

APPENDIX

F VEGETATION AND AESTHETICS ASSESSMENT





February 26, 2021

Highway 427 Industrial Secondary Plan Area Environmental Assessment
Existing Vegetation/Aesthetic Assessment
Section A

INTRODUCTION

This report is prepared as part of the Environmental Assessment for the proposed road improvements in the Highway 427 Industrial Secondary Plan Area, framed by Mayfield Road to the North, Regional Road 50 to the East, Castlemore Road to the South, and The Gore Road to the West. It provides an evaluation of the aesthetics of the local environment and the general streetscape conditions including a general overview of the existing vegetation and landforms. Section A will focus on the proposed Arterial A2, and improvements and proposed re-alignment of Coleraine Drive, with the remaining portions covered in the following Section B.

Highway 427 Industrial Secondary Plan Area is located in the North East area of the City of Brampton, and strategically located at the York/Peel boundary. It is near Highway 427 and adjacent to the CP Railway Terminal. Currently the site is majority agricultural land, comprised of large annually cultivated fields, with forage and grain crops dominating. All acreage drains into three distinct North to South oriented tributaries and riparian zones. Gore Road Tributary, Clarkway Tributary, and Rainbow Creek. The topography is fairly flat and expansive at the Southern portion of the site, becoming slightly rolling in nature as one proceeds North West. The most significant topography is located along riparian zones and the North-Western Portion of the site at the intersection of Countryside Drive and The Gore Road.

The Site is bisected by Clarkway Drive, running on a North-West, South-East Axis. This is the area with highest concentration of residential sites. Parallel to Clarkway Drive is Coleraine Drive to the East. Shorter in length, it provides access to several residential sites, an industrial park, a wood working facility, and a construction yard at its Southern intersection with regional Road 50. Both Coleraine Drive and Clarkway Drive are intersected by Countryside Drive, the only existing road traveling cross the parcel at the opposite South West to North East Axis. Additional residential sites, and an Equestrian Centre are located along this route. Industrial areas are located at the Eastern edge of the site. Canadian Pacific Railway lies at the South East corner, originating at the intersection of Castlemore Road and Regional Road 50 and spreading North along the East side of Regional Road 50. The North Eastern corner of the site holds the intersection of Mayfield Road and Regional Road 50, which serves as the main transit entrance to the industrial parks of Bolton.

The proposed improvements to the area are wide ranging. Several new North-South streets, along with a re-alignment of Coleraine Drive, and several local network streets to facilitate the development of neighborhoods and new business districts. Along with this work will come improvements to local hydrology in the form of riparian zone rehabilitation and improved storm water management. While the latter certainly has practical implications, these improvements will also provide an opportunity for improved natural aesthetic and ecological value, local character, and neighborhood identity.

This streetscape/aesthetics/vegetation study provides:

- An overview of the existing visual character of the site.
- Existing land uses within and adjacent to the site.
- A general analysis of the existing vegetation found along existing and proposed roadways.
- Identifies the impacts of the road improvements.
- Recommended streetscape upgrades and typologies.

Section A will focus on the following sub-sections:

- North-South Arterial (Arterial A2): a new arterial roadway from Mayfield Road to Major Mackenzie Drive/Highway 50
- Coleraine Drive: from Arterial A2 to Mayfield Road (including a possible realignment at Arterial A2, west of Highway 50)



Site Map

The vegetation/aesthetic/streetscape site analysis was carried out in Oct, Nov, and Dec 2019 and September 2020. The vegetation analysis includes existing woody vegetation located along the road frontage, typically within or immediately beside the road right-of-way (ROW) and provides an evaluation of the proposed road improvements on the existing vegetation and the aesthetics of the streetscape. Observable landscapes within the boundaries of the existing road network are also depicted. The vegetation survey is very general in nature and is not to be considered as a detailed tree survey. Streetscape improvement recommendations are discussed for each section of the corridor.

GENERAL SITE AESTHETICS

The Highway 427 Industrial Secondary Plan Area is largely a productive agricultural area, planted predominantly in forage and grain crops. Remnants of windrows and residual patches of riparian forest frame expansive fields. Aging farm structures punctuate open fields from time to time, underscoring the overall rural character. Residential sites are adjacent to the few major arteries and follow a traditional site layout of windbreaks and sod yards surrounding structures, composed of a mix of evergreens and large deciduous trees. Along with wind rows and riparian zone remnants, these sites represent the bulk of discernable “forested” patches. The topography is considerably flat at the Southern portion of the site where views are expansive. As one moves North, the terrain becomes more rolling and articulated, at times limiting views and giving a slight sense of enclosure. Roadsides are mostly defined by immediately adjacent agricultural land where soils are worked annually. This continuous disturbance creates an edge of grasses and forbs containing several species of Asters, Goldenrods, and the occasional ragweed. Other areas show the establishment of various shrubs, likely dispersed by animals and wind. The 3 main riparian corridors add significant character to the area. They create noticeable topographic and vegetative variation and provide habitat for the multitude of bird species animating the skyline throughout the day.



Image 1: Site/Rural Character – Looking east from Coleraine Drive

Arterial A2: Mayfield Road to Major Mackenzie Drive/Highway 50

Length: 3.3km

Arterial A2 is a proposed new interior road connecting to the Western Terminus of Major MacKenzie Drive West at its intersection with Highway 50, at the current intersection of Coleraine Drive and Highway 50. From this intersection, Arterial A2 will travel West for nearly half a kilometer before arching North West towards its terminus at Mayfield Road. Halfway through its North Western route, Arterial A2 will intersect Countryside Drive.

Highway 50 to Countryside Drive

Beginning at its Southern end and intersection with Highway 50, Arterial A2 will travel across what is now a mostly level agricultural field. Nearly unobstructed, the impacts of the new road to surrounding landscapes will be negligible, with the exception of the removal of two trees in poor condition at the current intersection of Highway 50 and Coleraine Drive. However, this agriculture field is articulated by Rainbow Creek and its drainageways at its south-western portion in a branching pattern. Although heavily impacted by annual farming practices, these existing natural surface flow features should be recorded and considered moving forward.

As Arterial A2 begins its arc to the north and intersects with the new Coleraine Drive alignment, it will cross and impact Rainbow Creek. At this specific point, the riparian zone has been cultivated to the maximum extent, with no permanent vegetation at its banks. Slightly overlapping with the intersection road alignment is an existing, and seemingly residual windbreak of mixed shrub and mature tree species to the north. At least 50% of the stand will need to be removed.

From the proposed new intersection north, Arterial A2 continues its northerly arc to align with the existing north-west/south-east historic property line. From this point to the proposed intersection with Countryside Drive the road straddles the current dividing line of property and agricultural field. It is largely devoid of any woody perennial vegetation save for its northern portion, where small groups or single trees do exist and will need to be removed. It is worth mentioning that as an agricultural landscape, it is difficult to consider surface drainage patterns as historic or naturally occurring, as it is clear these areas have been repeatedly disturbed over time. However, surface drainage patterns are observed, in a naturalistic branching pattern and undoubtedly have a degree of ecological value throughout portions of the year. In addition, in 2 locations small ponds/wetlands have been observed in this stretch directly in the path of the proposed road alignment. While these surface waterbodies are likely seasonal, they are part of an existing array of similar "structures" and undoubtedly have ecological significance.

Intersection with Countryside Drive

From a landscape perspective, other than the crossing of Rainbow creek, Arterial A2's intersection with Countryside Drive is perhaps the most disruptive. Two residences exist within the new road alignment, along with their cultivated landscapes of and mature trees. At the south of this intersection large trees are few, with a stand of willows and underbrush to the east, and a few large shrubs throughout. All trees and shrubs at this location will need to be removed to facilitate construction of the proposed road. To the north of the intersection is a much more actively maintained landscape with a row of shade trees along Countryside Drive, and several mature trees distributed along the

west property line. All frontage trees will need to be removed, either for Arterial A2, or the proposed improvements to Countryside Drive. A residence and equestrian centre is located at the North Eastern edge of the proposed intersection. While the structures and horse track are located just beyond the influence of construction, several trees along the current property line will need to be removed, and careful planning will need to be undertaken to minimize construction impact and post construction storm water flows onto the property.



Image 2: Countryside Drive – Looking west on Countryside Drive. Frontage trees to be disturbed and/or removed.



Image 3: Countryside Drive/Proposed Arterial A2 Intersection – Looking east on Countryside Drive. Frontage trees to be disturbed and/or removed. Site of significant disturbance. Proposed Alignment follows gravel driveways on north and south sides of road.

Intersection with Countryside Drive to Mayfield Road

Traveling north-west from the intersection with Countryside Drive to the proposed terminus with Mayfield Road Arterial A2 passes through more agricultural land containing 3 historic windbreaks/hedgerows, containing a mix of shrubs and occasional mature trees. Next the road crosses 3 ephemeral streams feeding Clarkway Tributary. Similar to the previously mentioned surface channels, these are also heavily influenced by seasonal agriculture practices with no woody vegetation present. Again, while they may be difficult to recognize during dry periods (other than topographically) they should be documented for both their significance to water quality and ecological value within the larger system.

As Arterial A2 approaches and intersects with Mayfield Road it encounters an existing construction yard. The current landscape is devoid of vegetation and obstruction free save for the current accumulation of equipment and materials.

Recommendations

- Existing hydrological patterns should be maintained or replicated.
- Consider Low Impact Development (LID) strategies to treat non-point source pollution from roadways, such as bioswales, bioretention areas, treatment trains, etc.
- For minor seasonal flow areas, culverts size should be adequate for passage of appropriate wildlife species. Wildlife underpasses should also be considered where appropriate based on the Ecological Study.
- Ponds and wetlands removed should be replaced following regional guidelines for mitigation.
- Street Tree plantings should follow Region of Peele standards and prioritize diverse, appropriate species with a focus on salt tolerance and ecological value. Trees must have adequate volume of high quality, or remediated soils.
- Ensure species diversity. The Peel Urban Forest Strategy recommends no single Streetscaping species represents more than 5 percent of the tree population, no genus represents more than 10 percent of the tree population, and no family represents more than 20 percent of the tree population.
- Improved plantings for beautification, reduction of R.O.W. maintenance costs, and improvement of adjacent habitat. Sod/turf strips should be reconsidered, replaced by a diverse and native low growing meadow mix requiring a single seasonal mowing.
- Intersections should enhance pedestrian and cycling visibility and crossing as appropriate for the context (e.g. reducing crossing distance, cross-ride treatments, providing a pedestrian crossing island, removing right turn channels or moving to smart channels).
- tree cover for active transportation infrastructure (including sidewalks) to provide shade (trees that will grow greater than or equal to 15m tall at maturity)
- Consider planting more shrubs and perennials for increased vegetation densities suited to the growing conditions and constraints.

Coleraine Drive: from Arterial A2 to Mayfield Road

Length: Approximately 3km

Intersection with Arterial A2 to Merger With Existing Alignment

The proposed layout of Coleraine Drive is a literal shift from its current southern alignment and intersection with Highway 50. The new layout would have Coleraine Drive swinging to the south west, avoiding the light industrial areas, and intersecting with the new Arterial A2. Beginning with this proposed intersection, with which the issues have been laid out in the above section, we head north, unobstructed, across level agricultural land. We find no substantial woody species in the area other than three dwindling hedgerows in poor condition set back well out of reach of the proposed improvements.

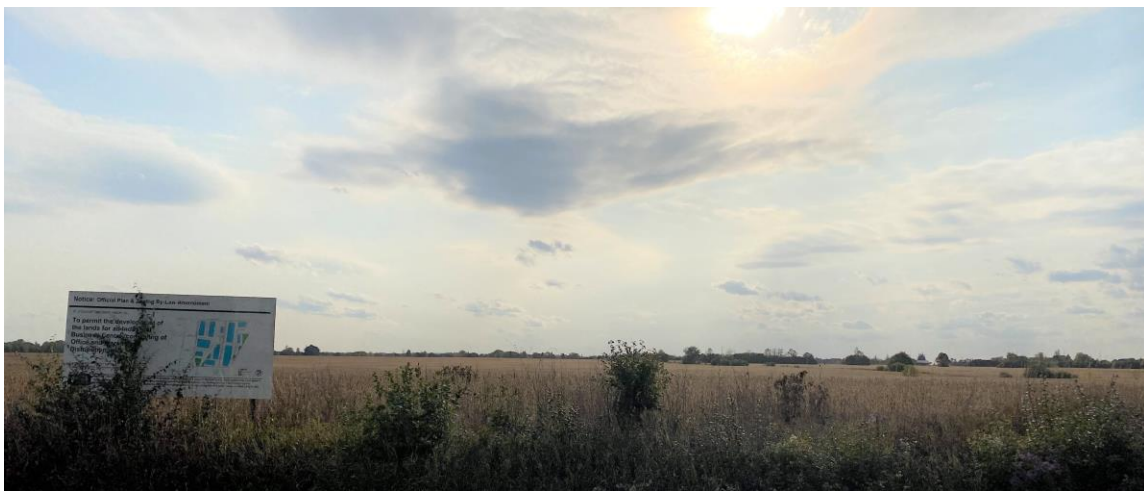


Image 4: Site of Proposed Coleraine Drive Southern Alignment – Looking west from Coleraine Drive

Although the road alignment of Coleraine drive has shifted as mentioned, an intersection is provided near the merger with the old alignment to allow access to the smaller, existing route headed to the light industrial areas; presumably, a “back of house” entrance to these sites in the future.

Just North of this intersection the proposed Coleraine Drive alignment merges with the existing, heading north west. As the road will be improved by the addition of widening, a central median, M.U.P’s on each side, as well as space for street tree planting, the existing road sides will be significantly altered, if not consumed.

Merger with Existing Alignment to Countryside Drive

Once merged with the existing alignment, Coleraine drive is devoid of any roadside woody species for some distance. Annual and perennial vegetation common to rural roads in the area is present. Species of note were Goldenrods, multiple Aster species, Daisies, Queen Ann’s Lace, Vetch, and the occasional Ragweed. In our September 2020 site visit, a large stormwater pond was situated on the east side of the road.



Image 5: Roadside vegetation – Goldenrod, Aster Species

As one travels north west on the road, the first residential sites come into view; one to the east, and 3 on the west side. These are currently well-maintained homes with developed landscapes. Each property has tree species of various sizes in the proposed right of way that would need to be removed.

Starting from the south-western property there is a mature windbreak of Black Spruce that encroaches on the proposed R.O.W. At least 2 of these would need to be removed. Heading North along the same side, there are Blue Spruce, White Cedar, and another row of Black Spruce at the property line. It is assumed from our site visit, at least nine trees will need to be removed from the property.

Across the street from this property there is a stand of mixed species trees that will also need to be removed. At our time of observation, we documented White Pine, Paper Birch, Black Cedar, and White Cedar. The residential property did not seem occupied or maintained at the time.

Continuing north, the west side of the road has several mature trees in the proposed R.O.W. that will also need to be removed as follows: Black Cedars, Weeping Willows, Norway Spruce, Black Spruce, White Cedar, Norway Maple, White Cedar, Austrian Pine, and a Red Oak. The eastern edge of the road is vegetated with a sporadic hedgerow of largely Buckthorn. As we travel further north to Countryside Drive, roadside Buckthorn and the occasional Willow shrub are distributed infrequently on both sides, allowing views over the grasses and forbs to the agricultural fields in the distance.



Image 6: Coleraine Drive – Looking west. Mature residential trees within the proposed construction zone/R.O.W.; Spruce, Cedars.



Image 7: Coleraine Drive – Looking west. Mature residential trees within the proposed construction zone/R.O.W.; Spruce, Cedars, Weeping Willow, Maples.



Image 8: Coleraine Drive – Looking south. Mature residential trees and mixed species shrubs within the proposed construction zone/R.O.W.; Spruce, Cedars to the west, mixed shrubs to the east. Willow, Buckthorn.

Countryside Drive to Mayfield Road

The intersection of Countryside Drive and Coleraine Drive is an open and flat landscape. Roadside ditches are present with seasonally mowed stands of the same grasses and forbs as previously mentioned. As one travels north farm fields are present on all sides and represent the dominant landscape. There are currently only five residential sites. The first residential we come too is situated on to the east side of the road and has a tree cluster consisting of Burr Oak, a young White Pine, and several shrubs within the R.O.W. Also, along the frontage are several young Black Spruce and another Oak that will also need to be removed. The adjacent property to the north is less vegetated, with 2 Weeping Willows that will need to be removed for the proposed road improvements.



Image 9: Coleraine Drive and Countryside Drive Intersection – Looking South



Image 10: Coleraine Drive East Side Residential Site – Looking North. Trees in proposed R.O.W. White Pine, Spruce, Cedars.

The next two residential sites we come to are clustered together on the west side of the road. They are currently screened by young, but substantial visual screens of woody vegetation. Species include Maples, spruce, pine, birch, and Oaks. Most of this visual barrier appears to be within the R.O.W. and will need to be removed. It is notable that the entrances to these landscapes are much more formal and developed, with substantial paving, curbs, culverts, and masonry structures. At the northern edge of the properties there is a box culvert directing surface drainage from the surrounding agricultural fields under Coleraine Drive to the west, where it is focused and conveyed into vegetated roadside ditches. A Weeping Willow that will be impacted by improvements is set back from the box culvert on the east side of the road. It will likely need to be removed.



Image 11: Coleraine Drive West Side Residential Site – Looking south. Trees in proposed R.O.W. Spruce, Cedars, Maples. Upper reaches of Rainbow Creek contained in roadside ditch. Substantial formal landscaping.



Image 11: Coleraine Drive West Side Residential Site – Looking north. Trees in proposed R.O.W. Spruce, Cedars, Maples. Upper reaches of Rainbow Creek contained in roadside ditch. Rainbow Creek Road Crossing in view. Substantial formal hardscaping.



Image 12: Coleraine Drive West Side Residential Site north property line – Looking north. Rainbow Creek seen in box culvert leading to drainage ditch. Large Weeping Willow and wetland on east side.

From this point north to the intersection with Mayfield Road, Coleraine Drive almost entirely open agriculture land. Cultivation takes place nearly to the roads edge with very few woody species, of which the majority are Buckthorn or Sumac.

Recommendations

- Existing hydrological patterns should be maintained or replicated.
- Consider Low Impact Development (LID) strategies to treat non-point source pollution from roadways, such as bioswales, bioretention areas, treatment trains, etc.
- For minor seasonal flow areas, culverts size should be adequate for passage of appropriate wildlife species. Wildlife underpasses should also be considered where appropriate based on the Ecological Study.
- Street Tree plantings should follow Region of Peele standards and prioritize diverse, appropriate species with a focus on salt tolerance and ecological value. Trees must have adequate volume of high quality, or remediated soils.
- Ensure species diversity. The Peel Urban Forest Strategy recommends no single Streetscaping species represents more than 5 percent of the tree population, no genus represents more than 10 percent of the tree population, and no family represents more than 20 percent of the tree population.
- Improved plantings for beautification, reduction of R.O.W. maintenance costs, and improvement of adjacent habitat. Sod/turf strips should be reconsidered, replaced by a diverse and native low growing meadow mix requiring a single seasonal mowing.
- Intersections should enhance pedestrian and cycling visibility and crossing as appropriate for the context (e.g. reducing crossing distance, cross-ride treatments, providing a pedestrian crossing island, removing right turn channels or moving to smart channels).

- tree cover for active transportation infrastructure (including sidewalks) to provide shade (trees that will grow greater than or equal to 15m tall at maturity)
- Consider planting more shrubs and perennials for increased vegetation densities suited to the growing conditions and constraints.

The following chart summarizes the streetscape opportunities as noted in this report.

Opportunity/Issue	Streetscape Treatment
New Arterial A2	
Boulevard Trees	A Landscape Plan will be developed at the Detailed Design Stage providing opportunities to enhance the Streetscape with doubled staggered rows, accent plantings and spacing that will be in accordance to current City of Brampton standards and recommendations.
Wetland/Riparian Zone Restoration	Repair or restore existing wetland plant communities, relocated wetlands, ponds, riparian zones, creek channels, and improved drainage areas.
R.O.W. Planting	Consider using low growing meadow species in place of Sod for beautification, reduction of R.O.W. maintenance costs, and improvement of adjacent habitat.
Low Impact Development	Consider setting aside space to accommodate Low Impact Development Strategies (LID) to improve water quality, ground water recharge, and reduce non-point source pollution; Bioretention Structures, Bioswales, etc.
Streetscape Design	A Landscape Plan will be developed at the Detailed Design Stage providing opportunities to enhance the Streetscape and include features such as Region of Peel approved rest areas in appropriate locations in consultation with and consideration of public transit.
Coleraine Drive	
Boulevard Trees	Diverse species to be planted on 10.0m centres both sides of Streets where possible. Trees should provide shade to M.U.P.
Wetland/Riparian Zone Restoration	Repair or restore existing wetland plant communities, relocated wetlands, ponds, riparian zones, creek channels, and improved drainage areas.

R.O.W. Planting	Consider using low growing meadow species in place of Sod for beautification, reduction of R.O.W. maintenance costs, and improvement of adjacent habitat.
Low Impact Development	Consider setting aside space to accommodate Low Impact Development Strategies (LID) to improve water quality, ground water recharge, and reduce non-point source pollution; Bioretention Structures, Bioswales, etc.
Streetscape Design	A Landscape Plan will be developed at the Detailed Design Stage providing opportunities to enhance the Streetscape and include features such as Region of Peel approved rest areas in appropriate locations in consultation with and consideration of public transit.

RECOMMENDATIONS

The following recommendations relate to the streetscape improvements that are to be implemented along this portion of the Highway 427 Industrial Secondary Plan Area.

Vegetation Assessment:

A Vegetation Assessment will be required, prepared by a certified ISA arborist. All existing vegetation removed as part of this project should be inventoried.

Mitigation During Construction:

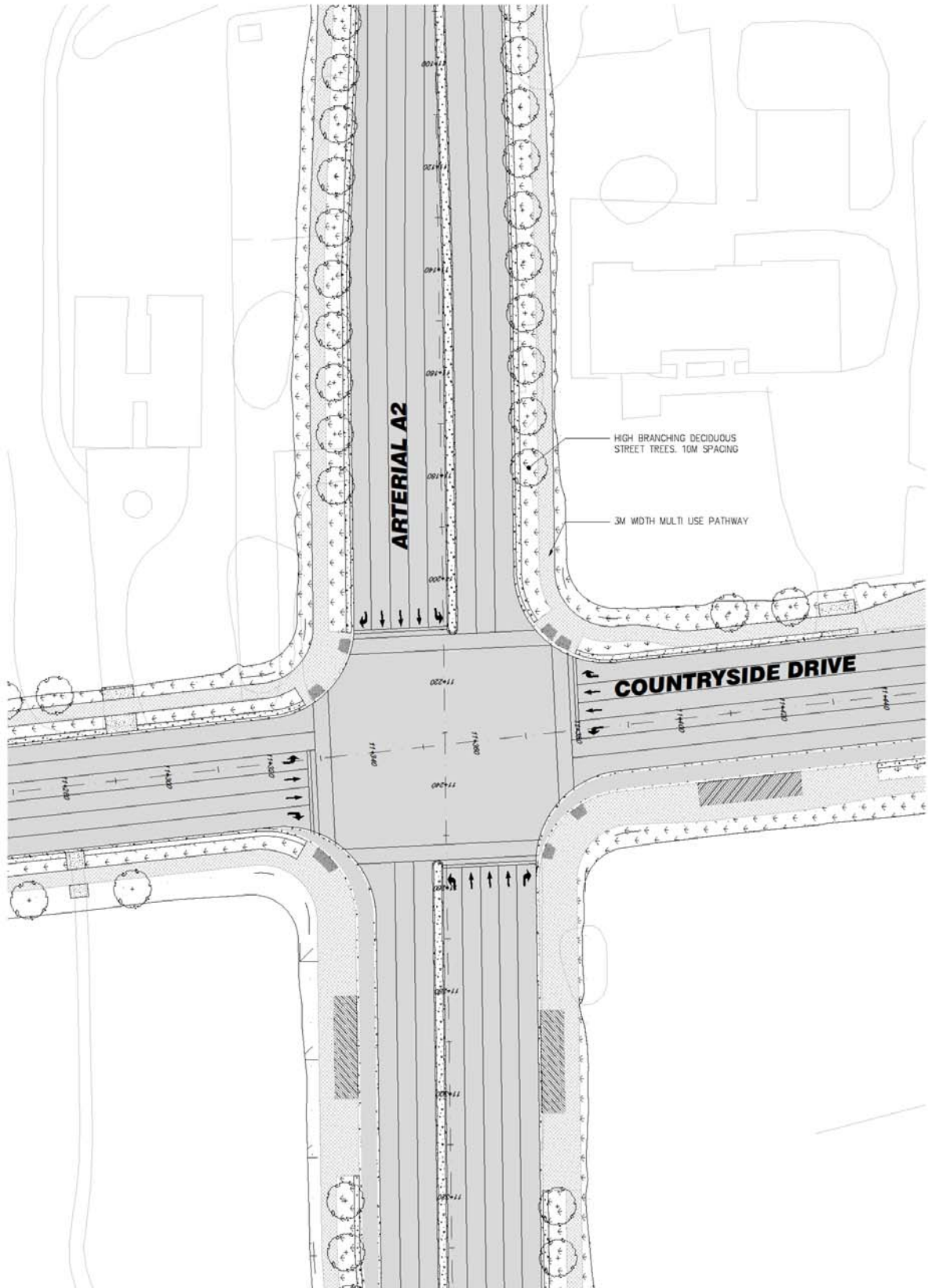
- Construction activities are to avoid damaging existing, healthy, trees located close to the ROW wherever possible. This is to be accomplished by installing suitable tree protection fencing, extending to the 'dripline' of trees designated for protection. This tree protection zone is to remain undisturbed by excavation, storage of materials and equipment, and other construction related activities. The fencing is to remain in place through the duration of construction activities.
- Existing trees scheduled for removal are to be inspected to determine if transplanting is a feasible option (depending on size, species, and health of tree).

Street Tree Planting and Planting/Streetscape Design:

- Tree planting/streetscape plans are to be prepared for the corridor by a registered landscape architect, as part of the detailed design of the roadway. These plans are to address:
 - Compensation for vegetation requiring removal on or near private property.
 - A Landscape Plan will provide opportunities to enhance the Streetscape with doubled staggered rows, accent plantings and spacing that will be in accordance to current City of Brampton standards and recommendations.
 - Restoration of Riparian Zones, Stream Channels, and Wetlands.
- All trees to be planted are to be selected from the City of Brampton Approved Street Tree List.

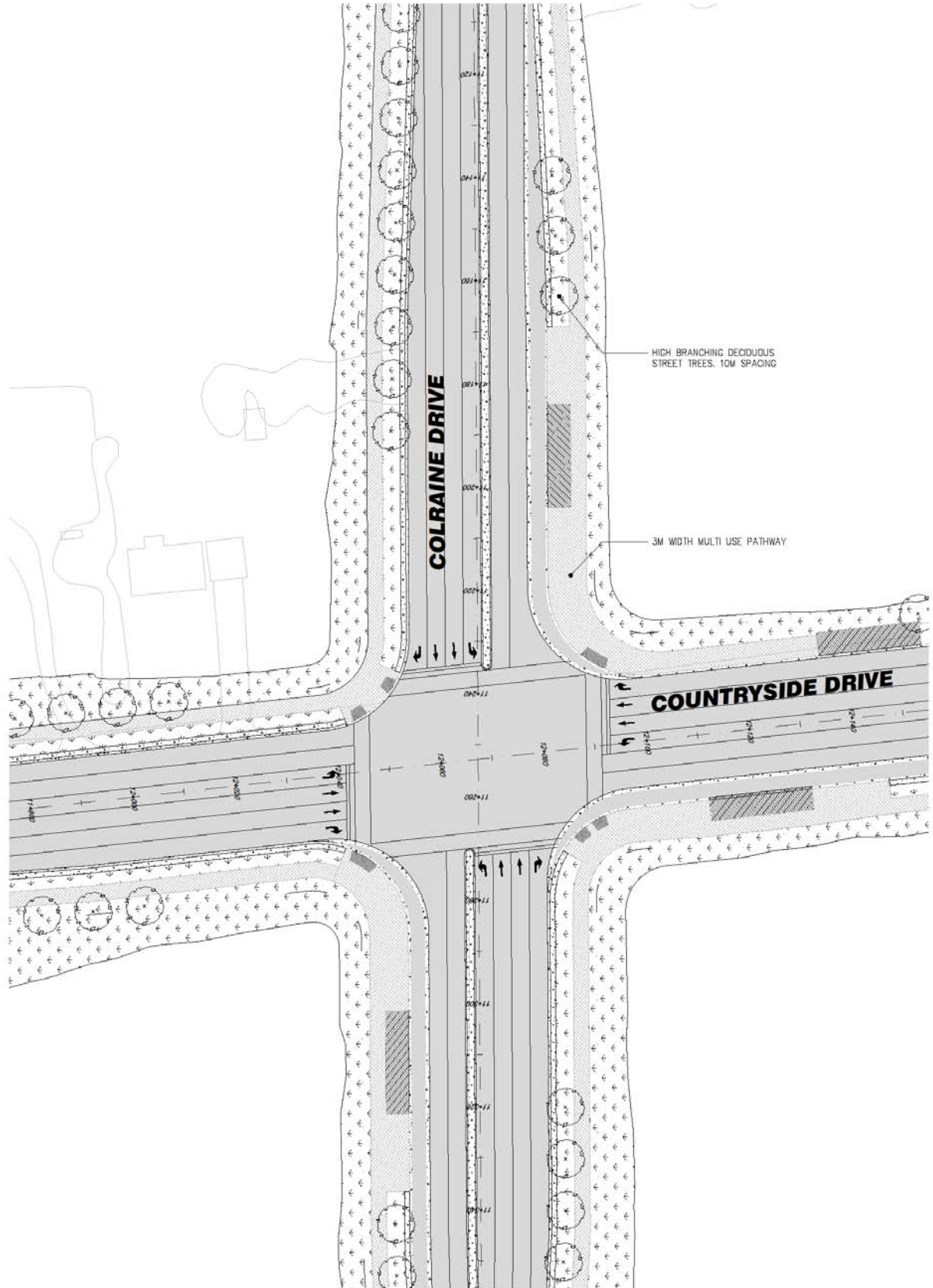
- The planting of new trees along the corridor is to be coordinated with existing and proposed utility corridors, and light standards.
- Construction impacts at stream crossings are to be mitigated with the planting of riparian vegetation. This vegetation should be native, non-invasive, riparian vegetation, as approved by the local Conservation Authority.
- Trees to be planted near overhead utilities to be selected to conform to mature height limitations (Hydro approved species)

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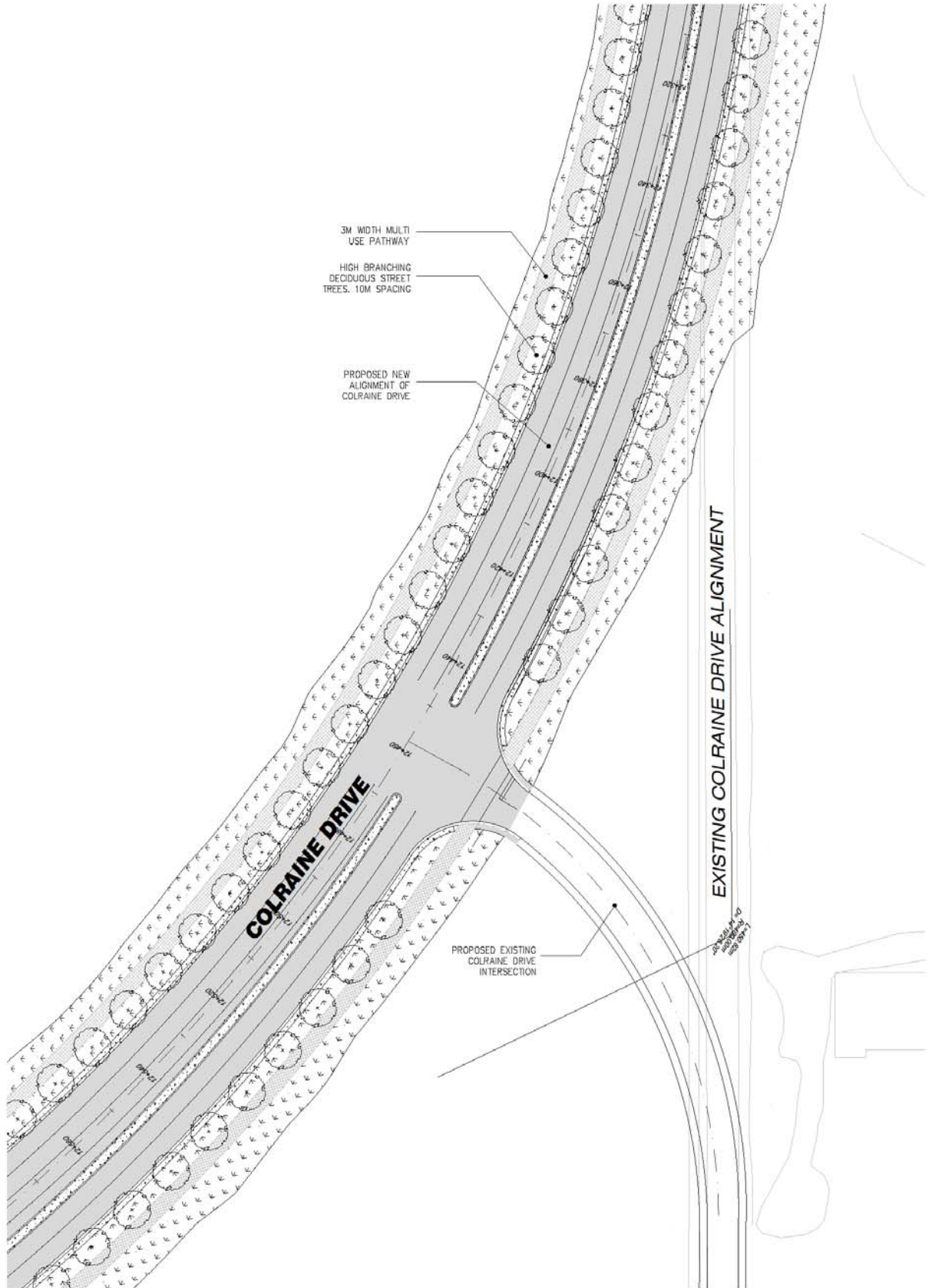
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