



Environmental Implementation Report (EIR) Environmental Impact Study (EIS)

**Terms of Reference
2018**



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1. Introduction

The City of Brampton requires that the development of Secondary Plans proceed through the preparation of Block Plans, and there are often a number of Block Plans within a Secondary Plan area.

In order to receive approval of a Block Plan, an Environmental Implementation Report (EIR), or Master Environmental Servicing Plans (MESP) as appropriate, must be prepared to the satisfaction of the City of Brampton in consultation with the area Conservation Authority and the Region of Peel.

Furthermore, the City of Brampton also requires that an Environmental Impact Study (EIS) be completed for all development proposed that may impact a natural heritage feature or area, or the function of that feature. If the development proposal falls within an area previously subject to an EIR (or MESP), the EIS must conform to and support the recommendations of the EIR.

The requirement of an EIR and EIS is directed by policies in Section 4.6 of the City of Brampton Official Plan, which state that an EIR/EIS will:

- Be required to address the impacts of development on the natural environment and to implement the recommendations of subwatershed studies. EIRs shall be completed to the satisfaction of the City of Brampton in consultation with the relevant agencies prior to the approval of a community block plan.
- Include, but not be limited to:
 - Inventories and analysis of the natural heritage features, functions, and linkages including vegetation, fish and wildlife habitat, topography, soils, groundwater and surface water hydrology, fluvial geomorphic processes, and natural hazards including flooding, erosion and meander belt width, slope stability, etc.
 - An analysis of the individual and cumulative environmental effects that are expected to occur as a result of the proposed development and future uses.
 - The consideration and evaluation of alternatives, including land use, engineering, subdivision design and infrastructure, and mitigation, enhancement, and restoration measures.
 - A commitment to implementing Adaptive Environmental Monitoring (AEM), including measures for compliance and long term monitoring, and the ongoing management of measures for the protection, maintenance, and enhancement of natural features, functions and linkages to achieve long term ecosystem health.

Section 4.6 of the City of Brampton Official Plan also states that:

- Adjacent municipalities will be consulted if there is likely to be potential impact on downstream watercourses or adjoining natural features.
- The City in consultation with the area Conservation Authority may determine that a scoped Environmental Implementation Report is appropriate.

- Removal of natural heritage features and areas from the City's natural heritage system should be avoided and must be justified by a watershed plan, subwatershed study, Environmental Implementation Report or natural heritage system study in consultation with the Conservation Authorities and other relevant agencies.
- These studies will demonstrate to the satisfaction of the City in consultation with the Conservation Authorities that there will be no net loss, and if possible a net gain, in natural heritage system values and ecological functions.

The following Terms of Reference are to provide for development proponents and staff to assess development within and adjacent to natural areas to ensure that the relevant plans and policies are being addressed. Development and its associated activities should conserve the existing natural heritage and hazard features, functions, and linkages of the local landscape and subwatershed area in a self-sustaining state. Development may also provide the opportunity to restore and enhance lands.

Pre-consultation and consultation at key milestones in the process between the development proponent(s), City of Brampton, Conservation Authority, and Ontario Ministry of Natural Resources and Forestry (MNRF), where applicable, and is required, and will be necessary to effectively deal with the complex issues that may arise during the EIR/EIS process.

The general purpose of an EIR/EIS is to:

- Ensure the goals, objectives and recommendations of the Subwatershed Study (SWS) and MESP or EIR are achieved when land use change occurs.
- If no upper level environmental study has been completed, the intent of the EIR is to provide site-wide environmental background information, and be structured so as to include a biophysical inventory and analysis, an identification of constraints and opportunities, an assessment of impacts, an analysis of mitigation measures, and identification of the monitoring needs.
- Use a systems approach to ensure that ecological features, functions, and linkages are planned for as a whole, and that a natural heritage system is created and/or enhanced.
- Ensure connectivity at local, regional, and provincial scales, and across study area boundaries, as appropriate.
- Develop a natural heritage plan to achieve natural heritage system planning goals and objectives for:
 - Valleylands
 - Wetlands
 - Woodlands
 - Significant Wildlife Habitat
 - Other terrestrial vegetation (e.g. hedgerows)
 - Fisheries and wildlife habitat
 - Habitat of threatened or endangered species
 - Watercourses and headwater drainage features
 - Flood and erosion hazards
 - Surface water quality and quantity

- Ground water recharge and discharge zones
 - Ground water quality and quantity
- Streamline the review and approval process.
- Provide sufficient detail such that implementation reports/plans for tableland tree preservation, woodland management, servicing, or stormwater management plans for plans of subdivision can be developed.

2. Content of an EIR/EIS

The typical EIR/EIS will consist of the following parts:

- i. Executive Summary
- ii. Background Information
- iii. Impact Assessment/Mitigation
- iv. Monitoring and Overall Benefit Summary

While the approach to an EIR/EIS must be consistent, it is recognized that scoping of the Terms of Reference may be appropriate. Scoping will be undertaken by the development proponent, and will be approved by the City in consultation with the appropriate Conservation Authority, and where applicable, the MNRF, prior to work commencing on the scoped EIR/EIS.

However, the development of each EIR/EIS must have regard for the:

- Timing of the EIR/EIS in consideration of the approval of the SWS and/or MESP and new (provincial, municipal and agency) legislation, plans, policies and/or regulations that must be addressed.
- Timing of the EIR/EIS and the natural and/or anthropogenic changes evident in the proposed development.
- Specific issues for the protection, restoration, enhancement, and linkage of the local natural heritage system and the proposed land use changes.

All revisions to submitted EIR/EIS documents will be accompanied by a response document outlining how the applicant has addressed City, Conservation Authority, and MNRF comments.

2.1. Executive Summary

Provide an Executive Summary at the front of the report, include a short description of the following:

- a) Proposed land use change;
- b) Natural features, functions, and linkages of the study area.
- c) Impacts of development on the natural feature and functions.
- d) Recommendations to eliminate and/or mitigate impact.
- e) Recommendations from the supporting environmental reports (Functional Servicing Report, Hydrological Report, Hydrogeological Report, Tableland Vegetation Assessment, Woodland Management Plan etc).

- f) Summary of Natural Heritage Enhancement, Stormwater Quality and Quantity matters related to the application's Sustainability Score.

2.2. Background Information

2.2.1. Development Proposal:

The purpose of this component is to translate the SWS or MESP goals, objectives, and recommendations to the development proposal, and to confirm the initial constraints and baseline conditions. This section should include:

- a) A brief description of the proposed land use changes and associated servicing issues as identified through a development concept that may negatively impact the natural features and functions of a site, including road construction, stormwater management, barriers, trails, parkland, servicing, grading, etc.
- b) A general map of the area that illustrates the development proposal with regard to the surrounding lands, particularly to connecting natural areas and features

2.2.2. Municipal and Agency Requirements

This section should include a description of applicable policies, plans, regulations, guidelines, and standards that serve as a framework for the proposed development, such as:

- Municipal – Official Plan, Secondary Plan component studies, Environmental Master Plan, Natural Heritage and Environmental Management Strategy, etc.;
- Provincial – Provincial Policy Statement, Growth Plan, Greenbelt Act, CA Ontario Regulations, CA policy documents (e.g. TRCA Living City Policies document), CA watershed/subwatershed studies, Endangered Species Act; and
- Federal – Fisheries Act, Migratory Birds, Species at Risk.

2.2.3. Existing Conditions / Natural Features of Concern

Field staking of the natural heritage features must be carried out with City and Conservation Authority staff, including top of bank and associated dripline, woodland dripline, and unevaluated wetlands. The MRNF staff will need to be contacted for the staking of evaluated wetlands.

In most instances, the information collected through the Secondary Plan's comprehensive studies will provide a good level of understanding of the area's natural heritage system, and its features, functions, and linkages. Additional inventories may not be necessary if there are no proposed modifications to the existing natural heritage system, and/or the proposed development does not impact the natural heritage system functions and linkages.

Additional field studies and/or staking will be required if:

- There is no approved upper level study (i.e. SWS, MESP, EIR).
- Required by other agency regulations.

- There are proposed changes/impacts to existing natural heritage features and/or functions.
- A substantial time has lapsed between the approval of the upper level study and the current proposal.

2.2.4. Potential Studies

Study of the items noted below may be required, as determined through the pre-consultation meeting and/or scoped Terms of Reference approval.

Earth Resource

- a) Geology, landforms and topography
- b) Soils and hazards (slope stability, valleylands, and erosion sites)

Water Resources

- a) Hydrology, including watercourse, floodplains (refer to the MNRF *Technical Guide River & Stream Systems: Flooding Hazard Limit*), surface water quality and quantity, and headwater drainage features (refer to the TRCA/CVC *Evaluation, Classification and Management of Headwater Drainage Features Guidelines January 2014*).
- b) Hydrogeology, including recharge/discharge zones, seeps, groundwater quality and quantity, groundwater elevations and flow directions, and seasonal groundwater elevation variations (refer to the appropriate CA hydrogeology study guidelines).
- c) Connection between groundwater and surface water at site, and the adjacent natural feature(s).
- d) Riparian and tableland wetlands.
- e) Site-wide and Feature-Based water balance (refer to the TRCA/CVC Stormwater Management Criteria, the TRCA wetland risk matrix, and the TRCA/CVC Wetland Monitoring Protocol).

Onsite Vegetation Resources

- a) Determine and map all vegetation communities to vegetation type in accordance with the Ecological Land Classification for Southern Ontario (ELC) and the City's *Tableland Tree Assessment Guidelines*.
- b) Map all provincially, regionally, and locally significant woodland communities. Locally significant woodland are 0.5 ha or greater with 500 trees of any size.
- c) Map all rare or uncommon vegetation communities (refer to the MNRF Significant Wildlife Habitat Schedules 2015 and to the *Peel-Caledon Significant Woodland and Significant Wildlife Habitat Study*).
- d) Describe the location and distribution of all rare or uncommon species.
- e) Identify and map all wetlands with the ELC and Ontario Wetland Evaluation System Southern Manual, or based on a MNRF wetland evaluation exercise.
- f) Provide an assessment of the vegetation community health and quality, including the presence of significant infestations of invasive species.
- g) Identify areas with significant stands of Ash trees.

- h) Prepare a survey of all field staked natural heritage features and map other relevant natural features, as appropriate.
- i) Identify any ecological and/or water targets recommended for the subwatershed and municipality.

Offsite vegetation resources (adjacent to the subject property)

- a) Visually verify the adjacent properties vegetation resources using the Conservation Authorities' ELC Community Series mapping.
- b) Describe the location and distribution of any rare, uncommon, or species of concern (refer to *Peel-Caledon Significant Woodland and Significant Wildlife Habitat Study*).

Wildlife Resources

- a) Identify all wildlife species associated with onsite vegetation communities, including specific wildlife habitat (e.g. vernal pool, hibernacula, snags, fallen logs, etc.) and identify critical habitat needs (i.e. reproduction, foraging, overwintering and movement/migration).
- b) Conduct breeding bird survey in accordance with appropriate monitoring programs, such as the Forest Bird Monitoring Program or the Marsh Monitoring Program.
- c) Conduct Amphibian surveys in accordance with appropriate protocols, such as the Marsh Monitoring Program.
- d) Undertake vernal pool searches for salamander egg masses if this are suspected as per the MNRF's Amphibian Breeding Habitat Significant Wildlife Habitat (SWH) criteria.
- e) Describe the location and distribution of any rare or uncommon species based on the provincial, regional, and/or Conservation Authority lists.
- f) Identify and map all candidate significant wildlife habitat, both onsite and on adjacent lands following all up to date guidelines, and protocols.
- g) Make use of all survey results to identify Confirmed SWH.

Fish and Aquatic Resources

- a) Determine and map the location and distribution of permanent and seasonal fish habitat and species, particularly spawning and other critical habitats (eg. refuge pools).
- b) Determine and map the location and of sensitive benthic communities.
- c) Define watercourse flow characteristics with emphasis on identifying direct and indirect fisheries habitat, permanent and seasonal watercourses, stream thermal regimes, contributing hydrological functions, channel characteristics, and riparian characteristics.

2.2.5. Analysis

Discuss the inter-relationship of the documented natural heritage features, functions, and linkages, in particular:

- a) Significant and sensitive features, functions, and linkages of the subject property.
- b) Natural and cultural vegetation features onsite (e.g. hedgerows, meadow-feeding areas, heritage trees, etc.).
- c) Relationship of the subject property to the natural heritage features, functions, and linkages on the adjacent lands.

- d) Relationship of the subject property to the entire natural heritage area, and/or the natural heritage system of the subwatershed (completed as part of the MESP).

List and describe other natural and cultural features onsite that may contribute to functions of the designated natural area's features and functions.

Identify the representativeness and rarity of the natural heritage features and functions.

Also identify area of management concern, which may include but not limited to areas of significant invasive species infestation, and large stands of Ash trees.

Note: Include literature cited, all background data (including SWS, MESP), list of information sources contacted during the study, and a listing of the professionals on the study team

2.2.6. Constraints and Opportunities Mapping

Provide a detailed Constraints and Opportunities Map at a maximum scale of 1:2000. This map should be legible to reviewers such that elements such as staked drips lines, as well as bearings and dimensions can be easily read. The map must include:

- a) Contours;
- b) Landforms, geology;
- c) All hydrologic features (e.g. watercourses, swales, ponds, depression areas, springs, seepage areas and existing stormwater management facilities);
- d) Watercourse hazards including Regulatory Storm floodplain, meander belt hazard, etc.
- e) Current land use;
- f) Natural Heritage System, including wetlands, woodlands, wetlands, cultural landscape features, and other terrestrial and riparian communities;
- g) Terrestrial corridors (existing and potential);
- h) Wildlife species; bird surveys; amphibians; location and distribution of species; identification and mapping significant wildlife habitats.
- i) Aquatic Habitat; identification of location and distribution of fish habitat and fish species, stream thermal regimes, spawning areas, nursery areas, refuge pools, migration routes, channel characteristics, and temperature;
- j) Valley slopes, staked top of bank, geotechnical hazard areas (e.g. long-term stable top of slope, meander belt width);
- k) Groundwater recharge and discharge areas, and the linkages between them (studies based on appropriate Conservation Authority hydrogeological study guidelines);
- l) Groundwatersheds; extending outside the study area, if applicable, and based on appropriate Conservation Authority hydrogeological study guidelines; and
- m) Applicable environmental buffers and/or setbacks for each environmental feature and area, and natural hazard lands.

2.3. Impact Assessment and Mitigation

2.3.1. Supporting Studies

Provide a brief summary of the main issues and recommendations of the Functional Servicing Report, including:

- a) Description of existing and proposed runoff conditions by subcatchment.
- b) Identification of watercourses.
- c) Confirmation of the the location, sizing and design of the SWM facilities and outfalls, and that they SWMP facilities do not encroach or impact the identified NHS (SWM facility design based on Conservation Authority SWM criteria documents).
- d) Identification of Low Impact Development (LID) facilities and appropriate locations.
- e) Identification of management practices and design considerations necessary to ensure that the stormwater management plan conforms to the MESP.
- f) Identification and methods to mitigate or eliminate of downstream problems.
- g) Identification, screening, and design of alternative management practices based on current Ministry of the Environment and Climate Change, Ministry of Natural Resources and Forestry, and Conservation Authority guidelines.
- h) Confirmation of facility location, catchment area, functional considerations, outlet characteristics and preliminary design elements.
- i) Documentation and adherence to criteria related to water quality, water quantity, and base flow protection.
- j) Detailed implementation programs and measures.
- k) A summary of the technical findings and recommendations.
- l) A summary of site-wide and feature-based water balances targets (refer to TRCA's Stormwater Management Criteria).

A brief summary of the findings and recommendations of the following supportive studies should also be provided, where applicable:

- Tableland Vegetation Assessment
- Woodland Management Plan
- Natural Channel Design
- Geotechnical Report
- Fish Habitat Compensation Plan
- Wetland Mitigation and Maintenance Plans
- Hydrogeology Report

2.3.2. Assessment of Impacts

Provide an assessment of potential impacts of the proposed development on the natural area's features and functions, both onsite and related to the adjacent lands. The assessment should consider cumulative, and short and long-term impacts. This section will qualify whether these are negative and/or positive impacts associated with the proposed development, and provide rationale for how impacts were determined.

Negative environmental impacts may be determined by one or more of the following characteristics:

- The degree to which public health and safety could be affected.
- Any unique characteristic of the area that may be adversely affected.
- The degree to which the potential impacts are highly uncertain or involve unique or unknown risks.
- The degree to which an action may adversely affect wildlife and its associated habitat, including threatened or endangered species and habitat.

The EIR/EIS impact assessment will need to integrate the information, data, results and recommendations, including potential environmental impacts that have been identified from each of the supporting studies (i.e. Functional Servicing Report, Tableland Tree Assessment, Woodland Management Plan, etc).

The Impact Assessment will examine potential impacts at all stages of the proposed development, including pre-construction, construction, and post-construction. It will also include features and functions of concern, which may include but are not limited to:

Impacts to Physical Resources:

- a) Discuss activities associated with the proposed land use changes, both during the construction phase and the post-development phase, which may have an impact on the natural environment.
- b) Explain erosion and sedimentation control measures;
- c) Outline grading alterations to facilitate development (e.g. cutting and filling);
- d) Describe pertinent geotechnical assessments (e.g. slope stability assessments and impacts of grading on stability).
- e) Outline the proposed stormwater management.
- f) Discuss changes in hydrology – site-wide water balance and feature-based water balance.
- g) Describe watercourse and stream erosion analysis.
- h) Explain groundwater quantity and quality changes, including recharge/discharge area quantity and quality changes;
- i) Describe surface water hydrology/drainage pattern alterations, including water quality and thermal alterations;

Impacts to Biological Resources:

- a) Map and discuss the extent of proposed tableland vegetation to be removed and/or retained (number of trees as per the Tableland Tree Assessment Guidelines, area of ELC communities), and its potential impacts on the natural heritage system.
- b) Discuss the extent of natural heritage features to be retained/removed/encroached (express in hectares and ELC communities), and potential impacts on the natural heritage system of the subject site;
- c) Outline wildlife habitat loss-disturbance (e.g. light, noise) to core, breeding, critical, recovery, migration and foraging habitats;

- d) Map and quantify in hectares the impacts associated with Redside Dace Habitat related to trail development, if applicable.
- e) Describe any loss, disruption, or alteration to direct fish habitat (e.g. refuge, up-wellings) and indirect functions (e.g. flows, benthic organisms, etc.)
- f) Map and discuss existing corridors and linkages, and removal, encroachment, or modification to existing corridors and linkages between natural heritage features on and off site, including potential barriers.
- g) Map and discuss the extent of proposed natural heritage system removal or encroachment, including buffers.
- h) Provide a summary of the proposed impacts of the proposed development on the site's and city's natural heritage system.

Impacts to Social Resources

- a) Map and discuss impacts of proposed trail development in and adjacent to natural heritage features.
- b) Provide a detailed location map and development concept.

2.3.3. Analysis of Mitigation Measures

It is almost impossible to eliminate an adverse environmental impact, but it may be possible to reduce or minimize the impact through mitigative measures. The EIR/EIS must illustrate and discuss how it complies with the continuum of conservation (or Mitigation Hierarchy) that includes:

- Protection (Avoid) = no development or site alteration (including buffers)
- Maintenance (Minimize) = no negative impacts (includes ESC, reduce buffers)
- Restoration and Enhancement = to improve form and function
- Compensation / Offsetting = to achieve (net) ecological benefit

- a) List and describe available techniques and their effectiveness to achieve an overall net ecological benefit, including but not limited to:
 - Modifying the proposal.
 - Dedication of land, including buffers and setbacks.
 - Timing restrictions (e.g. fisheries and breeding bird timing guidelines).
 - Stormwater management and low impact design measures.
 - Habitat improvements, including plantings, invasive species management, plant salvage;
 - Erosion and sediment control;
 - Directional or low level lighting, noise barriers, etc.
- b) Provide conceptual plans of proposed offsetting for any proposed encroachment into the natural heritage system or any removal of healthy tableland trees
 - The minimum replacement ratio for natural heritage area encroachment is 1:1
 - Refer to the City's Tableland Tree Assessment Guidelines for replacement ratios for tableland trees

- City buffer and setback requirement must be applied to the outer limit of the replacement/compensation area
- c) Describe proposed remediation for areas that are temporarily disturbed during construction.
- d) Describe proposed rehabilitation or restoration for existing disturbed areas related to past land use impacts.
- e) Describe proposed bank stabilization or slope remediation required as part of the proposed development.
- f) Include a quantitative summary, in table format, of the vegetation lost and gained as a result of the proposed development.

2.3.4. Water Balance

Scoping for a Feature Based Water Balance needs to occur very early in the process as they require long time frames to complete.

- a) Demonstrate how the hydrologic function of natural feature(s) will be protected during, and post construction, allowing for the feature's long-term perpetuation and sustainability, as required per the TRCA's/CVC's Stormwater Management Criteria.
- b) Describe the predicted impacts to the feature by the land use change, and identify mitigation measures needed to manage the water balance with the intent to maintain the pre-development hydrology, including groundwater infiltration.

2.3.5. Summary

This section will conclude with a summary of how the development proposal will protect the site's natural heritage system features and functions, and how it addresses the pre-construction, construction-operation, and post construction environmental management of these resources, including what mitigation measures will be incorporated into the planning and design of future land uses.

2.4. Monitoring and Overall Benefit Summary

Monitoring plans are intended to provide a mechanism for gathering field data for the purpose of adapting environmental control management systems, and improving local environmental conditions.

Depending on the significance and sensitivity of the natural heritage features, functions, and linkages of the site and adjacent lands, and the scale of the development proposal, monitoring may be required for pre-construction, construction-operation and post construction periods. Details of the monitoring program will be specific to the proposal, and will be determined through review of the EIR/EIS and supporting studies submitted for the development plan and detailed design.

The monitoring program will need to include:

- Identification of persons/organization to do work;
- Parameters to be monitored;
- Methods, standards, and guidelines to be used;
- The schedule and duration of the monitoring program; and
- Format and the frequency of reporting.

The EIR/EIS will include an outline of an integrated environmental monitoring plan for the study area that is based on principles of Adaptive Environmental Management. The goal of Adaptive Environmental Management is to monitor the environmental features and functions (i.e. existing woodlots, new restoration areas), and to observe the success of site design and mitigation measures (e.g. buffers, LIDs, etc.) in the protection of them. (e.g. fish habitat, wetland creation and water quality). The monitoring plan is to also identify any unforeseen negative impacts and to take action by instituting appropriate follow-up adaptive management measures as appropriate.

2.4.1. Pre-construction, Construction-operation and Post Construction Monitoring

The Monitoring Program will need to be reviewed by the City in consultation with the Conservation Authority and MNRF, and will address pre-construction, construction, and post-construction phases. Pre-construction monitoring will focus on establishing baseline conditions, construction monitoring will focus on sediment and erosion control and feature water balance, and post-construction monitoring will address erosion issues, function of SWM facilities, and overall success of the project. The monitoring plan will be designed in such a way that impacts can be distinguished from natural trends at an early stage.

The purpose of the monitoring plan is to measure effects over time including:

- To measure feature water balance to ensure the hydrology of the features are maintained.
- To measure the success of the mitigation measures including but not limited to restoration, enhancement, compensation/offsetting and buffers
- Proposed mitigation technology that is relatively untested or not proven in Ontario;
- To require future and/or ongoing refinement to the mitigation strategy where long-term operations are associated with the development (e.g. stormwater management, water taking etc.)

Post construction and long term monitoring needs to be considered for functions related to:

- Water quality;
- Fisheries;
- Hydrology (LID measures);
- Groundwater quality and quantity;
- Stream morphology;
- Erosion and slope stability monitoring; and
- Terrestrial resources – woodlots, wetlands, wildlife, Environmentally Sensitive Areas;
- West Humber Tributaries A and D as per TRCA's Natural Channel Monitoring Guidelines

If negative impacts are detected, a more intense monitoring program may be necessary to determine where, why and how fast the change is occurring, including, but not limited to:

- Proposing alternative, appropriate adaptive mitigation measures, if necessary; and
- Focusing on evaluating ongoing or proposed management practices.

2.4.2. Conclusions, Recommendations and Residual Impacts

This section will include, but is not limited to:

- a) A comparative evaluation of alternative management options leading to the selection of the preferred option.
- b) Conclusions and recommendations.
- c) Summary of mitigation measures that will be put in place to maintain features and functions, as well as their relationship within the natural heritage system.
- d) Description of the overall net ecological benefit to Brampton's natural heritage system.

3. Report Format

A complete description of all the work and conclusions prepared for the EIR/EIS needs to be included here. Also include appendices for technical reports and grading plans with sufficient cross-sections.

Reports must be submitted in hard copy along with an electronic copy on a labeled CD, USB key, or via e-mail. The City of Brampton will require 4 hard copies of the final approved report, each with a full set of maps, and 6 digital copies. The proponent should consult with the Conservation Authority regarding the format and number of copies they require.

Mapping

All mapping will be provided at a scale of 1: 2000 or higher.

GIS Data Submission Standards

All mapping and related data must be submitted in a compatible Geographic Information Systems (GIS) format. Preferred formats include Environmental Systems Research Institute (ESRI) ArcView shapefiles and Microsoft Access geo-databases. The City of Brampton uses the following map projections:

1. All mapping shall be compiled using the 6-degree Universal Transverse Mercator Projection Northern Hemisphere Zone 17 expressed in meters. The datum to be used for this contract must be North American Datum, 1983. A City of Brampton 2nd Order Horizontal Control network based on this projection & Datum is available and all mapping shall be tied into it.
2. The vertical datum to be used in the mapping shall be mean sea level as Bench Marks established by the North American Datum, 1927 with the 1978 Southern

Ontario Adjustment. A City of Brampton 2nd Order Vertical Control network based on this Datum is available and any DEM shall be based on this.

All submitted map data must conform to a pre-approved data model / layer (level) structure as provided by the City. Similarly, a metadata document will also be provided by the City. Any modifications to the above noted items must be reviewed and approved by the City.

The City will provide the base mapping and related data as required for the project. The specific mapping and data layers to be provided will be decided upon in discussions with the development proponent and City staff. The development proponent will be expected to use this base mapping as the foundation upon which the applicable project mapping and data will be created. Prior to receiving this data the development proponent must sign and return the City of Brampton End User License Agreement document to the GIS Services Section of the Information Technology Division. This agreement will govern the use of any base data provided by the City.

Data must be submitted on CD or DVD media. Any questions regarding GIS Standards and required documentation can be addressed to the City's Planning and Development Services Department.

Ecological Field Data Cards

Provide data card to assist with the maintenance of City and Conservation Authority databases.