



**Report:** PDL-CPL-16-07

## **Region of Waterloo**

### **Planning, Development and Legislative Services**

#### **Community Planning**

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**To:** Chair Tom Galloway and Members of the Planning and Works Committee

**Date:** February 2, 2016

**File Code:** D10-20

**Subject: Balancing Environmental Protection and Transportation, the Laurel Creek Headwaters Environmentally Sensitive Landscape Case Study - Final Report**

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#### **Recommendation:**

That the Regional Municipality of Waterloo take the following actions with respect to the Report No. PDL-CPL-16-07, Balancing Environmental Protection and Transportation, the Laurel Creek Headwaters Environmentally Sensitive Landscape Case Study, dated February 2, 2016:

- a) Receive the report for information and endorse the recommendations as a best practice guide for the mitigation of impacts of roads and road upgrades within or contiguous to Environmentally Sensitive Landscapes (ESLs) as described in this report; and
- b) Distribute this report to all Area Municipalities for information and consideration of the recommendations as opportunities to balance environmental and transportation priorities within ESLs, including the Case Study Area.

#### **Summary:**

In May 2013, Regional Council initiated a case study to identify opportunities to better balance transportation and environmental considerations in Environmentally Sensitive Landscapes (ESLs). In collaboration with a Project Team consisting of the affected Area Municipalities (Waterloo, Wellesley, Wilmot, and Woolwich) and the Laurel Creek Headwaters ESL Public Liaison Committee, Regional staff and a consulting team

carried out the case study focusing on the Wilmot Line - Kressler Road corridor near the eastern limit of the Laurel Creek Headwaters ESL. While ESLs are designated in the Regional Official Plan (ROP), Wilmot Line is a boundary line road located in the Township of Wilmot and the Township and the City of Waterloo share in its maintenance.

This study is not an Environmental Assessment with respect to any potential significant upgrades to roads within the study area. In addition, this study should not be considered an Environmental Impact Statement (EIS) under the ROP. The conclusions from this study would, however, help inform future study requirements where road projects are proposed within ESLs.

Two public open houses were held to obtain public input on the study on February 26, 2015 and October 27, 2015. Staff received 38 and 12 written submissions respectively, and these submissions were considered in preparing the final draft of the report. Preliminary findings and recommendations were also presented to the Councils of the Township of Wilmot (November 2, 2015), the City of Waterloo (November 9, 2015) and the Township of Wellesley (November 17, 2015). Feedback received at those meetings was incorporated into the final report.

With respect to transportation considerations, the case study concluded that:

- Current traffic volumes (1000 Average Annual Daily Traffic) are well below the typical traffic capacity of a paved two-lane rural road, but are high enough that hard surface treatment may become economically desirable from a maintenance perspective;
- Collisions are not a significant issue;
- Pedestrians and cyclists are sharing the road with motorists; and
- Within the unpaved portion of Wilmot Line, the 85<sup>th</sup> percentile speeds are generally much higher than the posted speed limit.

The study recommended potential measures to better balance environmental protection and transportation considerations without significant road upgrades being undertaken within the Case Study Area:

- Wildlife warning signage at potential wildlife crossing locations;
- Temporary road closure during spring breeding migrations of Blanding's Turtles and Snapping Turtles, if warranted by detailed amphibian breeding surveys;
- Modifications to road and ditch maintenance practices within the right-of-way;
- Improved stormwater management to reduce sedimentation to watercourses;
- Further traffic monitoring to better understand travel patterns and volumes; and
- Further monitoring of wildlife movement within the corridor.

If significant upgrades to Wilmot Line are proposed in the future, the study recommends that potential measures be considered as part of an Environmental Assessment such as operational modifications to the surrounding road network, installing new wildlife crossing structures, separating vehicular traffic from cyclists and pedestrians, traffic calming measures, and improved stormwater management.

### **Report:**

In May 2013, Regional Council approved commencement of a case study to identify opportunities to better balance transportation and environmental considerations in Environmentally Sensitive Landscapes (ESLs). This study originated with a recommendation by the Laurel Creek Headwaters ESL Public Liaison Committee about the future stewardship of Wilmot Line within the ESL. Regional staff subsequently hired Dougan & Associates environmental consultants and assembled a Project Team comprising staff from Waterloo, Wellesley, Wilmot, and Woolwich and a member of the Liaison Committee to carry out a case study focusing on the Laurel Creek Headwaters ESL. The overall goal of the study is to identify measures to address potential conflicts between transportation, environmental features and wildlife in areas where roads are located in ESLs or other environmentally significant areas.

ESLs are designations in the Regional Official Plan that contain concentrations of significant environmental features such as woodlands, wetlands, watercourses, small lakes, groundwater recharge areas and the habitat of endangered and threatened species as well as farms, aggregate operations and small settlements. The Laurel Creek Headwaters ESL is located within four Area Municipalities: the City of Waterloo and the Townships of Wellesley, Wilmot, and Woolwich (see Attachment A). This 2,043 hectare (5,048 acres) ESL was identified based on the concentration of Environmentally Sensitive Policy Areas (ESPAs) and Provincially Significant Wetlands (PSWs) comprising the headwaters of Laurel Creek and adjoining headwaters areas of Martin and Bamberg Creeks. It also contains three small kettle lakes: Bamberg Bog Lake, Paradise Lake and Sunfish Lake.

Significant features in the ESL include the Sunfish Lake – Laurel Creek Complex, seven ESPAs, 21 woodlands that meet the Significant Woodland criteria in the Regional Official Plan and one Regional Forest. These natural features sustain a rich array of significant plants and animals. A total of 56 wildlife species have been recorded in the ESL of which 22 are provincially and/or federally significant. Together, these features and wildlife species make the Laurel Creek Headwaters ESL one of the most important parts of the Region's Greenlands Network.

### **Objectives of the Study**

This study is not intended to fulfill the requirements of the Environmental Assessment Act with respect to any potential future upgrades to Wilmot Line or other local or

Regional roads. In addition, this study should not be considered an Environmental Impact Statement (EIS) under the ROP. If significant upgrades to Wilmot Line or other roads within the ESL are proposed in the future, a formal Environmental Impact Statement or equivalent study would have to be completed as part of the EA process depending on the nature of the project. However, staff expect that the recommendations from this study will help inform future environmental and transportation study requirements where ESLs are impacted by roads.

The objectives of the study as outlined in the Terms of Reference are to:

- Enhance and protect the social value of the ESL;
- Protect creeks, wetlands, threatened or endangered species as well as other wildlife species characteristic of the landscape from the effects of increased traffic and required road maintenance;
- Retain or potentially enhance the scenic quality and rural character of roads in accordance with the ESL policies in the Region's Official Plan; and
- Consider the environmental impacts of recreational uses such as hiking, jogging, horseback riding, cycling, and skiing on roads and adjacent publicly accessible lands.

As part of the Laurel Creek Headwaters ESL case study, issues and potential solutions associated with the above objectives are being addressed in the following study components:

- Transportation - potential conflicts between road users (e.g. cars, truck traffic, pedestrians, cyclists, joggers) along the Wilmot Line - Kressler Road corridor;
- Environmental Impacts - potential impacts on natural features, functions and species (e.g. sedimentation, pollutants caused by vehicles, snow clearing and road grading); and
- Wildlife Movement –identifying and assessing wildlife crossings (e.g. mammals, amphibians, reptiles) on Wilmot Line in the vicinity of Monastery Creek and Laurel Creek, and opportunities to reduce wildlife mortality at these locations (e.g. signage, eco-passages, reduced speed limits).

The Project Team refined the scope of the study to focus on the eastern part of the ESL where potential impacts on wildlife and environmental features could be more significant as a result of traffic entering and exiting the City of Waterloo and new residential development occurring on the western edge of the City (see Attachment A). The study area includes Kressler Road (Regional Road 16), Wilmot Line, and the following Regional and Area Municipal roads that intersect with them: Erbsville Road (Regional Road 70), Weimar Line (Regional Road 14), Cedar Grove Road, Conservation Drive, Berlett's Road, Wideman Road, and Carmel-Koch Road.

## **Public Consultation**

An initial public open house was held on February 26, 2015 to inform residents and other stakeholders of the study and obtain feedback. Approximately 100 members of the public attended the open house in addition to members of Regional and Area Municipal Councils. In addition, attendees were asked to fill out a questionnaire regarding environmental impacts that they have observed in the ESL and potential measures that could be used to address these impacts. As a result, staff received 38 written submissions that were reviewed and considered as part of the study's draft report.

Responses from the public were summarized into four themes: wildlife impacts, pollution, transportation concerns and potential mitigation measures.

## **Wildlife Impacts**

Many respondents described the value the community has for the natural features and diverse wildlife that the ESL supports. In addition, many of the responses discussed wildlife mortality along ESL roads. Comments included concerns for White-tailed Deer, frogs (including Spring Peepers), turtles (including Snapping Turtles), Monarch Butterflies, snakes (including Milksnakes), salamanders, and several other species. Other concerns included habitat loss/infringement; loss of wetland features; reduction in biodiversity; and loss of significant species. Respondents also spoke to loss of natural functions provided by the ESL such as pollination, erosion control, and carbon sequestration; reduced breeding success of reptiles and amphibians; and downstream effects to fish communities. Concerns were largely associated with the Wilmot Line but some people were also concerned about the impacts of the trails within the ESL in the Case Study Area.

## **Pollution**

Many responses noted that roads and vehicle use can result in pollution that alters environmental conditions as well as deteriorates the quality of natural features. Impacts may include the introduction of contaminants including oil, gas, salt, exhaust, washer fluid, and garbage; increased sedimentation into watercourses and wetlands; increased salinity of both water and soil; salt scalding of vegetation; increased dust and traffic noise.

## **Transportation Concerns**

Several transportation concerns related to road maintenance and safety. Safety concerns included the high occurrence of speeding vehicles, poor sightlines for vehicles, and the safety of cyclists and pedestrians sharing the road with cars. Several responses stated that there is poor road maintenance within the bounds of the Case Study Area as pot-holes, road wash-outs, and icy patches are frequent. The majority of

the questionnaires expressed concern about increasing traffic volumes in the near future due to increased residential and commercial development within north and west areas of Waterloo.

### **Potential Mitigation Measures**

Potential mitigation measures proposed by members of the public for the Case Study Area included:

- Implementing public education measures such as signage of significant species found within the area;
- Reducing speed limits and increasing enforcement;
- Constructing wider road shoulders to reduce conflicts between motorized and non-motorized users;
- Maintaining the scenic nature of the road profile (e.g. rolling hills);
- Closing Wilmot Line partially during known high wildlife road crossing periods;
- Closing part of Wilmot Line completely;
- Maintaining Wilmot Line as a gravel road;
- Avoiding additional lighting to reduce impacts to wildlife;
- Avoiding obstructions to wildlife crossings such as medians;
- Creating larger buffer zones between the road and environmental features;
- Installing wildlife passages above or below roadways;
- Reducing the use of trails within the ESL;
- Prohibiting any further trail development; and
- Improving the surrounding road network to reduce traffic backups that result in increased road use through non-arterial roads such as Wilmot Line.

A second public open house was held on October 27, 2015 to present the study's preliminary findings and recommendations. Approximately 40 members of the public attended the session. Attendees were encouraged to provide comments, and 12 written submissions were received. Key themes included:

- Local residents are not the only people who enjoy using the ESL as a scenic amenity for recreation and leisure. Many clubs and organizations use the Case Study Area on a weekly or bi-weekly basis.
- There is significant concern for the safety of road users, both motorized and non-motorized.
- Inclement weather often results in flooding, washouts, deep rutting, and icy conditions which periodically makes Wilmot Line unsafe.
- Residents commented that dust from Wilmot Line is spreading a large distance away from the road, thereby covering vegetation in adjacent natural areas.
- New residential development is likely to increase the traffic along Wilmot Line which could result in further degradation of the natural environment.

Preliminary findings and recommendations were also presented to the Councils of the

Township of Wilmot (November 2, 2015), the City of Waterloo (November 9, 2015), and Township of Wellesley (November 17, 2015). Feedback received was incorporated into the final report. Township of Woolwich staff was asked if a Council presentation would be desired but no response was received. Overall, feedback on the report from Area Municipal Councils was positive with several Councillors commending the Region for its work in designating the Laurel Creek Headwaters ESL for protection in the ROP.

## **Findings for the Case Study Area**

### **Transportation Considerations**

Findings related to transportation within the Case Study Area include the following:

- Wilmot Line is a minor part of the Township road network and is classified as a “rural local township road.”
- Based on Transportation Association of Canada and Regional guidelines, the travelled portion of the road allowance is acceptable to permit the safe passage of two travel lanes of traffic at the current traffic volumes.
- Grades on segments of the gravel portion of Wilmot Line are close to the acceptable 8% range for minor facilities such as this.
- Current traffic volumes are less than 1000 Average Annual Daily Traffic (AADT) along the unpaved section, a level well below the typical traffic capacity of a paved two-lane rural road. However, current traffic volumes are high enough in some portions of the Case Study Area that hard surface treatment might become economically desirable from a maintenance perspective.
- Trucks account for about 2-4% of the total traffic volume in the Case Study Area; this is within the expected range for Regional and Township roads.
- Collisions are not a significant issue as there is less than one collision per million vehicle kilometres (MVKM).
- Cyclists and pedestrians are using the roads within the Case Study Area and conflicts between motor vehicles and these users have been identified by the public as an issue that requires attention.
- The majority of reported collisions in the Case Study Area involved single vehicles leaving the travelled portion of the roadway.
- The posted speed limit within the Case Study Area is 60 km/h and all roads leading to Wilmot Line are hard-surfaced. In terms of traffic control, all side street approaches to the Case Study Area have stop control but there is no stop control on Wilmot Line itself.
- Within the unpaved portion of Wilmot Line, the 85<sup>th</sup> percentile speeds are generally much higher than the posted speed limit indicating that vehicles are excessively speeding. and

- The Terms of Reference for this study did not include analysis of potential future development impacts on traffic patterns and/or volumes in the Case Study Area and therefore no conclusions have been made in this regard.

### **Environmental Features and Functions**

Findings related to environmental features and functions include the following:

- The Laurel Creek ESL contains many significant features including but not limited to the Sunfish Lake-Laurel Creek Provincially Significant Wetland Complex, seven (7) ESPAs, one (1) Regional Forest, 21 woodlands that meet the Significant Woodland criteria in the ROP, and two (2) regionally significant Areas of Natural and Scientific Interest (ANSIs).
- The ESL has a rich diversity of species as a total of 56 wildlife species have been recorded within the ESL of which 22 are provincially and/or federally significant.
- Groundwater quality in the ESL is generally good and chloride levels in groundwater are generally lower than other groundwater features in the Region.
- Surface water quality in Laurel Creek and Monastery Creek within the Case Study Area is generally good compared to downstream reaches of these creeks outside the ESL. Monastery Creek exhibits somewhat poorer water quality due to agricultural activities and severe channel erosion in its headwaters.
- Chloride concentrations in Laurel Creek and Monastery Creek are the lowest in the watershed and are well below guidelines. This indicates that road runoff is not leading to elevated chloride concentrations under current conditions.
- The presence of Brown Trout spawning sites within and downstream of the ESL represent highly sensitive habitat locations that may be impacted by sources of sediment and other contaminants entering streams from within the ESL.

### **Wildlife Movement**

Findings related to wildlife movement within the Case Study Area include the following:

- Based on current traffic volumes (average 40 vehicles per hour at certain locations on Wilmot Line) turtles have about a 20-25% chance of mortality and frogs have about a 15-20% chance of mortality if they cross the road.
- Four locations, known as Wildlife & Hydrological Crossing Locations, within the Case Study Area were identified as having the highest likelihood of wildlife road crossings:
  1. North of the Cedar Grove Road and Wilmot Line intersection;
  2. Laurel Creek crossing at Wilmot Line;
  3. Southeast of Wideman Road and Wilmot Line intersection; and
  4. Monastery Creek crossing at Wilmot Line.

- The Terms of Reference for this study did not include road mortality surveys, habitat assessments or species specific breeding studies within the Case Study Area and therefore no conclusions have been made in this regard.

### **Recommendations for the Case Study Area**

In recent years, the Township of Wilmot has expressed interest in upgrading the surface of Wilmot Line within the ESL from gravel to a hard surface (tar/chip or pavement). The Project Team has given careful consideration to the Township's concerns and Township staff has been actively involved throughout the study process. It was not within the scope of the study to determine whether or not Wilmot Line should be upgraded, as this decision rests with the Township and would be subject to Environmental Assessment requirements. The study did conclude, however, that current traffic volumes are less than 1000 Average Annual Daily Traffic (AADT) along the unpaved section of Wilmot Line, well below the typical traffic capacity of a paved two-lane rural road. However, in portions of the Case Study Area current traffic volumes are high enough that hard surface treatment may become economically desirable from a maintenance perspective.

The Project Team is of the opinion that hard surfacing gravel roads could help mitigate the following impacts:

- Dust generated by vehicles;
- Sedimentation in watercourses;
- Frequency of ditch cleanouts; and
- Operational/maintenance costs related to all of the above.

However, hard surfacing of gravel roads in the absence of other mitigation can create impacts to residents and the environment such as:

- Higher traffic speeds (and potentially increased traffic volumes);
- More conflicts between motorized and non-motorized users;
- Increased wildlife road mortality;
- Ditch and stream channel erosion resulting from increased stormwater runoff volumes and velocities; and
- Contamination of watercourses as a result of road salting. (since gravel roads are not salted)

Based on public input received to date and technical information gathered as part of the study process, recommendations for potential measures that could help better balance environmental protection and transportation considerations without road upgrades within the Wilmot Line – Kressler Road corridor Case Study Area are listed below. These potential measures would not only apply to the Case Study Area but could also be considered for roads in other ESLs:

- Wildlife warning signage at significant wildlife crossing locations along the length of the Case Study Area;
- Temporary road closure, similar to Stauffer Drive in Kitchener, during spring breeding migrations, if warranted, following completion of detailed amphibian breeding surveys;
- Modifications to road maintenance practices such as regular inspections, conducting maintenance practices outside breeding seasons and ditch vegetation management at crossing locations 2, 3, and 4;
- Improved stormwater management measures to control runoff and reduce sedimentation to watercourses such as ditch block controls, rock check dams and/or sediment traps;
- Further monitoring of traffic in the area to better understand travel patterns and volumes; and
- Further monitoring of wildlife movement including conducting specific road mortality surveys, habitat assessments, and breeding call surveys.

In the event that the Township wishes to consider upgrades to Wilmot Line, some potential measures that should be evaluated through an Environmental Assessment process or Environmental Impact Statement include:

- Investigating operational modifications to the surrounding road network including improving alternative routes or considering road closures;
- Installing new wildlife crossing structures and exclusionary fencing at sites 2, 3, and 4 listed above;
- Developing measures to separate vehicular traffic from cyclists and pedestrians;
- Investigating traffic calming measures such as reducing or narrowing the travelled portion of the road at certain locations; and
- Developing a stormwater management strategy including techniques such as ditch maintenance practices/ditch treatments, bioswales and sediment traps or ponds adjacent to watercourses.

Comments received from the public and at presentations to Area Municipal Councils attach a high social value to the Laurel Creek Headwaters ESL. Residents from within and outside the ESL, recreational user groups, and other members of the community all attest to the environmental and recreational benefits the ESL has to offer. As such, it is recommended that the social value of this and other ESLs be further explored to better understand the areas and any potential impacts that may occur should road upgrades be proposed the future.

In addition, the final study report has been made available on the Regional website and in the Regional Councillors' library.

**Area Municipal Consultation/Coordination**

Staff from the Townships of Wellesley, Wilmot, and Woolwich and the City of Waterloo served on the study Project Team. Preliminary findings and recommendations were also presented to the Councils of the City of Waterloo, Township of Wellesley and Township of Wilmot. This staff report was also circulated to Area Municipal staff for comments.

Regional staff would also like to thank Area Municipal staff and the Laurel Creek Headwaters ESL Public Liaison Committee for their collaboration on the Project Team and participation in the public consultation process.

**Corporate Strategic Plan:**

This study supports Strategic Objective 3.5 – Preserve, protect and enhance green space, agricultural and environmentally sensitive lands, and Regionally owned forests.

**Financial Implications:**

The total budget for this study is \$78,000 (plus applicable taxes) and is being funded by the Community Environmental Fund (as noted in Report P-13-055) through the approved 10-year Transportation Capital Program.

**Other Department Consultations/Concurrence:**

Staff from Transportation and Environmental Services participated throughout this study.

**Attachments:**

Attachment A - Location of Laurel Creek Headwaters Environmentally Sensitive Landscape and Study Area

**Prepared By:** Tim Van Hinte, Principal Planner

**Approved By:** Rob Horne, Commissioner, Planning, Development and Legislative Services

Attachment A - Location of Laurel Creek Headwaters Environmentally Sensitive Landscape and Study Area

