



**Landscape Composition Report,  
Highway 401 Planning Study East  
of Brockville (GWP 4111-22-00)**

February 23, 2026

Prepared for:

Ministry of Transportation of Ontario  
Eastern Region  
1355 John Counter Boulevard  
Postal Bag 4000  
Kingston, ON K7L 5A3

Prepared by:

Stantec Consulting Ltd.  
100-300 Hagey Boulevard  
Waterloo ON N2L 0A4  
Tel.: (519) 579-4410  
Fax: (519) 579-6733  
165001328



**LANDSCAPE COMPOSITION REPORT, HIGHWAY 401 PLANNING STUDY EAST OF BROCKVILLE  
(GWP 4111-22-00)**

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Prepared by \_\_\_\_\_  
(signature)

**Landon Black, OALA, ISA Certified Arborist ON-1876A,  
Landscape Architect  
Tel.: (519) 585-7263  
landon.black@stantec.com**

Reviewed by \_\_\_\_\_  
(signature)

**Leo Guddemi, OALA, CSLA  
Senior Associate, Landscape Architecture Team Lead - Waterloo  
Tel.: (519) 242-0077  
leo.guddemi@stantec.com**



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# LANDSCAPE COMPOSITION REPORT, HIGHWAY 401 PLANNING STUDY EAST OF BROCKVILLE (GWP 4111-22-00)

Introduction  
February 23, 2026

## 1.0 INTRODUCTION

### 1.1 BACKGROUND

The Ontario Ministry of Transportation (MTO) has retained Stantec Consulting Ltd. to undertake a Preliminary Design, and Class Environmental Assessment (Class EA) Study on Highway 401 for the replacement and rehabilitation of one bridge and one culvert, and identifying the future Highway 401 footprint for an interim six lanes and ultimate eight lanes, from 0.75 km east of North Augusta Road to 3.3 km west of Maitland Road (approximately 2.6 km), in the Township of Elizabethtown-Kitley, east of Brockville, in the United Counties of Leeds and Grenville. The purpose of the study is to identify a Recommended Plan that addresses current and future transportation needs in the Study Area as part of the Ministry's ongoing review of safety and operational needs for the provincial highway network.

This study is a "Group B" project under the Class Environmental Assessment (EA) for Provincial Transportation Facilities and Municipal Expressways (2024) and includes undertaking environmental and engineering field investigations and seeking input from Indigenous communities, the public, stakeholders, municipalities and government agencies. This study will include reviewing existing conditions, developing and evaluating alternatives, identifying appropriate improvements, and developing environmental protection / mitigation measures. A Recommended Plan will be confirmed and designated (protected) at the completion of the study. This Landscape Composition Report provides supporting documentation for the project including potential vegetation retention, potential mitigation recommendations for habitat and visual impact, and design recommendations to address potential impacts associated with this project. The Study Area for this project is considered to include the proposed highway right-of-way and the surrounding viewshed (**Figure 1**).

### 1.2 PURPOSE

The *Environmental Reference for Highway Design* refers to landscape composition as the "aggregate of elements in a region or area, which include but are not limited to culturally significant vegetation, views and viewsheds, topography, landform, and land use" (Ministry of Transportation Ontario, 2006: pp.5). The purpose of this Landscape Composition Report is to:

- Document natural geomorphologic landforms, waterscapes, or vistas within the viewshed of the highway.
- Review pertinent background information produced by other disciplines.
- Assess impacts to the landscape vegetation.
- Assess impacts to views and vistas.
- Recommend mitigation to minimize impacts to the adjacent landscape.



# LANDSCAPE COMPOSITION REPORT, HIGHWAY 401 PLANNING STUDY EAST OF BROCKVILLE (GWP 4111-22-00)

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## 1.3 DESCRIPTION OF WORK

The proposed works for the project include, but are not limited to, vegetation removal, excavation, grading, paving, earthworks, rehabilitation or replacement of bridge and culverts, repaving and widening, and drainage improvements.

- Widening Highway 401 to an interim six-lanes and ultimate eight lane cross-section.
- Replacement of existing noise barrier west of Butlers Creek.
- Replacement of Butlers Creek culvert with a 4.2 x 2.4 m box culvert.
- Three culvert extensions consisting of box culverts.
- Replacement of the existing Sharpe's Lane bridge over Highway 401.

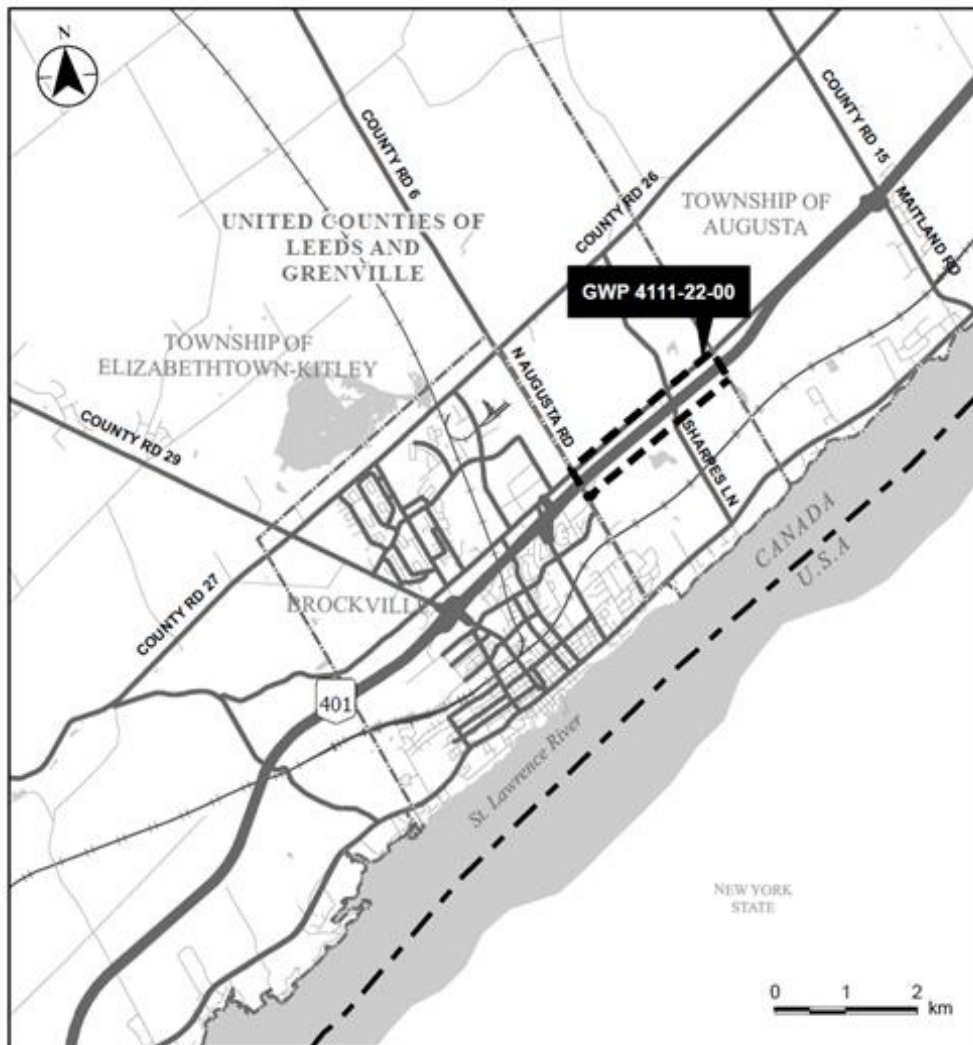


Figure 1: Study Area



Field Investigation  
February 23, 2026

## 2.0 FIELD INVESTIGATION

### 2.1 METHODS

A field investigation was undertaken on September 18, 2025, by Landon Black, OALA, to identify potential landscape resources within the Study Area. Potential landscape resources were visually reviewed from the nearest areas where they could safely be observed and cross-referenced with available GIS-based mapping tools to allow the assessment of potential landscape resources. The findings of the field investigation have been cross-referenced with the *Terrestrial Ecosystems Existing Conditions and Preliminary Impact Assessment Report* (Stantec, 2025) to confirm presence or potential presence of rare and threatened species that could not be confirmed by the field investigations and provide compensation and mitigation recommendations that are suitable for the Study Area. The *Cultural Heritage Resources Assessment Report* (Stantec, 2025) has also been consulted for potential mitigation to heritage landscape impacts.

### 2.2 EXISTING CONDITIONS

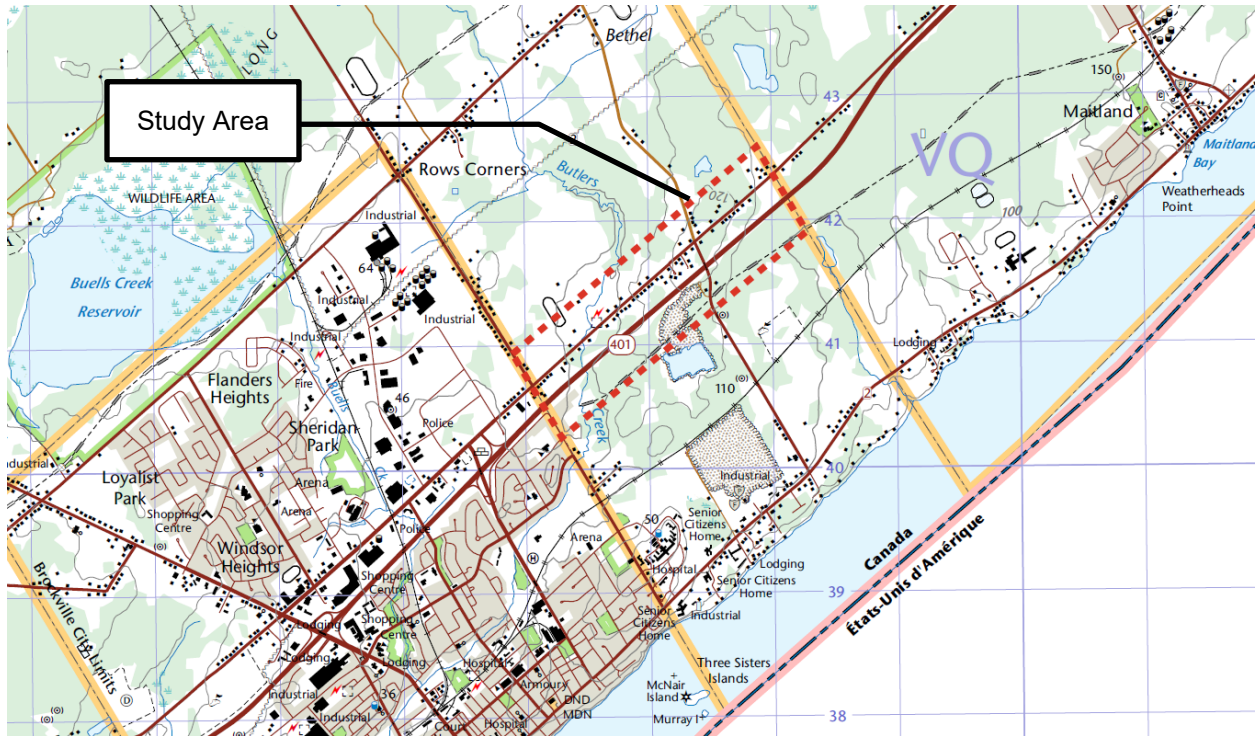
#### 2.2.1 Geomorphic Landforms, Waterscapes, and Vistas

The terrain within and immediately adjacent to the Study Area is relatively flat tableland above the St. Lawrence River which is located southeast of the Study Area (Figure 3). The elevation of the St. Lawrence River adjacent to the Study Area is less than 80 metres above sea level (masl) whereas the Study Area ranges between less than 100 masl and over 120 masl. Most of this elevation change occurs close to the riverbank creating a steep slope towards the River – a key feature of Brockville. Moving from east to west along Highway 401 the land rises and crests at the Sharpe's Lane overpass and then falls to its lowest point at Butlers Creek.



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Field Investigation  
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**Figure 2: Study Area Landform Context**

Despite the prominence of the Study Area above the St. Lawrence River, there are no viewsheds of the river. This is due to the nearly 2 km of mostly level terrain before the slope. The south boundary of the Study Area is mostly forested, which restricts any potential views out of the highway corridor. Portions of the highway are also lower than the surrounding area, further restricting views.



**Figure 3: Aerial Image of Forest in the Study Area**

The northern boundary of the Highway 401 corridor is mostly a consistent band of forest between residential lots and the highway. The width of the forest varies but is less than 30 m in some locations and



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Field Investigation  
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is much narrower than the forest along the south side of the highway. An apple orchard is the only significant break in the forested band apart from the Sharpe's Lane overpass (Figure 4).

## 2.2.2 Aesthetic and Non-aesthetic Man-made Features

The only major visible man-made features of the landscape that are visible from the highway in the Study Area is the Sharpe's Lane Overpass. Smaller features are present such as signage and noise walls at the western edge of the Study Area. Residential buildings may be visible at some times of the year at the eastern end of the Study Area. None of these should be considered negative aesthetic features from the perspective of a highway user as they are necessary and common parts of a typical highway. One sign made from a landscaped berm reads "LAFARGE", the name of an aggregate producer operating a pit south of the highway.

The highway and related infrastructure should be considered negative aesthetic features when viewed from the residential properties abutting the highway. In leaf-on conditions it is difficult to view the highway from ground level at Concession Road 2 north of the residential buildings. Based on the terrain and the width of forest between the highway and the residences, it is reasonable to assume that some residences have views of the highway, particularly from the second floor. Most trees in the forest are deciduous meaning the winter views are likely more open to the highway.

## 2.2.3 Scenic Composition, Arrangement, and Sequence of Landscape Features

There is very little sequencing of landscape features within the Study Area, partially because the Study Area is less than 2 km long and partially because views outward from the highway are very limited. The mixture of forest and agricultural land with little elevation change is typical of the Highway 401 heading eastward for a considerable distance. Heading west the Frontenac Axis briefly changes the forest composition and adds views of exposed bedrock, but not as noticeably as highways further north into the Canadian Shield. Brockville does open views from the highway corridor but there are still no significant views of the St. Lawrence River until Butternut Bay.

## 2.2.4 Density and Proximity of Surrounding Dwellers

The most significant group of dwellings is along both sides of Concession Road 2 north of the highway and along Sharpe's Lane both north and south of the highway. The closest dwelling is approximately 40 m from the shoulder of the highway. Most of the houses built on the south side of Concession Road 2 are closer to 140 m from the shoulder of the highway. Figure 5 shows the view of Highway 401 from Concession Road 2 through a limited vegetation screen. Figure 6 shows a vegetation screen with no leaf-on view of Highway 401.



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Field Investigation  
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**Figure 4: Transport Truck Viewed from 150 m**



**Figure 5: Forest Buffer Between Concession Road 2 and Highway 401**



## **3.0 IMPACT ASSESSMENT**

Numerous factors could potentially alter and/or impact the landscape during the construction of the proposed replacement overpass and additional highway lanes. These factors include vegetation and terrestrial impacts and visual impacts. Both potential impacts are discussed separately within the sections below. Cultural Heritage impacts were scoped down to potential vibration impacts (Stantec, 2025) which are outside the scope of visual mitigation tools. For the purpose of this assessment, we have assumed that all the natural vegetation within the grading limits will require removal but all areas beyond the grading limits can be retained.

### **3.1 VEGETATION AND TERRESTRIAL IMPACTS**

The development of any of the alignment and structure alternatives will result in the removal of natural vegetation cover providing habitat for plants and wildlife. The proposed works may also require temporary and short-term disturbance to vegetation cover and terrestrial habitat to accommodate construction within the ROW.

#### **3.1.1 Terrestrial Ecosystems**

Per Stantec (2025), the vegetation communities most impacted by the proposed design will be meadow (9.78 ha), forested habitat (4.03 ha), thickets (1.39 ha), wetlands (0.71 ha), and woodlands (0.39 ha). The restoration of these communities are possible with timeframes varying from short (meadows) to long (forests). Stantec (2025) recommend restoring meadow habitat through seed mix application including milkweed to mitigate impacts to monarch butterflies. Site specific mitigation and restoration measures will be provided in Section 4.0 and the Conceptual Landscape Design.

### **3.2 VISUAL IMPACTS**

There will be visual impacts to the existing landscape resulting from the construction of the proposed overpass and additional lanes. Our assessment of potential impacts considers both the view from the highway outward and from the surrounding area into the highway. The impact of views into the highway from adjacent residential lots is the main issue discussed.

#### **3.2.1 Views from the Highway Outward**

The main built elements of this project and their anticipated visual impacts are discussed in Table 1. In summary, none of the proposed built elements are likely to have a significant visual impact on the highway user post-construction. Little, if any, visual mitigation should be required from this perspective.



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Impact Assessment  
February 23, 2026

**Table 1: Visual Impacts of Proposed Built Elements from the Highway Outwards**

<b>Built Elements</b>	<b>Anticipated Visual Impact</b>
Widening Highway 401 to an interim six-lanes and ultimate eight lane cross-section	Limited. There are many sections of Highway 401 that transition from four to six lanes without significant visual impact.
Replacement of existing noise barrier west of Butlers Creek	Limited. Removal and replacement of noise barriers result in a similar before and after state.
Replacement of Butlers Creek culvert with a 4.2 x 2.4 m box culvert	Limited. It is unlikely highway users would notice this.
Three culvert extensions consisting of box culverts	Limited. It is unlikely highway users would notice this.
Replacement of the existing Sharpe's Lane bridge over Highway 401	Limited. Removal and replacement of a bridge would result in a similar before and after state. Bridges are a frequent feature of Highway 401 and unless a bridge is quite unique, removal and replacement is not very visually impactful.

**3.2.2 Views from Private Properties**

The main built elements of this project and their anticipated visual impacts are discussed in Table 2. In summary, the predominant concern is for residents north of Highway 401 with lots backing onto the ROW and limited depth of forest buffering them from the highway. Vegetation removals anticipated due to the proposed grading extents have the potential to open views of the highway. These instances should be mitigated. Figure 7 was taken east of the Study Area and shows the potential visual impact of losing forest buffer at 40 m. Some of the adjacent residences in the Study Area are approximately 40 m from the proposed Highway 401 shoulder. Contrast this view with the existing conditions shown in Figure 5 and Figure 6 where the view is partially or fully mitigated.

**Table 2: Visual Impacts of Proposed Built Elements from the Highway Outwards**

<b>Built Elements</b>	<b>Anticipated Visual Impact</b>
Widening Highway 401 to an interim six-lanes and ultimate eight lane cross-section	Likely. The grading associated with construction will require tree removal and reduce the visual buffer between residents and the highway. Residents with limited existing buffers might have significantly opened views of the highway.
Replacement of existing noise barrier west of Butlers Creek	Limited. Removal and replacement of noise barriers result in a similar before and after state.
Replacement of Butlers Creek culvert with a 4.2 x 2.4 m box culvert	Limited. Adjacent areas are forested and should not be visible from residences. Impacts are close to ground level.



**LANDSCAPE COMPOSITION REPORT, HIGHWAY 401 PLANNING STUDY EAST OF BROCKVILLE (GWP 4111-22-00)**

Impact Assessment  
February 23, 2026

**Table 2: Visual Impacts of Proposed Built Elements from the Highway Outwards**

Built Elements	Anticipated Visual Impact
Three culvert extensions consisting of box culverts	Limited. Adjacent areas are forested and should not be visible from residences. Impacts are close to ground level.
Replacement of the existing Sharpe’s Lane bridge over Highway 401	Likely. The grading associated with construction will require tree removal and reduce the visual buffer between residents and the highway. Residents with limited existing buffers might have significantly opened views of the bridge.



**Figure 6: Transport Truck from 40 m with no Forest Buffer East of Study Area**

### 3.3 SUMMARY OF IMPACTS

There are ecological and visual impacts expected because of the proposed built elements. Removal of trees is an important impact because it affects both categories. Mitigation options are restricted because MTO design standards restrict tree planting to 18 m and further from the edge of traveled lanes. This reduces the ability to restore forested areas and to visually mitigate views of the highway from adjacent residences. The largest vegetative community impacts by land area are to the meadow habitat. This vegetative community has less conflict with Highway use and is the predominant community in most ROW areas. The Study Area is currently habitat for monarch butterflies and restoration of meadow areas with native species, including milkweed, is a recommendation of Stantec (2025).



## 4.0 MITIGATION AND LANDSCAPE PLANTING RECOMMENDATIONS

Based on the assessment of potential impacts, the following mitigation and landscape planting recommendations should be considered for the Detail Design stage.

### 4.1 VEGETATION, WETLAND, AND RIPARIAN PROTECTION

Vegetation removal should be limited to the maximum possible extent where construction impacts can be avoided. Specific attention in this regard should be given to wetland and riparian vegetation. Erosion and sediment control (ESC) fencing should be used to separate work areas from sensitive natural features (e.g. wetlands and watercourses) and minimize the release of sediments and other deleterious substances.

Topsoil and organic matter should also be salvaged and reintroduced to any areas disturbed during construction, as appropriate. It is recommended that new seed should be introduced to disturbed soils as soon as feasible following construction (within 15 days for areas less than 200 m from a watercourse, and 45 days for other areas), and ESC fencing should remain in place until vegetation cover is re-established with minimal risk of erosion.

### 4.2 VISUAL SCREENING

Visual screening using coniferous trees is proposed in areas where residences are close to the proposed highway, have thin forested visual buffers, and grading work will require tree removal from the visual buffers. Deciduous trees are more prevalent in the local forest than coniferous trees, however coniferous trees are much more effective visual screens due to low branching and evergreen foliage. White spruce (*Picea glauca*) is the preferred species due to salt tolerance, locally native status, and branching density.

### 4.3 MEADOW RESTORATION

Meadow restoration should be completed using a native seed mix including milkweed species wherever topsoil has been disturbed through construction. Refer to the Concept Landscape Plan for application areas. Drill seeding shall occur on sites that are equal to, or greater than, 100 meters long; equal to, or greater than, 2 meters wide; and with slopes that are equal to, or flatter than, 6H:1V. Areas that do not qualify for drill seeding by the above definition shall be hydraulically seeded. Seed shall be applied to soil first, then matrix shall be applied as per OPSS 803.07.02.01 General. MTO seed mix "Southern Ontario Native Grass and Forb Mix – Well Drained" is preferred for the site based on species mix, soil conditions, and inclusion of milkweed.



# LANDSCAPE COMPOSITION REPORT, HIGHWAY 401 PLANNING STUDY EAST OF BROCKVILLE (GWP 4111-22-00)

Mitigation and Landscape Planting Recommendations  
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## 4.4 RIPARIAN RESTORATION

Riparian restoration is focused on a 30 m wide buffer from the existing Butlers Creek. Grasses and forbs shall be planted per Section 4.3 and supplemented with native riparian shrub species. Due to the small area, no additional seed mix is required. Additionally, many of the meadow species are well suited to the conditions immediately following construction. Some will eventually be outcompeted through seed stock present in the remaining wetland. Refer to the Conceptual Landscape Plan for species and application areas. The objectives are to stabilize riparian soils, provide habitat, restore wetland communities, and provide overhead cover for the watercourse.



Conclusions  
February 23, 2026

## **5.0 CONCLUSIONS**

The Ontario Ministry of Transportation (MTO) has retained Stantec Consulting Ltd. to undertake a Preliminary Design, and Class Environmental Assessment (Class EA) Study on Highway 401 for the replacement and rehabilitation of one bridge and one culvert, and identifying the future Highway 401 footprint for an interim six lanes and ultimate eight lanes just east of Brockville in the Township of Elizabethtown-Kitley. The landscape composition of the Study Area was reviewed, including cultural heritage, terrestrial ecology, and visual impacts. The main findings of the report are summarized below.

- The proposed built elements are not likely to significantly impact views from the Highway 401 ROW outwards at a landscape level. The visual impacts are expected to be minor.
- The removal of trees in the ROW may have a negative visual impact on residents adjacent to Highway 401 where narrow existing forest buffers are removed due to grading. MTO standards do not permit tree planting within 18 m of traveled lanes so there is little opportunity to replace removed trees. Planting white spruce beyond 18 m in impacted areas is the proposed solution.
- Restoration of meadow and riparian species in corresponding habitat areas is recommended to restore some of the ecological site function post construction.



# LANDSCAPE COMPOSITION REPORT, HIGHWAY 401 PLANNING STUDY EAST OF BROCKVILLE (GWP 4111-22-00)

References

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## 6.0 REFERENCES

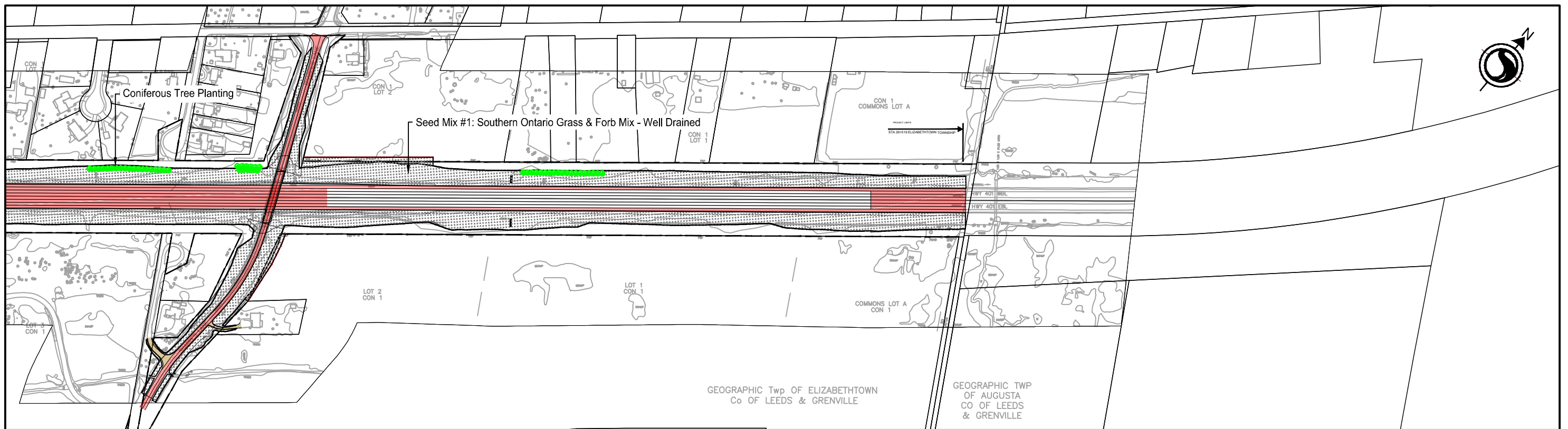
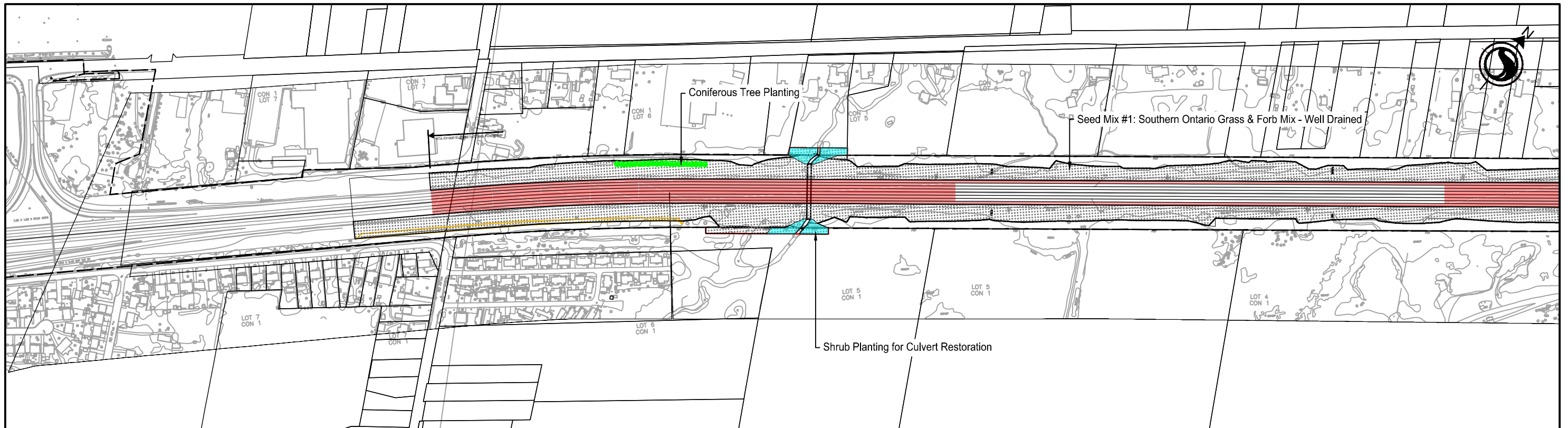
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Stantec, (2025), Terrestrial Ecosystems Existing Conditions and Preliminary Impact Assessment Report. Stantec Consulting Ltd.



**APPENDIX A:  
Concept Landscape Plan**



**HIGHWAY 401 PLANNING STUDY**  
 from 0.75 km east of North Augusta Rd Interchange  
 to 3.3 km west of Maitland Rd Interchange  
 Preliminary Design & Class Environmental Assessment  
 'GWP 4111-22-00'

- Limit of Existing MTO Right-of-Way
- New Roadway
- Driveway Modification
- Property Required
- Existing Noise Barrier Wall to be Removed
- New Noise Barrier Wall
- Existing Culvert
- New Culvert / Extension
- New Coniferous Tree
- New Shrub Planting Area for Culvert Restoration
- Seed Mix #1: Southern Ontario Grass & Forb Mix - Well Drained

**CONCEPTUAL LANDSCAPE PLAN** L-460 SHEET  
 HIGHWAY 401  
 ELIZABETHTOWN-KITLEY TOWNSHIP  
 SCALE 1:5000  
 JAN 2026