

**CONFIDENTIAL**



# **Appendix J: Natural Resources Background Analysis, SWS Integration**

**Southeast Courtice Secondary Plan  
and Environmental Assessment**

Municipality of Clarington, Ontario

May 1, 2020

# Table of Contents

	page
<b>J. Natural Resources Background Analysis .....</b>	<b>J-1</b>
J.1 Key Take-Aways .....	J-1
J.2 Purpose .....	J-2
J.3 Existing Conditions .....	J-2
J.3.1 Natural Resources .....	J-4
J.3.2 Surface Water .....	J-6
J.3.3 Hydrogeology .....	J-6
J.4 Policy Direction.....	J-10
J.5 Linkages to other Supporting Studies .....	J-11
J.6 Opportunities and Constraints .....	J-11
J.6.1 Natural Resources Constraint Levels .....	J-12
J.6.2 Hydrogeology .....	J-13
J.6.3 Surface Water .....	J-13
J.7 Recommendations / Next Steps .....	J-17

## List of Figures

Figure J-1: Study Area and Drainage .....	J-3
Figure J-2: Natural Heritage Features .....	J-5
Figure J-3: Surface Water Features .....	J-7
Figure J-4: Hydrogeological Features .....	J-9
Figure J-5: SECSP Development Constraints (High / Medium / Low) and Enhancement / Restoration Opportunities.....	J-16

## List of Tables

Table J-1: SECSP Development Opportunities & Constraints to accompany Figure J-5 (Source : R/T – SWS, 2019).....	J-14
Table J-2: SECSP Development Opportunities & Constraints Notes to accompany Figure J-5 (Source : R/T – SWS, 2019).....	J-15

# J. Natural Resources Background Analysis

## J.1 Key Take-Aways

The purpose of this appendix is to provide a summary of the findings, recommendations and conclusions of the study area existing conditions as characterized by the Robinson Tooley Subwatershed Study (SWS) currently under preparation by Aquafor Beech Ltd. The significance and sensitivity of natural environment features that pertain specifically to the study area are further evaluated through this report to determine opportunities and constraints for planning. The integrated approach includes reviews, provides comment on, and advice on implications of the existing conditions for the development of the Southeast Courtice Secondary Plan (SECSP) study area.

The SWS recognises land use constraints affecting development in the following areas:

- **Natural Heritage Systems (NHS)** – several categories of terrestrial and aquatic constraints have been identified in the SWS and further designated through this report as high, medium or low impact. High constraint areas are the most sensitive which should be excluded and in some cases buffered from development. The constraints identified by the SWS will form the baseline conditions for development within the SECSP study area.
- **Flood Hazard** – floodplain mapping for existing conditions has been confirmed and will be assessed for future conditions under proposed land use and transportation impacts.
- **Erosion Hazard** – meander belt widths are identified which identify areas that should be excluded from development.
- **Headwater Drainage Features** - with CLOCA implementing headwaters mapping, the SWS provides these additional constraints to SECSP for inclusion in the assessment of the extent and type of land use being proposed for future development.
- **Top of Bank/Valleylands** – identification of valleylands and “top of bank” features identified constrain potential land development.
- **Hydrogeologic (water balance)** – Locations of groundwater recharge and discharge are identified and may become land use constraints depending on their significance. Water Balance criteria provided by the SWS will be reviewed and confirmed as appropriate for guiding the extent and type of LID implementation.

The following considerations should be made when developing the Transportation Networks for the new development;

- Two of the Future Collector Roads will traverse High Constraint areas.
- There are features that ought to be considered which fall outside of our Study Area boundaries but which a New Connection could impact and should be considered cumulatively

- Meadowglade Road Extension - The alignment shown in Chapter 5 – Transportation Needs Analysis conflicts with constraints associated with Robinson and Tooley Creek; however these constraints are likely unavoidable.

Through the ongoing integration process, the SWS will also identify the impacts of future land use on watercourse flows, velocities and water levels and on watercourse water quality providing the opportunity to iterate future land use characteristics to minimise erosion, flooding and water quality impacts.

## **J.2 Purpose**

The integrated approach adopted for the preparation of the Southeast Courtice Secondary Plan (SECSP) area co-ordinates the planning and approval processes for the proposed development so it satisfies the requirements of the Planning Act and the Environmental Assessment Act simultaneously. *The “Integrated Approach” is outlined in the Municipal Class EA document (Municipal Engineers Association, October 2000, as amended in 2007, 2011 and 2015) which is an approved process under the Environmental Assessment Act.*

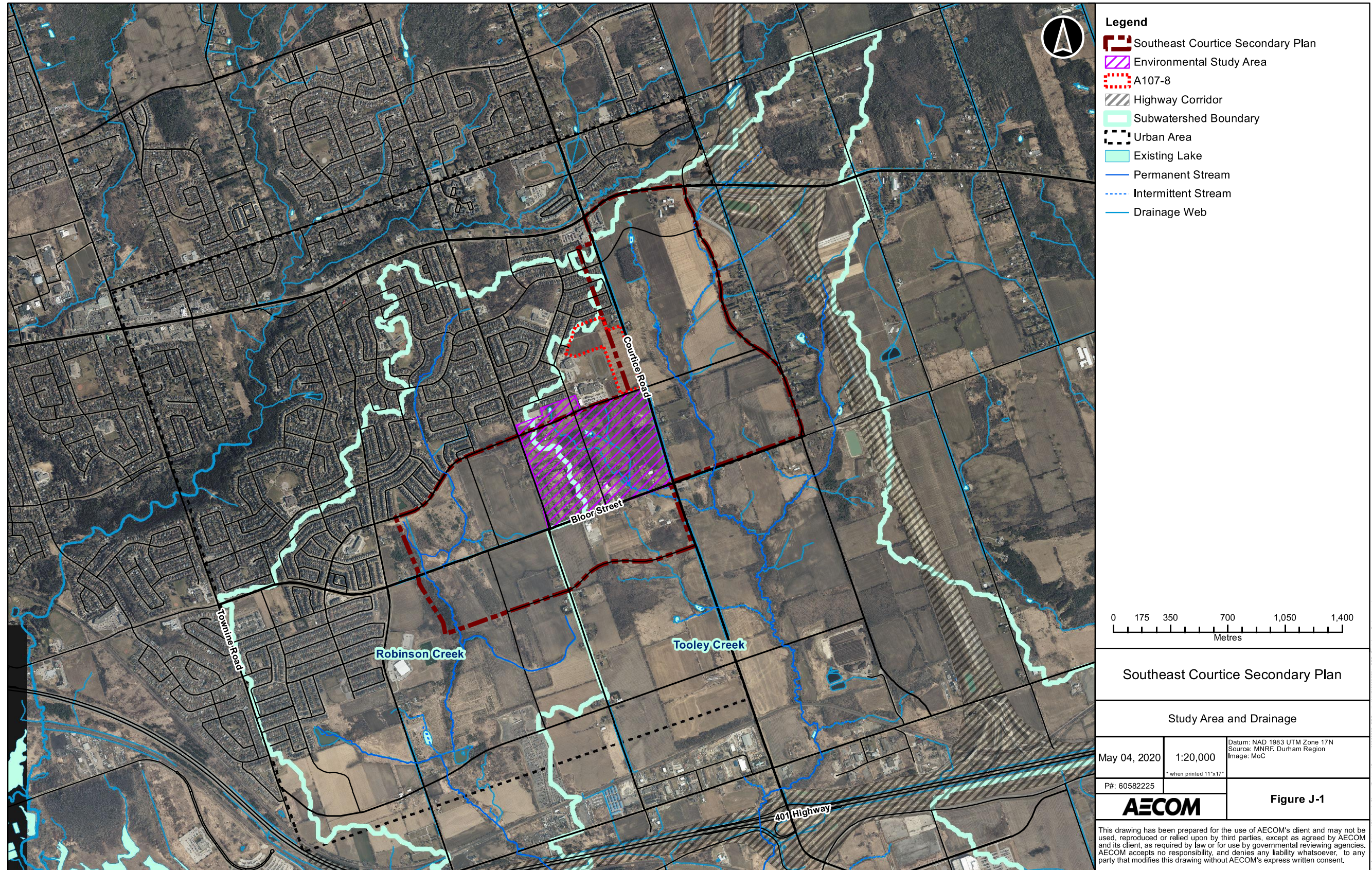
Consultations with the concurrent and ongoing Robinson Tooley Subwatershed Study 2018 (SWS) required in support of new secondary plans (*Clarington Official Plan policy- 23.3.10*) provides the opportunity for co-ordinated input, to achieve effective, tangible and cost effective results. Development considerations and constraints based on an existing conditions characterisation of natural heritage, fisheries, hydrogeology and hazard lands as determined by the R/T SWS 2018 under preparation by Aquafor Beech Ltd., will set the baseline conditions for further development of the SECSP Study area.

The focus of this background report is on interpreting the existing conditions as determined through the SWS, to distinguish between: those areas that are prohibited from development; those areas that may be considered for development subject to further studies / low impact uses providing natural and social enhancement / restoration opportunities; and those areas that can be developed as living / working areas through the secondary plan and subsequent development approval processes and deduce inferences that may guide the planning process.

## **J.3 Existing Conditions**

The Plan Area is located between the Robinson Creek valley in the West and Hancock Road in the East and extends from South of Bloor Street northwards to Durham Highway 2. Currently, there is a mix of parcel sizes and land uses within the Plan Area, which vary from larger farm parcels to smaller residential and commercial lots. The study area, as illustrated in Figure J-1, is 25% within the Robinson Creek Watershed and 75% within the Tooley Creek Watershed.

Figure J-1: Study Area and Drainage



### J.3.1 Natural Resources

The SWS has identified areas of natural heritage and environmental function with confirmed limitations to development. In addition other areas with potential constraints and areas for enhancement / restoration have been identified. The following sub-sections provide a summary of the ecological findings as understood from the SWS report:

#### J.3.1.1 Terrestrial Ecology

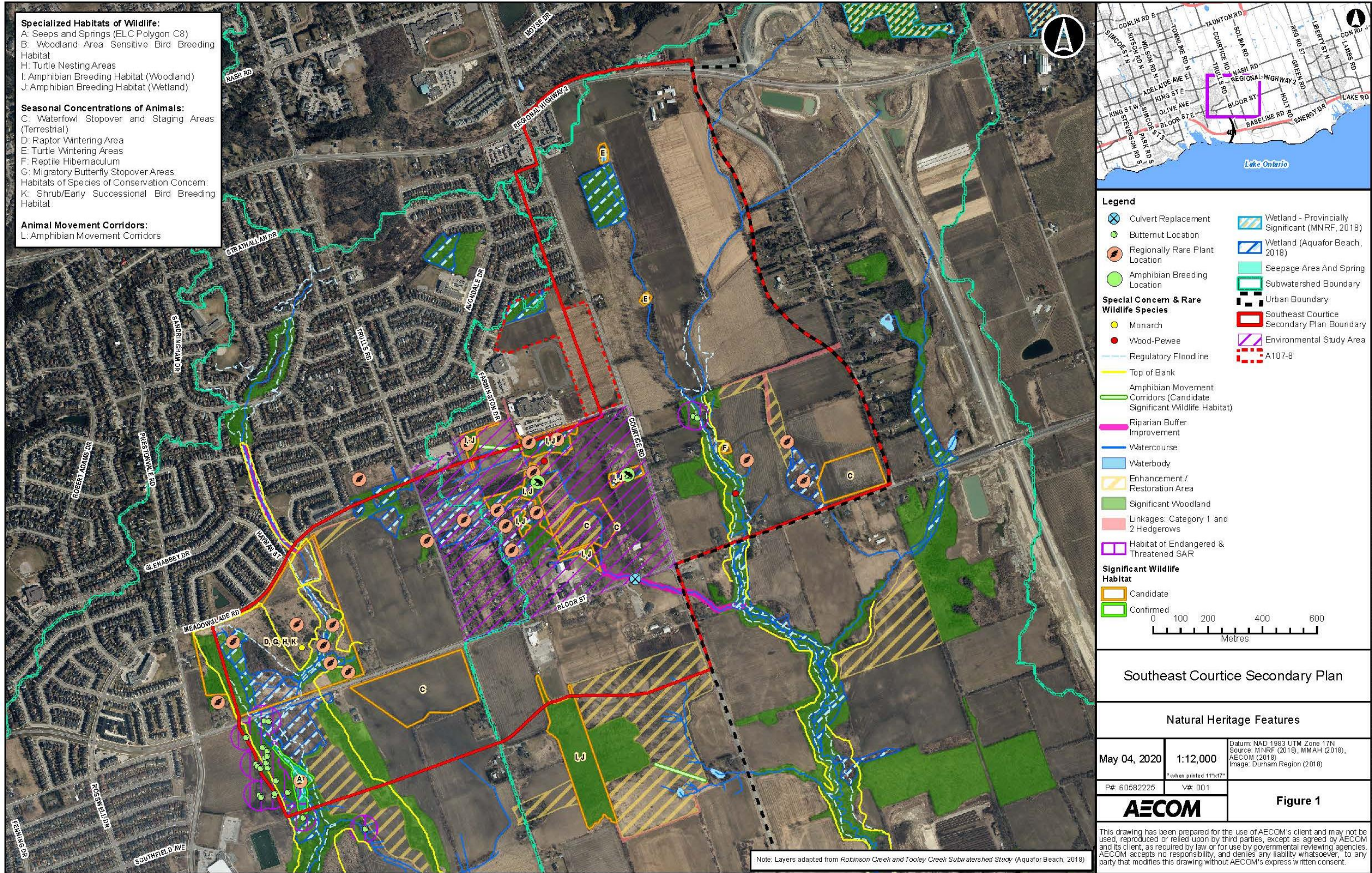
The SECSP study area consists of a rural area at the urban fringe. Agricultural land uses dominate the landscape with a combination of cropland and livestock pasture. Natural heritage features as illustrated in **Figure J-2**, are largely associated with the watercourses of Robinson and Tooley Creeks. They include a number of Significant Woodlands (defined as woodlots >1 ha) and wetlands (>0.5 ha) that have not been evaluated. One Significant Valleyland is present, associated with Robinson Creek in the west. Watercourses provide existing or potential natural linkages connecting woodlots and wetlands that can function as wildlife corridors. Field studies have confirmed the presence of Special Concern breeding birds, amphibian breeding sites and regionally rare plant species. Several areas of candidate Significant Wildlife Habitat (SWH) following MNRF criteria and butterfly have been identified. One seeps and springs area has been confirmed SWH and two amphibian breeding habitat areas appear to qualify. Other types of SWH need to be studied further to determine if present including potential seasonal waterfowl stopover and staging, raptor wintering, turtle wintering, turtle nesting, reptile hibernaculum, shrub/early successional breeding bird habitats, and butterfly migration .

#### J.3.1.2 Aquatic Ecology

The headwaters of Robinson Creek originate north of Bloor Street. Robinson Creek drains into Lake Ontario through a portion of the Provincially Significant McLaughlin Bay Wetland Complex and Darlington Provincial Park. Watercourses as illustrated in **Figure J-2** are predominantly coolwater thermal regime and provide habitat for eleven (11) common fish species including a migratory run of Rainbow Trout. Land use throughout the Robinson Creek Watershed is dominated by agricultural and urban residential land use, with relatively small proportions of natural and naturalized cover. Urbanization in the watershed is increasing, particularly in areas associated with the community of Courtice along the northern and western limits of the watershed.

The Tooley Creek subwatershed originates near the Lake Iroquois Shoreline at Nash Road, and outlets into Lake Ontario through the Tooley Creek Coastal Marsh. Watercourses are predominantly coolwater thermal regime with limited coldwater habitat in the upper reaches. Thirteen (13) common fish species inhabit the Tooley Creek subwatershed including a migratory run of Rainbow Trout. Existing land use within the subwatershed is predominately agricultural with some rural residential use and relatively small proportions of other land uses. The community of Courtice lies at the northwestern edge of the watershed and is the primary source of development pressure.

Figure J-2: Natural Heritage Features



### **J.3.2 Surface Water**

The study area is currently used for agricultural purposes and will see a significant increase in imperviousness and, unless mitigated, an increase in surface water runoff as it is developed.

#### **Headwater Drainage Features**

Headwater protection will be an ongoing consideration as it contributes to the maintenance of baseflow and associated water quality, fisheries, ecological, and natural heritage benefits. All contributing area greater than 2.5 ha are considered and; through a grading system considering functional classifications of hydrology, riparian, fish habitat and terrestrial habitat; a management classification is determined from “no management required” through to “mitigation”, “conservation” or “protection” .

#### **Stormwater Ponds**

There are no major SWM Ponds in the study area. However, there are several SWM Ponds adjacent to the study area that drain through it and there are several online ponds that are likely used for either agricultural or fire-safety purposes.

#### **Flood Hazard**

Regulatory Floodplains have been identified which restrict or eliminate the potential for land development. Additional regulatory buffers may be added to the floodplain extents that can trigger additional study if warranted.

#### **Erosion Hazard**

Meander Belt Widths have been identified that have the potential to limit land development. However, they are typically within floodplain limits and do not add an additional constraint.

#### **Hydrotechnical Models**

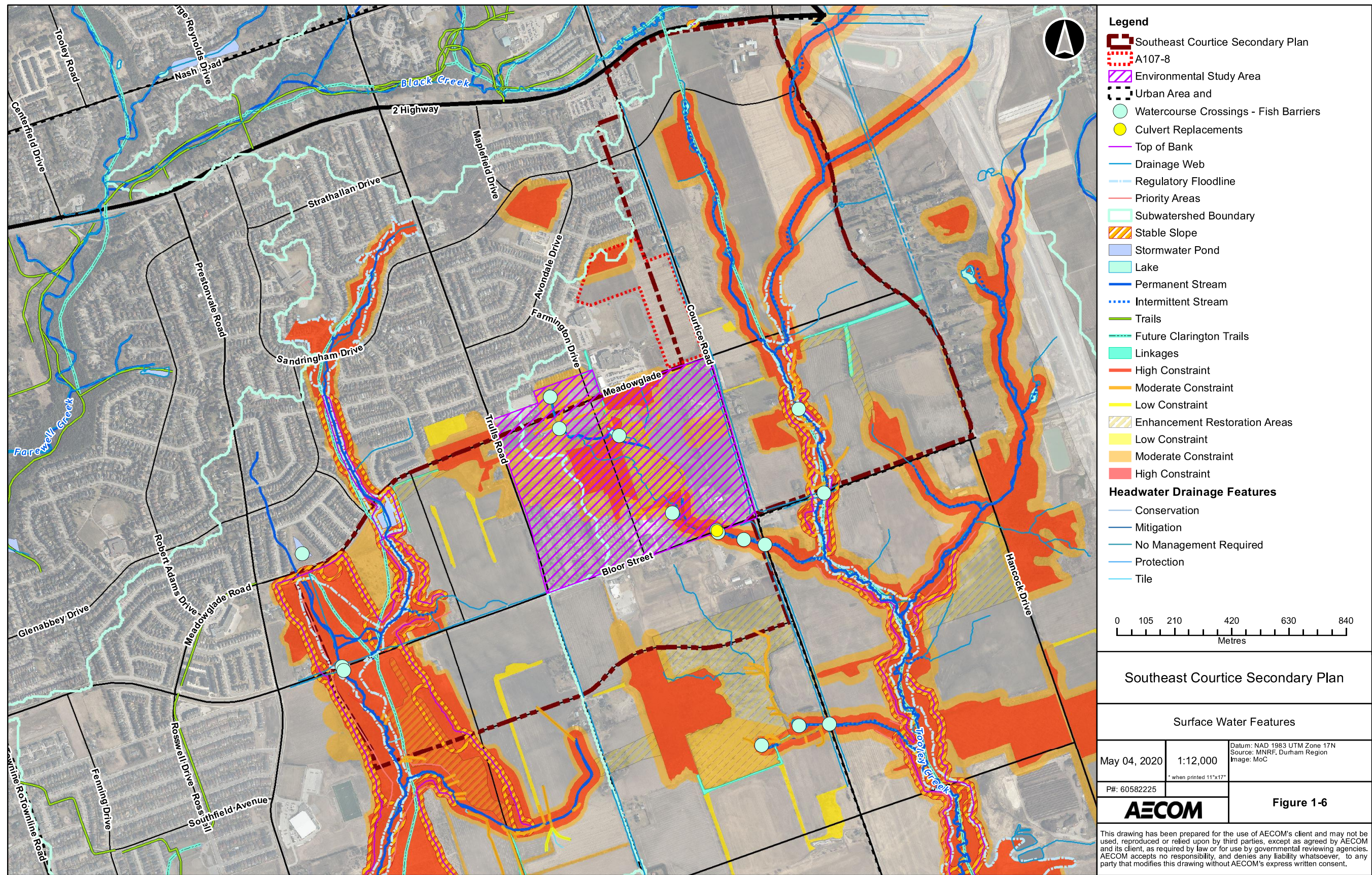
The SWS has developed up to date hydrologic and hydraulic models that are used to identify existing watercourse conditions as related to flows, water level, velocity, shear stress and stream power. The models will also be used to test future land use conditions for their impact on the same watercourse characteristics and to develop any mitigative measures such as SWM Ponds and infrastructure sizing including trunk stormsewers and watercourse crossing structures related to the transportation network.

### **J.3.3 Hydrogeology**

The Plan Area is located within the Iroquois Plain physiographic region, which is a gently sloping lowland area along the Lake Ontario shoreline (Chapman and Putnam, 1984). The Robinson Creek and Tooley Creek Subwatershed Study Report (Aquafor Beech Ltd., December 2018) has identified several hydrogeologically sensitive areas within the Plan Area.



Figure J-3: Surface Water Features



The dominant soil types within the Plan Area are fine and coarse textured glaciolacustrine deposits and sandy silt to silty sand till (Newmarket Till) that overlie Ordovician shale and limestone bedrock of the Blue Mountain and Lindsay Formations.

People living in the rural, unserviced areas obtain their drinking water from private wells and numerous businesses rely on groundwater for commercial and industrial use. Protection of active groundwater resources will be required during the proposed secondary plan development activities. The SWS has demarcated hydrogeologically sensitive areas, which were identified on the basis of surficial geology, groundwater recharge and discharge areas, watercourse characteristics, and the locations of wetlands and water wells. The findings of this subwatershed study can be used to inform the form and distribution of land uses during the preparation of the Secondary Plan process and as base information for further hydrogeological investigations to be carried out at the next stages of the development approval process. Following sub-sections provide a summary of the hydrogeological findings as understood from the SWS report:

### **Groundwater and Surface Water Resources**

The Robinson and Tooley watersheds are located south of the Oak Ridges Moraine and regional groundwater flow across watersheds and the Study Areas is north-south towards the Lake Ontario. Three main aquifer systems are present in the area, the Oak Ridges Moraine Aquifer; Thorncliffe Formation; and Scarborough Formation.

Additionally, shale bedrock also acts as a weak aquifer system. Most part of the Study Area is serviced by municipal water. Therefore, the water well distribution across the Study Area is limited as illustrated in **Figure J-4**.

### **Groundwater / Surface Water Interaction**

The Plan Area consists of several 1st and 2nd order streams within the Robinson Creek and Tooley Creek subwatersheds and wetlands, where groundwater discharges. Groundwater discharge to the streams is shown in **Figure J-4**.

### **Areas of High Volume Groundwater Recharge**

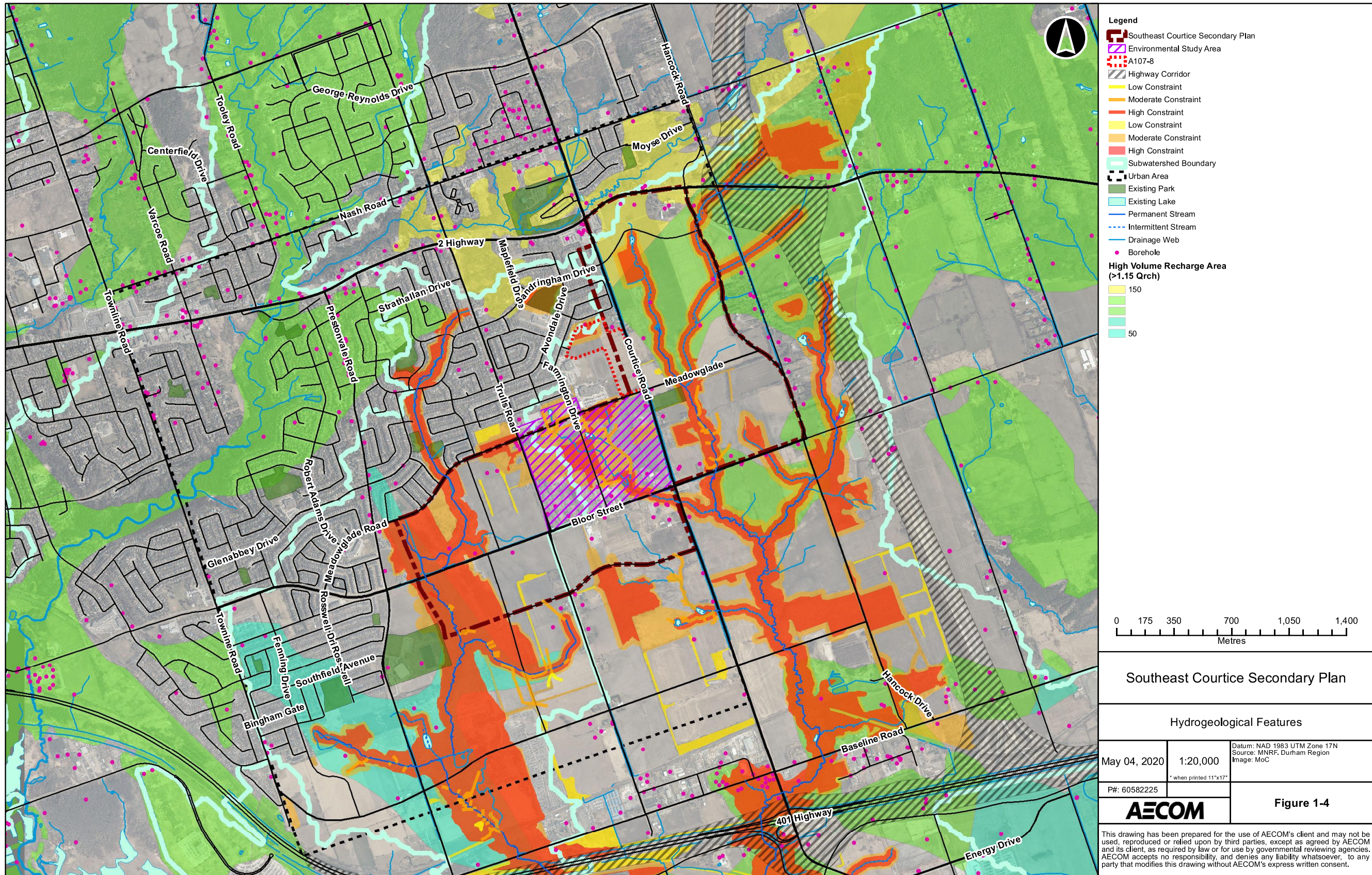
The SWS has identified High Volume groundwater recharge areas as illustrated in **Figure J-4** within the watersheds and the Northern part of the Plan Area is included in the identified important recharge areas. Both water sheds have net positive recharge to groundwater, which supports both local streams and wetlands near Lake Ontario Shoreline.

### **Fluvial Geomorphologic Features**

SWS report provides processes associated with streams and rivers, including stream hydraulics and sediment movement. The objective of the fluvial geomorphology component is to characterize stream and river channels, particularly with respect to erosion and channel stability.

Water courses were spatially grouped to reaches by channel characteristics and processes. The reach characteristics were identified for each of the major water courses within both watersheds, which included channel morphology, prominent channel processes, and channel stability.

Figure J-4: Hydrogeological Features



## J.4 Policy Direction

Furthering high level policy initiatives, the Clarington Official Plan (COP) mandates the protection and enhancement of the Natural Heritage System (NHS) within the study area. This means maintaining its ecological integrity in order to provide sustainable environmental, economic and social benefits to the community. It will be important to prevent or minimize fragmentation of habitat corridors by roads. Policies will need to firmly protect the significant and sensitive areas that remain in the SECSP area.

Further, development shall not be permitted on lands adjacent to the natural heritage features unless it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.

Maintaining predevelopment (existing) groundwater recharge volumes along with the groundwater discharge in and around the study area during the post development phase will be an essential part of achieving the sustainable development principal. The document, "Hydrogeological Assessment Submission, Conservation Authorities Guidelines to support Development Applications", (June 2013) shall be used to guide further hydrogeological assessments required in subsequent phases of the development process. This document provides information on the methodology that can be used to ensure that the natural ecological features and functions that are supported by groundwater resources are protected from potential impacts associated with development.

Stormwater drainage and water quality matters will be addressed through the Subwatershed Study and incorporated into the development of options and selection of a preferred land use plan. The SWS and resulting Stormwater Management Plan (SMP) will provide a summary of all of the elements of the recommended approach, together with the environmental targets and criteria that were developed during analysis. These could include:

- Recommendations for major and minor drainage patterns in the study area
- Flow targets at strategic nodes
- Stormwater management targets (water quality, erosion, flood protection, and infiltration) for maintaining subwatershed health
- Recommendations for locating and sizing stormwater management facilities
- Cost estimates and cost-sharing strategies for recommended stormwater management works
- Recommendations for infiltration-based source and conveyance controls (LIDs) to maintain pre-development hydrologic pathways and to maintain healthy groundwater and interflow regimes
- Erosion control and channel works priorities
- Flood protection works necessary to protect buildings and infrastructure
- Monitoring recommendation

- Maintenance recommendations
- Stormwater management controls – proposed development,
- Stream and valley enhancement / improvement works; and
- Protection and management of Natural Heritage System (NHS) features

## **J.5 Linkages to other Supporting Studies**

The existing conditions characterisation of natural heritage, fisheries, hydrogeology and hazard lands as determined by the SWS go beyond determining a set of baseline conditions (i.e., development area constraints), to recognise restoration and enhancement actions that can be implemented through the SECSP process. These site-specific actions will contribute to improving the quality of natural heritage features on the watershed level, moving towards CLOCA's goal of 30% natural cover per watershed and Environment Canada's target, set at a minimum of 30% woodland cover and 10% wetland cover per watershed to maintain ecosystem health.

Recommendations for restoration / enhancement efforts to consider size, shape, complexity and connectivity to improve the currently fragmented features within a predominantly agricultural setting and mainly concentrated around watercourses, provide guidance for site-specific planning studies and environmental assessments such the SECSP, to identify additional opportunities as appropriate to the site realising potential for a greater social, economic and ecological benefit for the overall study area and its related neighbourhoods.

Landscape, Servicing and Transportation opportunities and constraints resulting from this analysis are referenced in the respective SECSP background studies. Protection, mitigation and enhancement measures recommended by the SWS and recognised to have significant potential to contribute through the planning process have also been incorporated into the SECSP Sustainability & Green Development Principles report, prepared as part of the SECSP Phase 1 Background studies, to determine key performance indicators that will be used to assess the successful implementation of relevant planning & design strategies utilised to prepare the SECSP Phase 2 land use concept alternatives and the resultant preferred plan.

## **J.6 Opportunities and Constraints**

Maintaining the environmental function of the Natural Heritage System will involve retaining the largest contiguous blocks of habitat as possible. Given the targeted development densities, remaining natural vegetation will be subjected to increased impacts and therefore bigger blocks of habitat will have a better chance of retaining more environmental functions and providing public good. The need for a network of collector roads is likely to require additional stream crossings which result in fragmentation of the associated vegetation corridor. Consequently maintaining unbroken patches of at least 500 m in length and 100 m in width will be important. Similarly existing woodlots should remain intact without further fragmentation. They must be at least 1 ha in area to qualify as significant woodland but larger woodlands are more functional and connection to other natural areas is better yet. The mandatory VPZs can help to increase

the sizes of the significant woodlands and riparian buffers which should include ecological enhancements. Natural corridors are and will be crossed by some roads. In these cases vegetation should abut both sides of the road in a swath of at least 100 m wide wherever possible. CLOCA encourages working towards a target of 30% natural cover per watershed. The levels of constraints are outlined below and described further in **Table J-1**.

### J.6.1 Natural Resources Constraint Levels

- ✦ **High Constraints** - High Constraint areas include wetlands (>0.5 ha), significant woodlands (>1 ha), habitat for Endangered and Threatened SAR, Significant Valleylands (below top-of-bank), watercourses and waterbodies, and seeps and springs. Vegetation Protection Zones (VPZ) are included which are 15 m from significant woodland and valleylands; or 30 m from wetlands and watercourses. Development is restricted from these areas.
- ✦ **Moderate Constraints** – Candidate Significant Wildlife Habitat, Enhancement / Restoration Areas and regionally rare plant locations. Development is generally discouraged and will require a site-specific Environmental Impact Study (EIS) to determine if environmental functions will remain.
- ✦ **Low Constraints** – Natural Features not Eligible for Inclusion in the NHS, Other Constraints including Groundwater Recharge Area and HDFs with a “No Management Required” classification.

#### Terrestrial Ecology

- ✦ Butternut and Barn Swallow were the only Endangered and Threatened species recorded in the SECSP study area – Not total constraints because of need for further study (Butternuts require health assessments and therefore may not qualify, Barn Swallow nesting habitat can be permitted)
- ✦ Vegetation Protection Zones (VPZ) are prescribed in Clarington OP as 15 m from Significant Woodlands, Significant Valleylands, and 30 m from wetlands.
- ✦ Potential for several categories of Significant Wildlife Habitat (SWH) but MNRF criteria were not confirmed and need further study to determine if they qualify. Two sites appear to qualify as Amphibian breeding habitat and one site may provide early successional breeding bird habitat. Regionally rare plant locations are present which add to a site’s significance but does not qualify as SWH in itself.
- ✦ SWS identified Linkages at 3 locations and Habitat Restoration areas at 2 locations. They provide general recommendations on restoration, planting of native species and expanding VPZs.
- ✦ Proposed development or site alteration within the minimum area of influence of any natural heritage feature, including within VPZs, needs to be assessed and determined through site-specific Environmental Impact Studies (EIS) in accordance with Section 3.4.15 of the Clarington OP

## **Aquatic Ecology**

- ✦ As defined in MoC's Natural Heritage policies, watercourses plus 30 m on both sides are included in the Natural Heritage System (NHS). Vegetation Protection Zones (VPZ) are in addition to the NHS.
- ✦ According to the SWS, headwater drainage features (HDF) should be considered 'fish habitat' and should be protected under the municipal OP. However, some HDFs may contain hydrologic function or terrestrial habitat function in the absence of fish habitat function. Therefore, AECOM recommends that full HDF assessment under the Evaluation, Classification and Management of Headwater Drainage Feature Guidelines (2014) be conducted for proposed development or site alteration to confirm whether HDFs should be considered fish habitat under the OP. The SWS recommends that additional HDF assessment be carried out where land access was not obtained during the Subwatershed Study.
- ✦ Proposed development or site alteration within the minimum area of influence of any natural heritage feature, including within VPZ, needs to be assessed and determined through site-specific Environmental Impact Study (EIS) in accordance with Section 3.4.15 of the Clarington OP.

### **J.6.2 Hydrogeology**

- ✦ High volume recharge area to the northeast (constraint)
- ✦ Protection of wells (low / temporary constraint)
- ✦ Focusing investigations to characterize hydraulic properties of surficial and shallow soil strata and seasonal high groundwater levels to facilitate delineating potential areas to implement LID measures as a guide for development planning (opportunity)
- ✦ The Municipality considers preserving the natural heritage systems (NHS) within the Plan Area to be a priority. Hydrogeological studies should be carried out during the development stage in order to protect and enhance the existing NHS components (constraint).

### **J.6.3 Surface Water**

- ✦ Headwater protection will be an ongoing consideration as it contributes to the maintenance of baseflow and associated water quality, fisheries, ecological, and natural heritage benefits.
- ✦ A specific direction is being provided for the use of Low Impact Development (LID) measures and Best Management Practices (BMPs) as identified by government agencies including DFO, MECP, MTO, MNRF, CLOCA, Durham and Clarington, in public lands including ROWs, Parks and Buildings, to mitigate the impacts of increased imperviousness on runoff.
- ✦ The Robinson and Tooley Creek SWS will develop Stormwater Management Plans that will form the basis for the development of the major/minor drainage system within the SECSP and provide an opportunity to further optimise the preferred land use plan.

**Table J-1: SECS Development Opportunities & Constraints to accompany Figure J-5 (Source : R/T – SWS, 2019)**

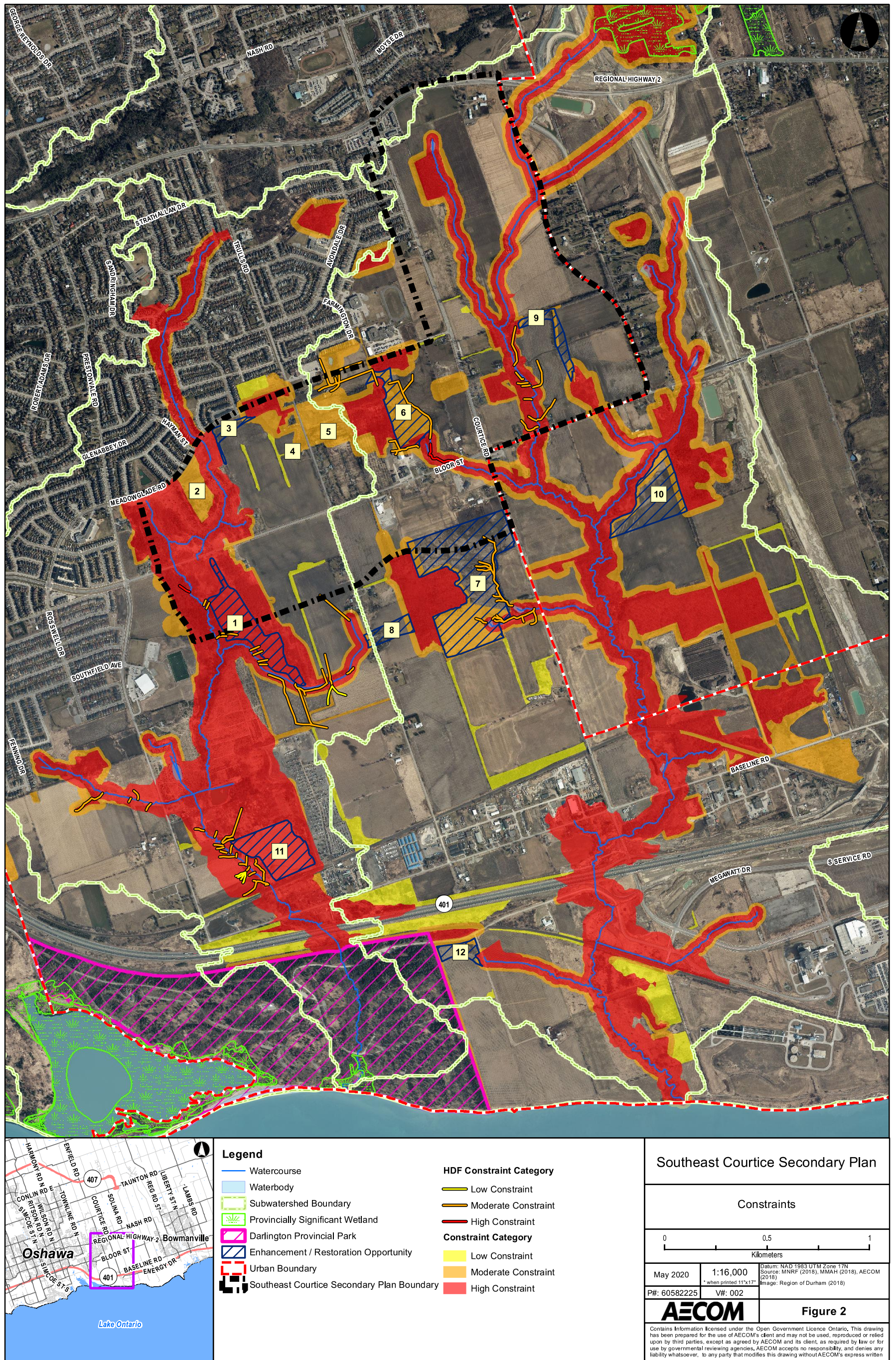
Constraint Level	Included Features	Caveats	Management Recommendation
High	<p><b><u>Natural Hazards: Confirmed</u></b></p> <ul style="list-style-type: none"> <li>• Meander Belt and Regulatory Flood Line</li> </ul> <p><b><u>Natural Hazards: Requiring Detailed Site Investigation</u></b></p> <ul style="list-style-type: none"> <li>• Slope Hazard and Long-term Stable Slope Setback (top-of-bank may be confirmed/refined by future studies)</li> </ul> <p><b><u>Natural Heritage System Features: High Sensitivity/Quality</u></b></p> <ul style="list-style-type: none"> <li>• Significant Woodlands</li> <li>• Wetlands over 0.5 ha that are part of the NHS and considered to be of high sensitivity/quality</li> <li>• Fish Habitat and Riparian Corridors</li> </ul> <p><b><u>Other Constraints</u></b></p> <ul style="list-style-type: none"> <li>• HDFs with a “Protection” classification (to be treated as Fish Habitat and Riparian Corridors under the NHS)</li> </ul>	<p>Generally, no development should occur in High Constraint areas. Several specific exceptions may be applicable to Flood Hazard Constraints as outlined in the SWS and noted below:</p> <ul style="list-style-type: none"> <li>• Stormwater management facilities shall be encouraged to locate outside of the flood hazard. However, quantity control facilities may be permitted within the flood hazard provided they are outside of the 1:100-year floodplain. Quality treatment facilities may be permitted provided they are outside of the 1:25-year floodplain. Both quantity and quality facilities must:                         <ul style="list-style-type: none"> <li>– ensure outlets are outside of the 2-year floodplain; and</li> <li>– demonstrate there is no impact on flood hydraulics and flood storage;</li> <li>– be located outside of the NHS as defined in the Watershed Plan.</li> </ul> </li> <li>• Public infrastructure (e.g. roads, sewers, flood and erosion control works) and various utilities (e.g. pipelines) may be permitted if it has been demonstrated to the satisfaction of CLOCA that there is a demonstrated need to locate in the flood hazard.</li> <li>• Public parks (e.g. passive or low intensity outdoor recreation and education, trail systems) may be permitted if it has been demonstrated to the satisfaction of CLOCA that there is no alternative location outside of the flood hazard</li> </ul>	<p>No development intrusion is generally allowable.                      Permissible Uses include:</p> <ul style="list-style-type: none"> <li>▪ Unpaved Trails / Elevated boardwalks through wetlands</li> <li>▪ Naturalized parkland</li> <li>▪ Stormwater ponds</li> <li>▪ Arboretum</li> </ul> <p>Non-Permissible Uses include:</p> <ul style="list-style-type: none"> <li>▪ Paved Trails</li> <li>▪ Manicured parkland</li> </ul>
Moderate	<p><b><u>Natural Heritage System Features: Moderate Sensitivity/Quality: Confirmed</u></b></p> <ul style="list-style-type: none"> <li>• Wetlands over 0.5 ha that are isolated and/or of lower sensitivity/quality</li> <li>• Category 1 and 2 Hedgerows Identified as Linkages</li> <li>• Natural Heritage System Features: Requiring Detailed Site Investigations</li> <li>• VPZs (exact dimensions to be confirmed; some development may be acceptable if it is considered a ‘compatible’ land use)</li> <li>• SAR setbacks (e.g., butternut 50 m habitat radius, where a health assessment has not yet been completed)</li> <li>• Complex ELC units containing both High/Medium Constraint and Low Constraint, e.g., wetland/cultural meadow complex (detailed delineation and mapping of wetland boundaries required)</li> <li>• Agricultural/pasture lands evidencing hydrologic function (e.g., ponding, saturated soils, wetland plants) in which it may be appropriate to complete additional hydrologic analysis</li> <li>• Areas providing candidate/unconfirmed SAR habitat or SWH (presence/absence of habitat to be confirmed through further studies)</li> </ul> <p><b><u>Other Constraints</u></b></p> <ul style="list-style-type: none"> <li>• HDFs with a “Conservation” or “Mitigation” classification</li> </ul>	<p>Development plans affecting Moderate Constraint features will be subject to site-specific study and completion of a Scoped Environmental Impact Study (EIS) to determine whether the proposed actions will have a significant negative impact on the identified features/functions.</p> <p>Mitigation and/or compensation measures may be recommended to offset impacts. In the case of hedgerows, generally it is the linkage function that is valued, so some modification or even relocation of the hedgerow feature may be considered so long as the function is maintained.</p> <p>In the case of VPZs adjacent to High Constraint features, these should be subject to a scoped EIS to determine appropriate VPZ widths and ensure no impact to key form or function of the adjacent High Constraint.</p> <p>“Conservation” HDFs are expected to be classified as Fish Habitat and Riparian Corridor (per NHS) following the completion of any proposed relocation, if relocation is approved.</p>	<p>Some development intrusion may be acceptable, pending further site-specific study to confirm the presence/ absence or define the boundaries of features (e.g., in the case of candidate SWH or wetlands) or assess the degree of impact of the proposed works.</p> <p><b><u>Permissible Uses include:</u></b></p> <ul style="list-style-type: none"> <li>• Multi-use Trails / Elevated boardwalks through wetlands</li> <li>• Naturalized &amp; manicured parkland</li> <li>• Environmental Learning Parks</li> <li>• Wetland Park – conservation/ education/ local tourism</li> <li>• Urban Ecology Centre</li> </ul>
Low	<p><b><u>Natural Features not Eligible for Inclusion in the NHS</u></b></p> <ul style="list-style-type: none"> <li>• Wetlands smaller than 0.5 ha</li> <li>• Woodlands that do not meet the criteria for Significant Woodlands per the Municipal Official Plan and do not exhibit other indicators of significance (rare species, hydrologic function, etc.)</li> <li>• Category 3 and 4 Hedgerows, and other hedgerows not assessed as part of the subwatershed study due to their lack of connectivity to other features (e.g., narrow windbreaks between agricultural fields)</li> </ul> <p><b><u>Other Constraints</u></b></p> <ul style="list-style-type: none"> <li>• Groundwater Recharge Areas</li> <li>• HDFs with a “No Management Required” classification</li> </ul>	<p>Features may be considered for incorporation into site-level plans where possible (e.g., parks or SWM blocks, preservation of individual specimen trees, alignment with rear lot lines or trail routes, etc.).</p>	<p>Development intrusion is not restricted by existing policies and regulations, but it is suggested that features be considered for incorporation into site-level plans where possible to avoid net loss of natural cover.</p>



**Table J-2: SECS Development Opportunities & Constraints Notes to accompany Figure J-5 (Source : R/T – SWS, 2019)**

Number	SECS Development Opportunities & Constraints Notes
1	An enhancement/restoration opportunity was identified at this location as it is currently under agricultural cultivation but located below top-of-bank. Restoration of this area would improve connectivity between the Significant Woodlands to the east and west, and overall create a larger natural area with a lower edge-to-interior ratio.
2	This moderate-level constraint area is largely surrounded by NHS features and was identified as candidate SWH pending further investigation. Upland successional habitat is generally poorly represented in the watershed, as most components of the NHS consist of forests, wetlands, and watercourse corridors, so the value of representation of this habitat should also be considered during site-level assessment.
3	An enhancement/restoration opportunity was identified overlapping the existing hedgerow connection at this location to maintain/improve linkage between the Robinson Creek and Tooley Creek watersheds. This is one of the only locations where such a cross-watershed connection is feasible. Maybe contingent on further assessment of moderate-level constraint area discussed under #5, below.
4	This moderate-level constraint area consists of a portion of ELC polygon A13 (cultural woodland) with a willow thicket swamp inclusion. The area is contiguous with the high-constraint complex of woodland/wetland habitat to the north; however, it is acknowledged that the connection is via a narrow, wooded strip along the south edge of a residential property. It is anticipated that a development proposal for this area may, if supported by an EIS, allow development of the existing moderate-constraint woodlot by proposing recreation/restoration of a similar area of habitat in another location that would be more contiguous with the rest of the NHS.
5	This moderate-level constraint area is associated with a complex mosaic of cultural meadow and meadow marsh communities which was noted to contain two locally rare or uncommon plant species (Closed Gentian, Slender False Foxglove). Further detailed study would be required at this location to delineate and confirm the wetland-upland boundary within the unit and to identify important hydrologic functions that should be maintained.
6	The identified moderate-level constraint area and enhancement/restoration opportunity is associated with a pasture located between a watercourse and components of the NHS. Observed site conditions and aerial photo interpretation suggest the pasture experiences surface ponding/drainage and contains wetland plant species (although as an active pasture it was not subject to ELC assessment); it is also bordered on the south and west by wetlands. It is strongly suspected that ceasing management (e.g., grazing) of this area would cause it to naturalize into wetland habitat. Further assessment of the hydrologic function of this area is recommended prior to the development of any proposed land use options.
7	An enhancement/restoration opportunity was identified at this location for multiple reasons: although currently a pasture, the area exhibits evidence of surface ponding/drainage and wetland characteristics, and if management were to cease it is strongly suspected that this area would naturalize into wetland habitat; the area is associated with HDFs; the area is over 15 ha in size and therefore has potential to support area-sensitive open habitat birds if allowed to naturalize; and it is adjacent to a Significant Woodland. A portion of the area has also been identified as a moderate-level constraint since a potential amphibian movement corridor (SWH) was identified at that location which would also provide a linkage between the otherwise-isolated woodlot and the Tooley Creek valley east of Courtyce Road.
8	An enhancement/restoration opportunity was identified at this location to create a linkage between the Robinson Creek corridor and an otherwise-isolated woodlot (which would further connect to the Tooley Creek corridor in conjunction with area #7, discussed above). This is one of the only locations where linkages between Robinson Creek and Tooley Creek corridors are feasible. Additional restoration of the drainage channel west of #8 may also be appropriate as this channel is currently closely bordered by agricultural cultivation and has little to no riparian vegetation present.
9	An enhancement/restoration opportunity was identified overlapping the existing hedgerow connection at this location to maintain/improve linkage between the main branch of Tooley Creek and the wetland located along a tributary to the southeast.
10	An enhancement/restoration opportunity was identified at this location to create a wider natural area adjacent to the existing riparian corridor and overall create a larger natural area with a lower edge-to-interior ratio in conjunction with existing woodlands to the east.
11	An enhancement/restoration opportunity was identified at this location as it is currently under agricultural cultivation but located below top-of-bank. Restoration of this location would create a larger natural area and improved buffering to the adjacent watercourse. Further, restoration of the area to open meadow would provide additional habitat area for threatened species Bobolink which is potentially nesting in the area immediately to the north.
12	An enhancement/restoration opportunity was identified at this location to maintain/improve linkage between the Robinson Creek and Tooley Creek watersheds. This is one of the only locations where such a cross-watershed connection is feasible. Additional restoration of the drainage channel extending southeast may also be appropriate as this channel is currently closely bordered by agricultural cultivation and has little to no riparian vegetation present.

Figure J-5: SECSPP Development Constraints (High / Medium / Low) and Enhancement / Restoration Opportunities



## J.7 Recommendations / Next Steps

To ensure relevant information from the SWS was considered in the design and planning of the SECSPP area, the integration process included a co-ordination meeting led by the Municipality of Clarington with the Aquafor Beech biologists, ecologists and engineers to review the existing conditions as determined in the Robinson Tooley SWS (2018) Report and discuss its further categorisation into levels of High and Medium Constraints in the context of their potential for planning opportunities / implications.

The final development opportunities and constraints outlined in the July 2019 R/T SWS Phase 1 Existing Characterisation Report, prepared as part of the SWS, confirmed baseline conditions and laid the foundation for the development of landuse concepts and the preferred plan for the SE Courtice Secondary Plan area.

While all options sought to minimise impact on the areas of high constraint, two of the Landuse Concepts namely Priority Green and Community Focus, explored enhancing the Moderate Constraints areas between Trulls and Courtice Road to serve as a community facility such as an Arboretum or a Wetland Park. Qualitative and quantitative assessments using the predetermined Evaluation Criteria were done to determine efficient strategies / components that would come together to determine the preferred plan.

The Secondary Plan and Urban Design and Sustainability Guidelines recognised the environment as a priority, ensures the protection and conservation of environmentally sensitive features, and enhancement where possible such as maintaining the function of headwater features, incorporating habitat linkages and encouraging the use of Low Impact Development (LID) measures. It also notes areas, through further study should areas of moderate environmental constraint not suited to development, that the opportunity be explored to develop a naturalised community amenity such as an arboretum or a wetland park, that will not only provide opportunities within the community for education and social interaction, but could improve the natural ecosystem over time.

An Environment Study Area has been identified by the SWS and will be subject to further site-specific environmental investigations.