in this relatively high volume/high speed section of Greenfield*	$35,000	2

No.	Location	Recommended Measure	Cost	Stage
		Avenue. The need for this measure should be reviewed following the action taken in Items 37 and 39.		
37	**Greenfield Avenue**	**Consider allowing parking on the north side of the street from Concord Street west to Havelock Street.** *The current pavement width is 12m. Allowing parking on this side of the street and introducing curb extensions (Items 38 and 40) would reduce the vehicle speed and reduce the pedestrian crossing distance. This measure can likely be accommodated as long as proper sight lines are protected for traffic exiting the adjacent residential development.*	$200 x 4 = $800 (signs)	1
38	**Greenfield and Montcalm**	**Construct curb extensions (2m) at the southeast, southwest, and northwest corners of the intersection to protect on-street parking areas and reduce the pedestrian crossing distance.** *A speed survey conducted on Greenfield Avenue between Concord Street and Montcalm Street indicated an average vehicle speed of 54 km/h. The 85th percentile speed was found to be 61 km/h. At the time of design, consider locating bollards in the curb extension to improve the protection of pedestrians and cyclists waiting to cross the street.* *Vehicles currently park on the south side of Greenfield Avenue between Montcalm Street and Concord Street (parking is not permitted on the north side along this street).*	$5,000 x 3 = $15,000	2

No.	Location	Recommended Measure	Cost	Stage
39	**Greenfield and Concord**	**Consider installing all-way "STOP" sign control at this intersection.** *As the adjacent new residential development is now fully occupied, the Region conducted August 2000 traffic counts at this intersection to determine if all-way "STOP" sign control is warranted. With these current volumes, multi-way STOP control was only 31% warranted. Currently the visibility of traffic flow on Greenfield Avenue is poor from the side street approaches.*	$2,000	2
40	**Greenfield and Concord**	**Construct curb extensions at the southeast and southwest corners of the intersection and construct a narrow centre median (1.5m) on the north leg of Greenfield Avenue.** *These measures will help to reduce the amount of pavement, protect the on-street parking, reduce pedestrian crossing distances and better define traffic flow through this intersection.* *A speed survey conducted on Concord Street at Greenfield Avenue indicated an average vehicle speed of 57 km/h. The 85th percentile speed was found to be 65 km/h. At the time of design, consider locating bollards in the curb extension to improve the protection of pedestrians and cyclists waiting to cross the street. One or two parking spaces would be lost on the north side of Greenfield Avenue.*	$15,000	2
41	**Concord and Colonel By Drive**	**Install bollards across the entrance to the multi-use path located adjacent to Colonel By Drive.** *This would prevent vehicles from illegally accessing Colonel By Drive from Concord Street.*	$2,000 to $5,000	1

No.	Location	Recommended Measure	Cost	Stage
42	**Hawthorne Avenue (east of Main)**	**Pending the implications of other measures proposed for the street, consider installing two speed humps on Hawthorne Avenue.** *Recent speed surveys (March 2000) indicated an average speed of 45.1 km/h, an 85th percentile speed of 51 km/h and 81% compliance. Another speed survey (April 2000) conducted by City staff suggested even an lower average speed and 85th percentile values that also do not warrant installation of speed humps. Some street residents perceive, however, actual speeds to be higher than recorded during these isolated counts.* *Therefore, given the results of the latest speed surveys and the other measures being proposed for Hawthorne Avenue (39-41) as part of this Plan, it is recommended that an assessment of these measures be completed to determine if speed humps are warranted at this location.* *The City of Ottawa is currently evaluating the success of speed humps that have been installed in the past, and do not anticipate approving installation of additional humps in the current year. Speed humps, however, may be a recommended traffic calming measure for Hawthorne Avenue (depending on the findings of additional speed surveys) should the suggested locations be acceptable to the adjacent residents.* *For a desired 85th percentile speed of 50 km/h, speed humps should be spaced at 125m intervals on local streets. Furthermore, they should not be located within 75m of a signal, or within 15m of an intersection. Grades greater than 8% should also*	$4,000 x 2 = $8,000	1

No.	Location	Recommended Measure	Cost	Stage
		be avoided. To meet these guidelines, the first hump on Hawthorne could be placed between 75m and 90m from Main Street (119 to 129 Hawthorne) and the second about 125m downstream just prior to the drop in grade on the approach to Concord Street (141 to 149 Hawthorne).		
43	**Hawthorne Avenue (east of Main)**	**Consider providing a delineated edge line along the south curb of Hawthorne Avenue at an approximate 2.0m distance from the curb.** *This would better control traffic flow along this wide one-way street, would buffer the sidewalk from the adjacent traffic and should help promote slower vehicle speeds through a visual narrowing of the road.* *Alternatively, the City is also considering the provision of a contra-flow bicycle lane along the north curb of Hawthorne Avenue. The implications of this measure, including a potential shift of on-street parking to the south side of the street, require further study.*	$1,000 to $2,000 (paint)	1
44	**Hawthorne Avenue (east of Main)**	**Improve the one -way street signage by posting additional "ONE-WAY" signs mid-block.** *Additional mid-block signage may help to alleviate any confusion, especially for those vehicles exiting the parking facility of the Scotia Bank (access off of Hawthorne Avenue) located at 65 Main Street.*	$200 x 2 = $400 (signs)	1
45	**Hawthorne and Concord**	**Add a curb extension (1.5m) at the northwest corner of the intersection in conjunction with the City's planned year 2000 road works.** *This would more clearly identify Hawthorne Avenue as a one-way street, especially for those vehicles travelling northbound on Concord Street. The curb*	$5,000 x 1 = $5,000	1

No.	Location	Recommended Measure	Cost	Stage
		extension would also shorten the pedestrian crossing distance.		
46	**Hawthorne Avenue (west of Main)**	**Review the potential of extending the sidewalks into the curb lane (between Main Street and Colonel By Drive) in order to increase sidewalk width.** *As the current curb lane widths are 4.25 and 4.50m wide (including parking spaces), there may be the potential to reduce the width of these lanes to better accommodate pedestrians. The location of the hydro/light poles along the south curb edge conflict with this potential widening and is a consideration.*	$40,000	2
47	**Lees Avenue**	**Consider installing raised intersections on Lees Avenue.** *This will be evaluated at a later date pending the findings of a current report commissioned by the Region to study the effects of raised intersections and speed humps on emergency vehicles.*	$30,000 per location	2
48	**Lees and Rosemere**	**Construct a curb extension (2m) on the northwest side to reduce the pedestrian crossing width of Lees Avenue** *This would shorten the pedestrian crossing distance of Lees Avenue by 2m, protect vehicles parked on the north side of Lees Avenue, and would accommodate the existing bus stop at this location.*	$5,000 x 1 = $5,000	2
49	**Lees and Concord**	**Construct a curb extension (2m) on the northeast corner to reduce the pedestrian crossing width of Lees Avenue.** *This would shorten the pedestrian crossing distance of Lees Avenue by 2m, protect vehicles*	$5,000 x 1 = $5,000	2

No.	Location	Recommended Measure	Cost	Stage
		parked on the north side of Lees Avenue, and would accommodate the existing bus stop at this location.		
50	**Graham Street**	**Provide a contra-flow bicycle lane on Graham Street.** *Graham Street is currently one-way westbound. The City expects the installation of an eastbound bike-lane to be undertaken in the summer of 2000 (subject to Council approval).*	$35,000 (composed of $2,000 for paint and $33,000 for signal at Main St)	2
51	**Clegg Street (west of Main)**	**Implement curb extensions (2m) on Clegg Street at the northwest corner of each of Glenora Street, Drummond Street and McGillivray Street.** *Curb extensions would reduce the pedestrian crossing distance and protect parked vehicles parked along the north curb. There are presently no parking restrictions on Clegg Street west of Main Street.*	$5,000 x 3 = $15,000	2
52	**Colonel By Drive /Echo and Clegg**	**Reduce the curb radii at these intersections.** *This would better define the intersections and provide a safer pedestrian and bicyclist environment.*	$5,000 to $10,000	2
53	**Colonel By Drive and Clegg**	**Provide an additional pedestrian crossing of the median at the south side of the intersection.** *Presently no path exists on the south side of Clegg Street between Colonel By Drive and Echo Drive.*	$1,500 to $2,000	2
54	**Colonel By Drive and Clegg**	**Consider providing a pedestrian actuated traffic signal at the intersection.** *The Region and City should discuss the feasibility of this measure with the NCC. Pedestrian safety would be improved. Recent August 2000 traffic*	$55,000	1

No.	Location	Recommended Measure	Cost	Stage
		counts indicate that traffic control signals are 79% warranted at this location.		
55	**McNaughton and McGillivray**	**Provide either a curb extension at the southeast corner of this intersection, or provide a centre landscaped traffic island to reduce the amount of pavement and provide more order to the intersection.** *Would need to discuss the options further with adjacent residents.*	$5,000 to $10,000	2
56	**Rideau River Drive**	**Erect a "Playground Advance" sign at the appropriate location upon leaving southbound Main Street.** *This measure would warn drivers that there is a park ahead and hopefully reduce vehicle speed and/or increase driver awareness. Vehicles typically diverge from southbound Main Street onto Rideau River Drive at rather high speeds.*	$200 (sign)	1
57	**Rideau River Drive**	**Modify the intersection geometry of Rideau River Drive (at the bend) with the adjoining cul-de-sac to reduce the turning radius and increase the separation of the road from the adjacent homes.** *This measure would slow traffic as it transitions around the bend and also improve visibility at the intersection with the small cul-de-sac. It involves relocating to the east a portion of curb located in front of 1966 Rideau River Drive into the exiting travel lane (requires relocation of an existing catch basin), and pushing to the east a portion of curb that defines the centre island of the cul-de-sac.* *These modifications should be considered for implementation during future road reconstruction.*	$15,000	2

No.	Location	Recommended Measure	Cost	Stage
58	**Study Area**	**Provide lower curbs at pedestrian crosswalk locations (where required) to better accommodate all users of the crosswalk.** *This will be rectified as soon as possible by Regional staff.*	To be determined	1

3.6 Longer Term Options for Main Street

The measures presented in Table 4 could be implemented if/when additional road capacity is provided elsewhere in the southeast sector of Ottawa that would attract traffic volume away from Main Street.

Table 4: Longer Term Options for Main Street.

No.	Location	Recommended Measure	Cost	Stage
A1	**Main street**	**Physically narrow Main Street from four to three lanes between Riverdale Avenue and Oblate Avenue.** *This would allow for wider sidewalks and/or a boulevard, or bicycle lanes, or a protected parking lane on one-side (i.e., bulb-outs). The centre lane would be used for opposing left-turns.* *Analysis indicates a reduction in current volume up to 30% would be required to meet the Region's 0.90 v/c guideline for acceptable intersection performance.*	Unknown at this time.	*2*
A2	**Main street**	**Allow all day parking on both sides of Main Street between Beckwith/Bower Avenue and Oblate Avenue to buffer the sidewalks from the travel lanes.** *Analysis indicates a volume reduction in the order of at least 30% would be required to meet the Region's 0.90 v/c guideline for acceptable intersection performance.*	$2,000 (paint)	2

3.7 Measures Not Carried Forward

The following Table 5 lists those measures not carried forward to the Transportation Plan for Main Street and the adjacent neighbourhoods. For each measure on the list, a brief justification is provided.

Table 5: Measures Not Carried Forward for Main Street and the Adjacent Neighbourhoods.

No.	Location	Measure	Reason(s) for Not Carrying Forward
100	**Main Street**	Restrict vehicular use of curb lanes during the off-peaks.	*Current on-street parking provision accomplishes the same effect.*
101	**Main Street**	Introduce bollards between the sidewalk and the roadway at intersections.	*Insufficient space for installation given pedestrian and snow plow requirements.*
102	**Main Street**	Relocate sidewalk adjacent to St. Paul University to be behind the existing line of trees.	*The Region's Urban Forester indicated that this placement this may be detrimental to tree survival. Cost and lighting are also an issue.*
103	**Main Street**	Provide path consisting of crushed stone behind St. Paul University.	*Cost and maintenance issues.*
104	**Main Street**	Introduce a variety of TDM measures (i.e., travel restrictions, increased fuel prices, transit and ride-sharing incentives, Park'n Ride at Riverside Hospital).	*Beyond the scope of the study.*
105	**Main Street**	Install speed bumps on shoulder lane only to discourage travel in this lane.	*Would create speed imbalance in adjacent travel lanes which is considered unsafe. Vehicle weaving and road maintenance is also an issue. No precedent in Canada was identified.*
106	**Main Street**	Encourage transit and heavy vehicles to use median lane during off-peak to eliminate vibration.	*Current on-street parking provision should encourage this.*
107	**Main Street**	Implement trolley cars.	*Beyond the scope of the study.*

No.	Location	Measure	Reason(s) for Not Carrying Forward
108	**Main Street**	Shorten the response time on pedestrian activated signals.	*The traffic signals along Main Street operate in a synchronized manner from 6:30 to 22:30. Since shortening the pedestrian response time would require the signals to operate in a free mode, the result would be increased delay to all users of the road, increased fuel consumption and vehicle emissions, and increased noise pollution.*
109	**Main Street**	Lengthen walk time to accommodate seniors and young children, especially during winter months.	*The signals are currently timed to accommodate seniors and young children. The duration of the "walk" and flashing "don't walk" is set based upon the width of the crossing and pedestrian walking speed.*
110	**Main Street**	Mount red-light cameras for enforcement purposes.	*The Region has not identified any intersections within the Main Street Study Area for inclusion in the Red-Light Camera Program..*
111	**Main Street**	Synchronize traffic signals to lower speed (i.e., < 50 km/h).	*Variations in distance between traffic signals, differences in crossing street green times, fluctuations introduced by pedestrian sequences, and the need to consider multiple directions of traffic flow make it impossible to design synchronization to maintain uniform traffic flow at a specified speed.*

No.	Location	Measure	Reason(s) for Not Carrying Forward
112	**Main Street**	Extend on-street parking bounds on Main Street southward to Toronto Street.	*The existing boundary in the south is just north of Bower/Beckwith. There would be adverse safety implications to northbound traffic crossing the McIlraith Bridge onto Main Street if the boundary on the east side was extended south to Toronto Street. On the west side of Main Street., there are no dwelling units present to support on-street parking in this area.*
120	**Main and Toronto**	Close Toronto Street at Main Street.	*Would hamper resident mobility.*
121	**Main and Toronto**	Extend median from the bridge to Toronto Street to permit right-in/right-out movements only.	*Although this configuration would eliminate left-turn movements at this intersection, the issue has not been of concern to most residents, nor does historical accident data warranted the measure. Resident mobility would also be hampered.*
122	**Main and Riverdale**	Implement a traffic circle at the intersection of Main Street and Riverdale Avenue.	*Alternative alignments have been found to be more preferable.*
123	**Main and Centennial**	Install traffic lights at Centennial / Main to facilitate exiting vehicles.	*Signal would be too close to the Riverdale / Main intersection to function properly.*
124	**Main and Beckwith**	Make Beckwith Road one-way from Main Street to Marlowe Crescent.	*Not acceptable to the City of Ottawa.*

No.	Location	Measure	Reason(s) for Not Carrying Forward
125	**Main and McNaughton**	Install a median island on Main Street to prevent left turns onto McNaughton Avenue from northbound Main Street.	*Restricts local access and displaces traffic to Clegg Street.*
126	**Main and Clegg**	Ban left-turn from Main Street onto Clegg Street during peak hours.	*Clegg Street provides a necessary link between Main Street and Echo Drive.*
127	**Main and Lees**	Ban pedestrian crossing of Main Street at Lees Avenue.	*Would force pedestrians to take a circuitous path to cross the road. Some would cross anyway.*
128	**Main and Lees**	Implement a pedestrian only phase (scramble phase) at Main/Lees intersection.	*Insufficient intersection capacity to warrant a pedestrian-only phase.*
129	**Main and Lees**	Lengthen the left-turn ban to 24 hours from Main Street onto Lees Avenue.	*Lees Avenue provides a necessary link.*
130	**Main and Hawthorne**	Enlarge the curb extension at the entrance of Hawthorne Avenue.	*Enlarging the curb extension would restrict school bus access due to their large turning radius.*
131	**Main and Hawthorne**	Consider closing Hawthorne Avenue just past the ScotiaBank entrance, and make the street a two-way street accessed only from Concord Street.	*Would displace traffic onto Lees Avenue.*

No.	Location	Measure	Reason(s) for Not Carrying Forward
132	**Main and Evelyn**	Consider implementing "instant" pedestrian activation of the east-west green phase at this location.	*Past studies at this location have shown that east-west pedestrian crossing demand is primarily generated by Immaculata High School and is concentrated into three clearly defined periods during the morning, noon hour and afternoon weekdays. During these periods the "walk" indication is displayed automatically every cycle.* *Providing "instant" response for pedestrians at this signal is not possible without removing the signal from synchronization with the other signals along Main Street. The current average waiting time for pedestrians during the weekday morning, noon hour and afternoon hours is 50, 40, and 50 seconds respectively. These values would not be reduced significantly if "instant" pedestrian response were provided given the need to provide adequate green time to service Main Street traffic.*
140	**Greenfield Avenue**	Remove signage that diverts H417 traffic from Main Street onto Greenfield Avenue and reduce posted speed limit.	*Should maintain access to H417.*
141	**Greenfield Avenue**	Create provision for pedestrian right-of-way between Greenfield Avenue and Colonel By Drive.	*Property not available and location is not desirable.*

No.	Location	Measure	Reason(s) for Not Carrying Forward
142	**Hawthorne Avenue (east of Main)**	Paint parking stalls on north side of Hawthorne Avenue.	*Although this would emphasize the supply of parking, the measure is not warranted on a City street considering the other measures being recommended.*
143	**Lees Avenue**	Make Lees Avenue one-way	*Would displace traffic onto other streets.*
144	**Lees Avenue**	Install speed humps on Lees Avenue.	*Lees Avenue is on a Primary Response Route for emergency vehicles and therefore speed humps are not appropriate.*
145	**Lees Avenue**	Reduce speed limit on Lees Avenue.	*Studies have shown that posted speeds that are below a street's comfortable driving speed tend not to be effective.*
146	**Lees Avenue**	Plant trees on Lees Avenue.	*No space is available.*
147	**Concord and Lees**	Post a sign stating "no left turn 7-9am" at Concord Street and Lees Avenue.	*Would likely not be effective as drivers who choose to disobey the turn restriction will likely continue to do so.*
148	**Simcoe and Lees**	Implement a curb extension (2m) on the north side of Lees Avenue.	*Not feasible due to driveway location on the north side.*
149	**Concord and Hawthorne**	Add all-way STOP control.	*Not warranted based on review by the City.*
150	**Rosemere and Evelyn**	Provide a raised intersection /raised crosswalk at Rosemere Avenue and Evelyn Street.	*Existing traffic volumes and speeds do not warrant a raised intersection.*
151	**Rosemere and Evelyn**	Install all-way STOP control.	*Not warranted based on review by the City.*
152	**Springhurst Avenue**	Reverse the one-way direction of Springhurst Avenue.	*Would make local access difficult.*
153	**Rosemere Avenue**	Make one-way southbound.	*Would make local access difficult.*

No.	Location	Measure	Reason(s) for Not Carrying Forward
154	**Simcoe Street**	Make one-way southbound.	*Would make local access difficult.*
155	**Concord Street**	Make one-way southbound.	*Would make local access difficult.*
156	**Chestnut Street**	Install speed humps.	*Speed survey indicated 85th percentile speed would be in the range of 40 to 44 km/h.*
157	**Chestnut and Evelyn**	Install STOP sign to control northbound and southbound traffic on Chestnut Street.	*As noted in letter from City to area residents dated July 6, 1998, existing level of traffic control is appropriate.*
158	**Chestnut and Springhurst**	Install STOP sign to control southbound traffic on Chestnut Street and eastbound traffic on Springhurst Avenue.	*As noted in letter from City to area residents dated July 6, 1998, existing level of traffic control is appropriate.*
160	**Clegg Street**	Implement speed humps on Clegg Street.	*A speed survey conducted by a local area resident on Clegg Street between Drummond Street and Glenora Street indicated an average vehicle speed of 44 km/h. The 85th percentile speed was found to be 53 km/h.*
161	**Clegg Street**	Close Clegg Street between Main Street and Colonel By Drive.	*Would make local access difficult.*
162	**Clegg Street**	Close Clegg Street between Drummond Street and Colonel By Drive.	*Would make local access difficult.*
163	**Drummond and Clegg**	Install all-way STOP control.	*Not warranted based on review by the City.*
164	**Glenora and Clegg**	Install all-way STOP control.	*Not warranted based on review by the City.*

No.	Location	Measure	Reason(s) for Not Carrying Forward
165	**Colonel By and Clegg**	Extend length of time for southbound left-turn restriction from Colonel By Drive to Clegg Street.	*Signs currently indicate a banned left turn onto Clegg Street from Colonel By Drive from 7:00 AM to 9:00 AM and from 3:30 PM to 5:30 PM. Changing the time window would be inconsistent with other area restrictions and would unduly restrict area residents.*
166	**Mount Pleasant Avenue**	Paint a centre line through the curved portion.	*The City has suggested that painting the centre line will have little effect on the operation given the local nature of the traffic,*
167	**McNaughton Avenue**	Introduce speed humps.	*City does not support due to low volumes.*
168	**McGillivray and McNaughton**	Add yield or stop sign.	*Not warranted based on review by the City.*
169	**McGillivray and McNaughton**	Add median island or traffic circle.	*Would restrict local access and displace traffic onto Clegg Street.*
170	**McGillivray and Clegg**	Ban left turns from McGillivary Street to westbound Clegg Street.	*Would restrict local access and displace traffic onto Clegg Street.*
171	**Rideau River Drive**	Close Rideau River Drive at Main Street.	*Not feasible due to snow removal and access issues.*
172	**Rideau River Drive**	Install “Stop” or “Yield” sign just in from exit; install speed humps close to corner; install reduced speed limit sign	*Based on a review by the City, these measures are not appropriate or warranted at this location.*
180	**Clegg Street (east of Main)**	Implement curb extensions on Clegg Street.	*The narrow width of pavement does not permit such a measure.*

No.	Location	Measure	Reason(s) for Not Carrying Forward
181	**Marlowe Crescent**	Introduce speed humps.	*A speed survey conducted on Marlowe Crescent between Burnham Road and Letchworth Road indicated an average vehicle speed of 40 km/h. The 85th percentile speed was found to be 47 km/h. Speeds of this nature do not warrant speed humps.*
182	**Bullock and Centennial**	Replace "Yield" signs with "Stop" signs.	*Not supported by the City.*

4 IMPLEMENTATION AND MONITORING

Due to the current budget constraints at the City and Region, it is not possible to implement the whole plan within a short time frame. If approved, the implementation of the recommended measures will, therefore, take place over several years. Those measures categorized as Stage 1 will be implemented in the short term (i.e., within the next 6 months). Those measures categorized as Stage 2 will be implemented following the completion of all priority one measures and hopefully within a 6-month to 3-year time horizon, subject to funding.

4.1 Implementation of Measures

In certain cases, it was noted that the measure would only be implemented after monitoring at other locations in the city. This is primarily to ensure that measures that have not been fully tested in Ottawa (such as traffic circles, raised intersections and speed humps) are thoroughly tested and evaluated in local conditions and hence are designed correctly, and are deemed to be appropriate and effective.

In other locations where major changes were proposed that could have a significant effect on the use of, or the look of a street, it was noted that further consultation with the effected residents and special-interest groups is required. This consultation would include the preparation of a small scale plan showing the details of the proposed changes, as well as further public involvement to discuss the advantages and disadvantages of the plan. Example locations include the proposed narrowing of Clegg Street west of Main Street, or the “pillar” issue at the Main Street / Beckwith Road intersection.

Finally, it may be prudent to accelerate the implementation of some measures to correspond with the scheduled re-construction of a roadway. Such is the case for Hawthorne Avenue east of Main Street, which will be undergoing a major re-construction effort in the Spring of 2000.

Table 6 provides a summary of the costs of the proposed measures categorized by priority rating. It should be noted that these costs are based on the costs of similar features elsewhere in the City and are subject to refinement during detailed design.

Table 6: Summary of Estimated Costs

Priority Rating	Cost ($)
1	$116,600
2	$987,500
Total	$1,104,100

Note: Assumes capital costs only

4.2 Monitoring of Study Area

The plan should be monitored during and after implementation, and it's success in terms of solving the problems and issues should be measured. Advanced planning for a monitoring program will ensure that the resources needed for future data collection and public consultation are available. In general, the monitoring and re-evaluation should be conducted on an annual basis and should include the following elements:

- consultation with City staff, local councillors, Region staff, and Advisory Committee;
- collection and analysis of data describing conditions related to traffic volumes, and vehicle speeds;
- obtain updates on new measures tested elsewhere in the city;
- consultation with the public to determine the level of approval or disapproval of the implemented measures;
- implementation of measures to rectify undesirable situations; and
- evaluation and confirmation of measures still to be implemented, in the face of existing conditions and public opinion.

Appendix A

SKETCHES OF SELECTED RECOMMENDED MEASURES