APPENDIX A
SECTION 1: BACKGROUND INFORMATION

APPENDIX A1

LSS TERMS OF REFERENCE

SCS consulting group ltd

GEI Consultants

Wildfield Village
Town of Caledon, Ontario

Local Subwatershed Study (LSS)

Terms of Reference

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Revisions Registry

Identification	Date	Description of Issued and/or Revision
Wildfield CEISMP Terms of Reference	January 18, 2024	1st Submission to Town
Wildfield LSS Terms of Reference	May 31, 2024	2nd Submission to Town, TRCA and Region of Peel
Wildfield LSS Terms of Reference	August 23, 2024	3rd Submission to Town, TRCA and Region of Peel

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1.0 Introduction

1.1 Purpose

Wildfield Village is located within Peel Region, in the Town of Caledon, within the Region's Urban Boundary. The lands are designated as 2051 New Urban Area in the Peel Region Official Plan (April 2022).

The Wildfield Village Landowners Group are initiating a Local Subwatershed Study (LSS) to support a Secondary Plan process for Wildfield Village. As indicated by the Town of Caledon, the intent of the LSS is to "develop a sustainable development plan for the subject growth area in Caledon by protecting and enhancing the natural and human environments through the implementation of the direction, targets, criteria and guidance of the Region of Peel's Scoped Subwatershed Study (Wood et al., 2022). The LSS will confirm, refine and implement a Natural Heritage System (NHS) and the water resource management approach that will protect, rehabilitate, and enhance the natural and water-based environments within the Secondary Plan Area, and the surrounding lands in the subwatershed."

The proposed scope of work for the LSS is outlined in the following sections. The LSS will address a range of environmental and servicing matters associated with the Wildfield Village Secondary Plan (WVSP) area, including the protection and management of surface water, groundwater, fluvial geomorphology, and terrestrial and aquatic resources. The LSS will also identify the NHS and municipal servicing needs, including stormwater management, sanitary and water servicing and site grading requirements.

The LSS serves to:

- Address the relevant natural features and functions identified in the Provincial Policy Statement (PPS; MMAH 2020), Region of Peel Official Plan, and Town of Caledon Official Plan;
- Provide the foundation for the layout of the Secondary Plan by defining and delineating elements such as the NHS, transportation and servicing networks, and the location of stormwater management (SWM) facilities;
- Follow the direction and guidance of the Scoped Subwatershed Study (Wood et al., 2022) confirming targets and criteria based on site specific data obtained through the Secondary Plan level study; and,

- Define measures to protect and/or enhance the NHS to achieve a robust, healthy NHS.

This Terms of Reference (TOR) was developed with reference to the Region of Peel TOR dated June 2024, originally provided as Appendix F to the Scoped Subwatershed Study (Wood et al., 2022) and the Town of Caledon LSS TOR dated May 2023. It provides guidance for preparation of the LSS, and allows for future modifications to scope and content based on comments and on-going consultation with the Town, TRCA and Region.

As noted in the TRCA TOR guidelines, the LSS will include three phases of reporting including:

- Phase 1 – Characterization of Existing Conditions and Baseline Inventory
- Phase 2 - Analysis, Impact Assessment, Mitigation and Recommendations
- Phase 3 - Implementation, Monitoring and Adaptive Management

The LSS report will be submitted by phase, with the subsequent phase being prepared while the agencies are reviewing and preparing comments on the previous phase. This will allow adequate review time and opportunity to provide comment, while allowing the Study Team to proceed with the next phase ensuring that the overall Secondary Plan process timelines can be achieved.

Each phase of the LSS will include the following study components: natural heritage features, natural hazards; geology; hydrogeology; hydrology; geomorphology; and, municipal servicing. The individual study components will be integrated across the various disciplines in all three phases of the LSS.

The TRCA's Environmental Impact Statement Guidelines (October 2014) and the TRCA's Master Environmental Servicing Plan Guideline (March 2015), will be utilized when preparing the LSS. The LSS will also follow all requirements of the Region of Peel Official Plan, Town of Caledon Official Plan, and the TRCA.

1.2 Study Area

Wildfield Village Secondary Plan (WVSP) area is approximately 358.08 ha in size and is bound by Planned Highway 413 Transportation Corridor to the north, the Greenbelt Plan and The Gore Road to the east, Mayfield Road to the south and Centreville Creek Road to the west (**Figure 1**) and is herein referred to as the WVSP Area. The WVSP area will be the

basis for the LSS; however, there are several study components that will have study areas that will go beyond the WVSP limits as follows.

1.2.1 Natural Heritage Study Area

The Natural Heritage Study Area (NHSA) will consist of the WVSP area plus the 120 m adjacent lands. The 120 m adjacent lands allow for the assessment of potential negative impacts on significant features.

1.2.2 Geomorphic Study Area

The geomorphic assessment will be undertaken for watercourses within the WVSP area, as well as receiving watercourses for a distance of approximately 250 m downstream of the study area. The assessment for the downstream reaches will be used to assess the impacts of the proposed development to these reaches, from a geomorphic perspective. Recognizing that these reaches flow on lands that are not participating in the current study, where appropriate, these geomorphic assessments will be completed within the road right-of-way, or through desktop-based methods.

1.2.3 Hydrologic Study Area

The WVSP is located within the upper reaches of the Humber River and is identified as being in the West Humber subwatershed. The Hydrologic study area (HSA) will encompass the WVSP area, in addition to external drainage from lands upstream that flow through the WVSP area. The HSA will also include key flow nodes downstream of the WVSP area to Lake Ontario. These flow nodes will be utilized to compare post development flows to pre-development flows to assess potential impacts and develop mitigation plans specific to the WVSP.

1.3 Existing Land Use and Ownership

The WVPS Area is dominated by active agricultural lands, with scattered wetlands and headwater drainage features occurring on the tableland. The West Humber River and its associated valley occur north and east of the Study Area, within the Greenbelt Plan area. This valley consists of woodland and wetland habitat. Residential homes front onto portions of the roads bordering the WVPS Area.

Wildfield Village is comprised of relatively even mix of participating and non-participating properties. **Figure 2** shows the ownership for the WVPS Area with approximately 57% of the lands participating in the Secondary Plan process including the LSS.

1.4 Background Studies and Guidelines

There are numerous studies, plans, guidelines, etc. that will provide input and guidance to the preparation of the LSS. The following list outlines a number of these studies noting that it is not an exhaustive list and that additional information obtained while preparing the LSS will be including in the final report:

- Region of Peel Official Plan (2022);
- Region of Peel Settlement Area Boundary Expansion Study (SABE), (2022);
- Scoped Subwatershed Study (SSS), Part A: Existing Conditions and Characterization (Final Report), Settlement Area Boundary Expansion, Region of Peel, (Wood., 2022);
- Scoped Subwatershed Study (SSS), Part B: Detailed Studies and Impact Assessment (Final Report), Settlement Area Boundary Expansion, Region of Peel, (Wood., 2022);
- Scoped Subwatershed Study (SSS), Part C: Implementation Plan (Final Report), Settlement Area Boundary Expansion, Region of Peel, (Wood., 2022);
- Region of Peel Water and Wastewater Master Plan (2020);
- Town of Caledon: Development Standards Manual (2019);
- Town of Caledon Official Plan (March 2024);
- Draft Town of Caledon Growth Management Phasing Plan and Financial Impact Assessment Presentation (2023);
- Municipal Consolidated Linear Infrastructure Environmental Compliance Approvals, Ministry of Environment, Conservation and Parks (MECP), (June 2023);
- A Place to Grow: Growth Plan for the Greater Golden Horseshoe (2020);
- Mayfield Road Improvements (Airport Road to Coleraine Drive) Class Environmental Assessment – Environmental Study Report, (Stantec, 2013);
- Development Charges Background Study – Consolidation Report, The Regional Municipality of Peel (Watson & Associates Economists Ltd., 2020)
- 2051 Transportation Master Plan, Peel Region,

- Species at Risk in Ontario (SARO) List, regulation to the Endangered Species Act, 2007 (ESA);
- Ministry of Natural Resources: Natural Heritage Reference Manual: Second Edition (OMNR 2010);
- Humber River Watershed Plan (TRCA, 2008) and any on-going updates including the Humber River Watershed Characterization Report (TRCA, 2023);
- Humber River Watershed Plan Implementation Guide (TRCA, 2008);
- Humber River State of the Watershed Reports (TRCA, 2008);
- Final Report Humber River Hydrology Update (TRCA, 2018);
- Listen to Your River: A Report Card on the Health of the Humber River Watershed (TRCA, 2007);
- Humber River Fisheries Management Plan (MNR and TRCA, 2005);
- TRCA Master Environmental and Servicing Plan Guideline (TRCA, 2015);
- Evaluation, Classification, and Management of Headwater Drainage Features Guidelines (CVC & TRCA, 2014);
- TRCA Guidelines for Review of SWM Pond Location with Respect to Groundwater Conditions;
- TRCA Stormwater Management Criteria Document (TRCA, 2012);
- Erosion and Sediment Control Guide for Urban Construction (TRCA, 2019);
- Crossings Guideline for Valley and Stream Corridors (TRCA, 2015);
- Channel Modification Design and Submission Requirements (TRCA, 2007);
- Technical Guidelines for Flood Hazard Mapping (TRCA and other Conservation Authorities, 2017);
- TRCA/CVC Low Impact Development Stormwater Management Planning and Design Guide (February 2024) https://wiki.sustainabletechnologies.ca/index.php?title=Main_Page&oldid=15953;

- Geotechnical Engineering Design and Submission Requirements (TRCA November 2017);
- Hydrogeological Assessment Submissions- Conservation Authority Guidelines to Support Development Applications (Conservation Ontario 2013);
- Technical Guide for River & Stream Systems: Erosion Hazard Limit (MNRF, 2002);
- Ministry of the Environment Water Well Records;
- Approved CTC Source Protection Plan (CTC Source Protection Committee, 2022); and,
- Approved Assessment Report: Toronto and Region Source Protection Area (CTC Source Protection Committee, 2022)

1.5 Technical Advisory Committee (TAC)

A Technical Advisory Committee will be formed consisting of members from the Town, TRCA, the Region and the Consulting Team. Through the completion of the LSS analyses, regular monthly meetings will be held to discuss technical matters, as needed.

2.0 Phase 1- Subwatershed Characterization and Integration

The scope of work in Phase 1 includes the characterization of existing conditions and development of a baseline inventory, as well as the cross-synthesis of the various disciplines, as outlined in the following sections. Tasks relating to the understanding of the existing inter-relationships between groundwater, surface water, and natural heritage features and delineation of the NHS and are presented in Sections 2.2.3 and 2.2.4, respectively.

2.1 Background Information Review

a) Compile and review existing studies, plans, mapping, etc.

b) Summarize existing policies, guidelines, and legislation affecting LSS study components.

c) Identify data gaps and make suggestions for continued monitoring to fill the data gaps during Phases 2 and 3 of the LSS.

2.2 Natural Heritage and Hazards

2.2.1 Natural Heritage Assessment

a) Characterize natural heritage features through ecological inventories on participating lands of the NHSA as outlined in Sections 2.2.1.1 through 2.2.1.9. Non-participating lands of the NHSA will be assessed through a desktop analysis, including air photo interpretation.

b) Summarize all pertinent information relating to the data collection including dates and times of field visits, names of surveyors, and weather conditions.

c) Document protocols for the various surveys and prepare mapping to identify the location of all sampling/survey efforts.

d) Conduct a Species at Risk Screening exercise.

2.2.1.1 Ecological Land Classification (ELC) and Botanical Surveys (completed)

a) Prepare ELC mapping to identify vegetation communities and other important features on and adjacent to the property, including a description of vegetation

within ELC units (to the extent possible).

b) Prepare ELC Mapping to identify significant species and feature locations.

c) Complete an assessment of terrestrial connectivity.

2.2.1.2 Breeding Bird Surveys

a) Conduct conventional breeding bird surveys (completed);

2.2.1.3 Calling Amphibian Surveys

a) Complete call surveys within suitable habitat areas that have the potential to undergo direct or indirect impacts from adjacent development (completed);

2.2.1.4 Reptile Surveys

a) Complete Snake and turtle surveys to determine if there is suitable reptile habitat in the NHSA (completed);

2.2.1.5 Aquatic Habitat Assessment

a) Undertake a visual survey of existing in-stream and riparian conditions along and adjacent to the watercourses (completed);

2.2.1.6 Fish Community Sampling

a) Conduct Fish Community sampling to confirm the distribution and extent of direct fish habitat in the watercourses, and to identify species diversity and relative abundance (complete);

2.2.1.7 Headwater Drainage Feature (HDF) Assessments

a) Characterize all hydrologic features utilizing the TRCA's Interim Guidelines for the "Evaluation, Classification, and Management of Headwater Drainage Features" (2014) including watercourses, natural areas providing flood storage attenuation, depression storage, recharge areas, seepage areas or springs, and HDFs (complete);

2.2.1.8 Bat Habitat Assessment and Bat Acoustic Monitoring Surveys

a) Conduct bat habitat and acoustic monitoring surveys to understand the presence/absence of Species at Risk (SAR) bats and bat Significant Wildfield Habitat (complete);

2.2.1.9 Staking of Natural Heritage Features

a) Undertake staking of all natural features (e.g. dripline, top-of-bank, and wetlands) on participating landowner parcels with TRCA and the Town of Caledon .

b) Provide a survey copy of the staked lines stamped by an Ontario Land Surveyor.

2.2.2 Natural Hazards

2.2.2.1 Erosion Hazards

a) Complete a geomorphic analysis to support the erosion hazard delineation for applicable tributaries within the WVSP area (i.e., meander belt delineation for unconfined valley systems, and calculation of the toe erosion allowance for confined valley systems), following established protocols.

b) For the Phase 1 report, a preliminary, desktop level slope stability assessment will be completed for confined valley systems along the east side of the WVSP Area. The confined valley in the north of the WVSP Area is north of the Planned Highway 413 Transportation Corridor and will not be assessed. The assessment will include using LiDAR topographic data and conservative assumptions for toe erosion allowances and stable slope inclinations, to estimate the long-term stable top of slope in accordance with TRCA Guidelines. Commentary will be provided to identify where detailed slope stability assessments are required to be completed as part of the Draft Plan of Subdivision process, including preparing cross-sections of steep, or long, or unstable slopes in valley corridors in accordance with TRCA Geotechnical Guidelines. Slope conditions shall be investigated and modelled, and slope stability assessed as part of detailed geotechnical studies completed in support of Draft Plan of Subdivision applications.

2.2.2.2 Flood Hazards

a) Review and verify available TRCA hydraulic models (both engineered and estimated HEC-RAS models) and floodplain mapping for the tributaries of the Humber River located within the WVSP area.
b) Delineate floodlines for watercourses (defined bed and bank) within the WVSP area, not previously mapped by TRCA, as required.
c) Identify existing Flood Vulnerable Areas (FVAs) downstream of the WVSP area that will potentially be impacted from future development in the WVSP area.

2.2.3 Natural Heritage System Evaluation

a) Describe existing natural heritage conditions in the NHSA, including aquatic and terrestrial features and functions.

b) Identify and analyze key ecological features and functions, with consideration to whether any refinements to the (additions or minor deletions) are warranted based on current site data.

c) Identify key features and ecological functions, including the natural heritage features identified in the PPS (MMAH 2020), Region of Peel Official Plan (2022), Caledon Official Plan (2024), SABE SSS (Wood, 2022), and Humber River Watershed Characterization Report (TRCA, 2023), within the NHSA and on adjacent lands that may be affected by development, to the extent possible using aerial photography.

d) Identify features (e.g., certain vegetation communities that support concentrations of significant species, structures, habitat elements) that would qualify as significant habitat (i.e. Significant Wildlife Habitat screening).

e) Identify key features and/or functions that contribute significantly to the ecological integrity or importance of the proposed NHS.

f) Identify the natural heritage system for the NHSA area and document sensitivities to changes in land uses.

g) Identify habitats that support species that have designations under the Endangered Species Act or the Species At Risk Act; and provincially significant areas under the Provincial Policy Statement (2014) such as significant valley

lands, significant woodlands, significant wildlife habitat and significant wetlands. Also identify species and communities of concern as ranked by TRCA, as well as Locally Significant Features and Areas pursuant to applicable municipal and TRCA policies.

2.2.4 Opportunities and Constraints Mapping

a) Prepare Opportunities and Constraints mapping that would include: watercourses, protected HDFs, existing flood limits (if defined bed and bank), erosion limits, meander belt widths, staked top-of-bank, long-term stable top-of-bank, wetland and dripline boundaries, linkages and enhancement areas.

b) Identify minimum buffers for natural features and natural hazards (flooding and erosion) required by any applicable provincial plans, municipal policies and/or TRCA policies.

c) Delineate the Natural Heritage System (NHS) based on the established constraints, hazards and associated buffers. The LSS will work towards confirming the environmentally appropriate limits of development and appropriate uses within the NHS. The final limits of development will be established through the more detailed analysis at the Draft Plan of Subdivision stage once feature based water balance assessments have been completed.

d) Utilize this mapping to integrate into the proposed land use concept, looking at alternatives for locations of stormwater management facilities, parks and open space, as well as for consideration when siting potential uses in the NHS (i.e., infrastructure, trails, etc.). This mapping will ultimately feed into establishing the limit of development through more detailed study at the Draft Plan of Subdivision stage of the development process.

2.3 Groundwater

2.3.1 Geological and Hydrogeological Setting

a) Characterize the existing geological and hydrogeological setting. Results from the studies outlined in Section 1.4 shall be used to build upon the current understanding of geology and groundwater systems determined from the review of past studies.

b) Identify site stratigraphy and hydrostratigraphy.

c) Identify areas of groundwater recharge and discharge.

d) Determine hydraulic properties of stratigraphic units including those units that transmit groundwater to natural features such as watercourses and wetlands.

e) Delineate shallow and deeper groundwater flow patterns and hydraulic gradients in the WVSP area.

f) Identify groundwater-dependent natural features and characterize their relationship with the local surface water/groundwater flow conditions.

g) Quantify baseflow contributions to streams and/or wetlands in the WVSP area.

h) Complete surface and subsurface soils analysis, including groundwater conditions and inter-relationships with environmental features such as watercourses and wetlands (i.e., sources of water to feature).

2.3.2 Water Balance for Groundwater Recharge

a) Obtain the available groundwater model(s) from the Oak Ridges Moraine Groundwater Program and/or the Region of Peel.

b) Review the applicability of the available groundwater model(s) to the WVSP area in comparison to the Thornthwaite and Mather Methodology.

c) Utilizing the Town's preferred groundwater model(s), estimate the pre-development overall site water balance to determine the existing annual site infiltration and runoff rates.

d) Set targets to meet average annual infiltration volumes for meeting overall site water balance for groundwater recharge.

2.3.3 Water Supply Wells

a) Complete a desktop assessment of existing water supply wells to identify the local use of groundwater resources in the study area. The online MECP Water Well Record database shall be used to determine the potential nearby water users for the desktop assessment. A door-to-door private well survey will be completed for all houses within 500 m of the WVSP area.

b) Establish baseline groundwater levels and quality of nearby well users; which should be used to support the development of a baseline aquifer monitoring program. The baseline conditions will be determined using the door-to-door private well survey of all houses within 500 m of the WVSP area, where a questionnaire will be provided including questions about water quality and yield. Any responses received back from the well owners will be incorporated into the report. In-situ testing and sampling of the private wells will not be completed as part of the LSS in support of the Secondary Plan process.

2.3.4 Monitoring

a) Provide a summary of groundwater monitoring completed for the WVSP area and identify any data gaps for long-term monitoring by the Town of Caledon.

2.4 Surface Water

2.4.1 Hydrologic Assessment

a) Characterize the existing hydrologic setting.

b) Identify existing storm drainage patterns and external drainage impacting the WVSP area.

c) Survey and undertake field inspection of existing culverts, as necessary, including a map showing locations and sizes.

d) Provide a summary of applicable stormwater management criteria for quantity, quality and erosion control. Include the Humber River unit rates for quantity control of 2 through 100 year storm events.

e) Review and verify TRCA Humber River Watershed existing conditions hydrology model (Visual Otthymo) based on existing land use and topography.

f) Discretize the Regional storm event TRCA Humber River Watershed existing conditions hydrology model (Visual Otthymo) for the purposes of establishing pre-development targets for stormwater management for the WVSP area.

g) Report Regional storm event peak flows from the TRCA Humber River Watershed existing conditions hydrology model (Visual Otthymo) at key flow nodes downstream of the WVSP area down to Lake Ontario.

2.4.2 Geomorphic Assessment

a) Delineate reaches based on assessment of geomorphic form and processes, following a review of current aerial photographs, surficial geology and topographic mapping.

b) Complete rapid geomorphic assessments for defined watercourse reaches within the WVSP area and immediately downstream, to document active geomorphic processes and stream health, and to characterize the reaches based on their sensitivity to erosion. This will help to identify locations requiring detailed erosion assessments.

c) Complete detailed geomorphic assessments for receiving watercourses located downstream of the proposed stormwater management facilities (5, based on the current stormwater management plan). The detailed geomorphic assessment to consist of a survey of the longitudinal profile for an appropriate length of stream, minimum of 5 cross-sections, characterization of riparian vegetation, bed substrate and bank materials, and calculation of an estimate of bankfull discharge.

d) Develop erosion thresholds (i.e., the critical discharge required to entrain the bed and/or bank materials) for the five receiving watercourses, following standardized approaches (primarily the TRCA's Stormwater Management Criteria among others).

e) Complete erosion exceedance analysis under existing conditions using the results of the continuous simulation hydrological modelling. The following parameters will be considered to establish baseline conditions: cumulative time of exceedance, cumulative effective velocity, cumulative effective discharge, and cumulative effective work.

2.4.3 Feature Based Water Balance Assessment

a) Complete wetland screening and water balance risk evaluation to identify under proposed development conditions which individual wetlands (onsite and on adjacent lands) will have changes to their hydrology to be at risk for negative impacts to their form and/or function.

b) Identified wetlands that are assessed through the screening/risk evaluation to be at risk for negative impacts to their form and/or function, are to be assessed further to first identify options to avoid impacts. Where impacts are not avoidable for a given wetland, continuous simulation hydrological modelling (including, pre-development, post-development without mitigation and post-development with mitigation) is to be completed to assess suitable options to maintain pre-development wetland hydrology post-development (e.g., hydrologic inputs from Low Impact Development measures).

2.4.4 Monitoring

a) Provide a summary of existing conditions surface water quality monitoring completed for the WVSP area.

b) Undertake surface water quality monitoring for the WVSP area generally as follows:

i. Complete six (6) surface water quality monitoring events between April and December 2024 with surface water quality samples collected at each station for one (1) wet and one (1) dry event for each season.

ii. Collect two (2) grab samples for each wet weather event; one grab sample must be collected during the onset of the storm and one grab sample must be collected during the recession of the storm. A “dry” weather event is considered to be an event completed where precipitation has not occurred within the previous 72 hours. A “wet” weather event is considered to be any precipitation event of 5 mm or more in a 24-hour time period.

iii. Analyze the grab samples for each wet weather and dry weather event for the following contaminants:

- Oil and Grease
- Total Phosphorus
- Anions (Nitrate, Nitrite, Phosphate, Chloride)
- Ammonia
- Total Kjeldahl Nitrogen (TKN)
- Conductivity
- Total Solids (TS)

- Total Suspended Solids (TSS)
- Biochemical Oxygen Demand (BOD_5)
- PH/alkalinity
- Total Coliforms/Fecal Coliforms/E.Coli
- PAH
- Metals (Al, Sb, As, Ba, Be, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, P, K, Se, Si, Ag, Na, Sr, Tl, Sn, Ti, W, U, V, Zn, Zr)
- Hardness as $CaCO_3$
- Turbidity

iv. Field measurements of the following contaminants will be measured using a water quality probe during the sampling event:

- Dissolved Oxygen
- PH
- Salinity
- Temperature

2.4.5 Municipal Servicing

a) Provide an overview of existing and/or planned servicing infrastructure, sanitary and water, that will be utilized to service the WVSP area including quantification of available capacity, and identification of logical connection points.

3.0 Phase 2: Impact Assessment

The results of the Phase 1 Study will be utilized to complete the analysis required for Phase 2. Phase 2 will introduce the land use plan, and will consist of an assessment of the potential for impacts on natural heritage features and functions, as well as on groundwater and surface water that might result from the proposed development.

3.1 Natural Heritage

a) Complete an integrated assessment of potential negative impacts of the land use plan and climate change on terrestrial and aquatic systems, including a discussion related to the potential magnitude and longevity of impacts on the NHS.

b) Assess wetland data in accordance with the updated Ontario Wetland Evaluation System (OWES; MNRF 2022) and submit to the Town of Caledon for their records. Complete a wetland water balance risk evaluation for all wetlands identified in the NHSA.

c) Identify restoration/enhancement opportunities using the Town of Caledon's Official Plan mapping and policies, TRCA's Terrestrial Natural Heritage System Strategy, and the applicable watershed plan(s).

d) Develop strategies to mitigate impacts to Species at Risk, including Redside Dace (*Clinostomus elongatus*).

e) Demonstrate conformity of the land use plan with applicable policies, including the PPS, Regional and Local Municipal Official Plans, the Conservation Authorities Act, the federal Species at Risk Act, and the provincial Endangered Species Act.

3.2 Groundwater

a) Identify potential impacts of the proposed land use and climate change to local groundwater resources and groundwater-dependent supported features based on implementation of the land use plan. This is to include assessment of the impact on local groundwater flow patterns, infiltration and recharge, discharge patterns, and the effects on existing well users and the natural environment,

including a reduction in infiltration, impacts to natural flow system(s), and changes to groundwater and surface water quality.

b) Undertake a preliminary assessment of dewatering requirements during the installation of services based on the conceptual servicing plan prepared for the WVSP area. Should dewatering be required, assess the potential impacts on the natural flow regime and potential impacts to nearby water supply wells and natural features.

c) Utilizing the selected groundwater model(s), estimate the post-development overall water balance for the WVSP area to determine the future annual infiltration and runoff rates due to the proposed development.

d) Discuss the impact of reduced infiltration and increased runoff volumes on the natural environment within the WVSP area.

e) Assess potential impacts to existing wellhead protection zones (if any) that may result during the construction and post-construction periods and increases to the aquifer vulnerability.

3.3 Surface Water

3.3.1 Hydrologic Assessment

a) Discretize the TRCA Humber River Watershed future conditions hydrology model (Visual Otthymo) for the purposes of establishing post-development uncontrolled flows for the WVSP area.

b) Update the TRCA future conditions hydrologic model for the 2 through 100 year and Regional storm events (Visual Otthymo), to reflect proposed future land uses within the WVSP area in accordance with the land use plan.

c) Report post development uncontrolled peak flows and compare to pre-development peak flows for the 2 through 100 year and Regional storm events at key nodes downstream of the WVSP area to Lake Ontario.

d) Assess the implications of uncontrolled future flows in existing downstream flood vulnerable areas validating the need for end-of-pipe SWM facilities providing control of post development flows to pre-development levels for the

Regional storm event.

e) In consultation with the Town and TRCA, complete a climate change assessment consisting of evaluating the hydrologic impacts of the proposed land use under future climate change scenario(s).

3.3.2 Geomorphic Assessment

a) Prepare a detailed scope of work for future post development erosion assessment(s) to determine stormwater management requirements for erosion control (i.e. extended detention depth and duration) and water balance (i.e. retention depth). The post development erosion assessment(s) will be completed at the next stage of the development process in support of Draft Plan of Subdivision applications. Refer to Section 4.4 for future study requirements.

b) Establish which properties within the WVSP area will require post development detailed erosion assessments in support of Draft Plan of Subdivision applications. This will be dependent on proposed SWM facility and storm outfall locations.

3.3.3 Feature Based Water Balance Assessment

a) Identify natural features requiring feature-based water balance assessments to mitigate future development impacts resulting from implementation of the proposed land use plan. The post development feature-based water balance impact assessments for these features will be completed at the next stage of the development process in support of Draft Plan of Subdivision applications. Refer to Section 4.4 for future study requirements.

b) Establish which properties within the WVSP area will require feature-based water balance assessments in support of Draft Plan of Subdivision applications. This will be dependent on the locations of the natural features requiring mitigation, as well as the location of the development causing the impact to the feature.

3.3.4 Hydraulic Assessment

a) Based on the results of the HDF Assessment and delineation of existing flood hazards completed in Phase 1, identify where modifications to the floodplain are required based on the land use concept.

b) Where required, complete preliminary cut and fill balance analysis to ensure that the conveyance of flood flows will remain unaffected.

3.4 Municipal Servicing

3.4.1 Grading

a) Prepare a Preliminary Grading Plan showing centreline road grades based on the conceptual road alignments.

b) Provide direction to more detailed grading analyses to be completed at the Draft Plan of Subdivision stage of the development process.

c) Identify any areas where grading is required within the NHS for the implementation of infrastructure, trails or roads and assess potential impacts from grading on natural features and functions of the NHS.

3.4.2 Sanitary Sewer Servicing

a) Complete conceptual sanitary flow generation calculations based on the land use plan.

b) Prepare preliminary design and layout of internal trunk sanitary servicing system within the WVSP area.

c) Provide confirmation of conformance of the plan to the most current Region of Peel Water and Wastewater Master Plan.

d) Confirm capacity of existing downstream sanitary infrastructure to facilitate any proposed interim and ultimate servicing strategies through consultation with Region staff.

e) Identify potential impacts to the NHS from the proposed sanitary sewer servicing strategy.

3.4.3 Water Supply and Distribution

a) Develop a conceptual fire and peak daily water demand associated with the land use plan.

b) Identify the preliminary alignment and design of the internal distribution water supply system, and associated connection points to the external system.

c) Provide confirmation of conformance of the plan to the most current Region of Peel Water and Wastewater Master Plan.

d) Identify potential impacts to the NHS from the proposed water supply and distribution strategy.

e) Hydrant testing/pressure monitoring to be conducted, as required.

4.0 Phase 3: Management, Implementation and Monitoring

4.1 Management and Implementation

4.1.1 Natural Heritage

a) Develop a Restoration and Enhancement Plan for the NHS that will enhance the ecological integrity and function, optimize biodiversity and restore natural features. This plan will also establish ecological targets to guide the design of site-specific restoration/enhancement initiatives.

b) Confirm that any proposed feature removals and compensation initiatives are technically feasible, including identification and quantification of those features that are proposed to be removed, and confirmation that:

   i. the restoration and enhancement strategy is of an appropriate scale, particularly when replicating and compensating for features that will be removed from the landscape; and,

   ii. the locations for restoration and enhancement are feasible for the type of the restoration or enhancement initiative that is proposed, in consideration of local site conditions.

c) Confirm that any proposed feature removals and compensation/restoration appropriately addresses policy and regulation requirements of the agencies having jurisdiction.

d) Prepare an implementation strategy to guide the timing/sequencing of implementation of the various restoration and enhancement initiatives in consideration of the following:

   i. Land ownership;

   ii. Sequencing of servicing and build-out;

   iii. Seasonal timing;

   iv. Habitat protection requirements;

   v. Requirements for the establishment of the restored areas;

vi. Practical considerations including site accessibility and construction logistics; and,

vii. Responsibilities for implementation.

e) Prepare a management plan that will address care of plantings, invasive species control, and other adaptive management initiatives that may be required to ensure that the restoration and enhancement initiatives become established and evolve to attain the defined ecological targets.

4.1.2 Groundwater

a) Provide preliminary recommendations and measures to be considered during construction to mitigate impacts to local groundwater resources resulting from dewatering.

b) Develop a post development Low Impact Development (LID) strategy to mitigate impacts to the water balance caused by decreases in infiltration and increases in runoff.

c) Identify potential surface water infiltration opportunities based on soils information, depth to the water table, and aquifer vulnerability.

4.1.3 Surface Water

a) Develop a Stormwater Management (SWM) strategy, including LID measures and end of pipe SWM facilities that achieves the SWM criteria for quantity (post to pre control for the 2 through 100 year and Regional storm events), quality (Enhanced level), and erosion control, in addition to mitigating impacts to water balance. Natural heritage, groundwater and surface water impact assessments shall be considered when developing the SWM strategy.

b) Determine the required storage volumes to control post development flows to pre-development levels on a catchment basis for the 2 through 100 year and Regional storm events.

c) Verify the SWM strategy conformance with the criteria developed as part of the Phase 1 Study.

d) Identify additional systems such as Clean Water Collector (CWC) systems, required to support LID measures as part of the overall water balance mitigation strategy and/or any feature specific water balance mitigation strategy, where required.
e) Provide general design criteria for end-of-pipe SWM facilities that will work toward mitigating the impacts from the land use plan. The criteria will provide guidance at the next stage in the development process in support of Draft Plan of Subdivisions for sizing and grading of SWM facilities.
f) Provide an overview of timing, phasing and cost sharing requirements for end-of-pipe SWM facilities.

4.1.4 Municipal Servicing

a) Identify any mitigation measures required to amend any water pressure exceedances encountered to support the proposed development of the WVSP area including, but not limited to, remediation and improvements to the existing water infrastructure to ensure water pressures are within Town standards.

b) Provide timing and phasing recommendations for the construction of municipal services.

4.2 Monitoring Plan

a) Prepare a Monitoring Plan to monitor the subwatershed response to the proposed land use change such that impacts can be distinguished from natural trends at an early stage. This will provide an ability to focus future monitoring (to be completed by the Town, Region and/or TRCA) to help determine the how/why/frequency of potential impacts and will assess cause-effect relationships between the environment and land use change.

b) Include the preparation of construction and post-construction environmental monitoring plans that will establish monitoring objectives, responsibilities, requirements, and timing for monitoring of components of the NHS where warranted. Consultation with agencies will be required to obtain input to a monitoring plan to yield targeted, useful data that will satisfy specific monitoring objectives.

c) Identify key features and functions that are to be monitored, and associated protection goals and objectives. Provide performance targets for evaluation of the proposed mitigation measures. Formulate a Monitoring Plan to monitor the success of the mitigation measures in relation to the performance targets.
d) Items that are recommended to be monitored over the long term include:
    i. Water quality and quantity, including stormwater system performance;
    ii. Fisheries and aquatic resources;
    iii. Groundwater quality and quantity;
    iv. Stream morphology and slope stability;
    v. Terrestrial resources including woodlands, wetlands, flora and fauna, Environmentally Sensitive Areas, Areas of Natural or Scientific Interest, terrestrial linkages, buffer areas, invasive species, natural system encroachments, and natural system edge management; and,
    vi. Feature Based and Site Water balance and the effectiveness of infiltration measures.
e) Address costs and responsibilities for monitoring, and length of time for monitoring within the Monitoring Plan.

4.3 Adaptive Management Plan

a) Prepare an Adaptive Management Plan (AMP) that will suggest adaptive responses where impacts are being observed through the monitoring program.
b) Provide metrics for evaluating the monitoring results in relation to the management targets.
c) Identify components of the proposed mitigation measures that can be adjusted in response to monitoring results should adaptation be required.
d) In preparation of the AMP, give consideration to the MECP broad-based community monitoring plans that support the Consolidated Linear Infrastructure ECA process, if available.
e) Discuss responses to changing conditions or anticipated impacts, which may include more aggressive monitoring.

f) Working in coordination with the Climate Adaptation Plan scope, and through further consultation with the Town and TRCA, incorporate potential climate change considerations within the proposed management and implementation strategy, demonstrating compliance with the Town of Caledon's Community Climate Change Action Plan and the Region of Peel's Climate Change Master Plan.

4.4 Future Study Requirements

4.4.1 Comprehensive Servicing and Stormwater Study

Following completion of the LSS and subsequent to the Secondary Plan process, individual properties may proceed with development applications for Draft Plan of Subdivision approval. In support of the first Draft Plan of Subdivision application(s) within the WVSP area, a Comprehensive Servicing and Stormwater Study (CSSS) will be required for the entire WVSP area. Subsequent Draft Plan of Subdivision applications would then be required to update or amend the initial CSSS to accompany each Draft Plan submission that follows.

The purpose of the CSSS will to provide a comprehensive servicing and stormwater management (SWM) plan for the entire WVSP area. It will involve preparation of a Comprehensive Concept Plan for the WVSP area, utilizing the proposed Draft Plan of Subdivision(s) and preparing concept plans for future and non-participating lands. A Terms of Reference for the CSSS will be provided as part of the Phase 3 Study of the LSS.

4.4.2 Draft Plan of Subdivision Studies

Consistent with the Town of Caledon's requirements for Draft Plan of Subdivision applications, the following studies (associated with the LSS) will be required at the next stage of the development process:

a) Environmental Impact Study (EIS) including establishing Limits of Development
b) Geotechnical Study
c) Hydrogeological and Water Balance Study (HWBS)
d) Functional Servicing and Stormwater Management Report (FSSR)
e) Detailed Erosion Assessment (as needed)
f) Feature Based Water Balance Assessment (as needed)

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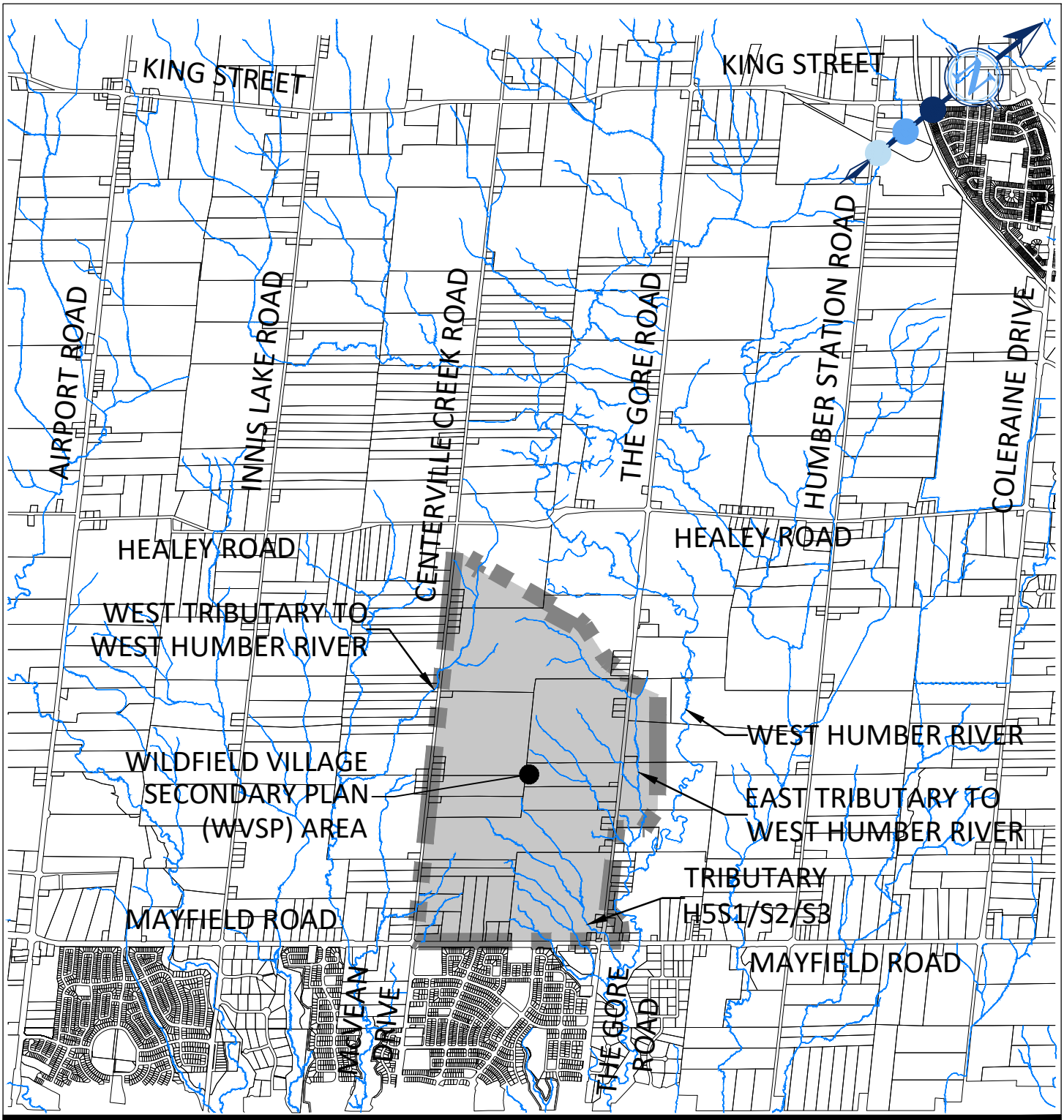
Figure 1: Wildfield Village Secondary Plan Area

APPENDIX A2

FIGURES



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WILDFIELD VILLAGE

KEY PLAN

DESIGNED BY:	A.T.	CHECKED BY:	A.R.K.	PROJECT No:	FIGURE No:
SCALE:	N.T.S.	DATE:	DECEMBER 2024	2630	1.1

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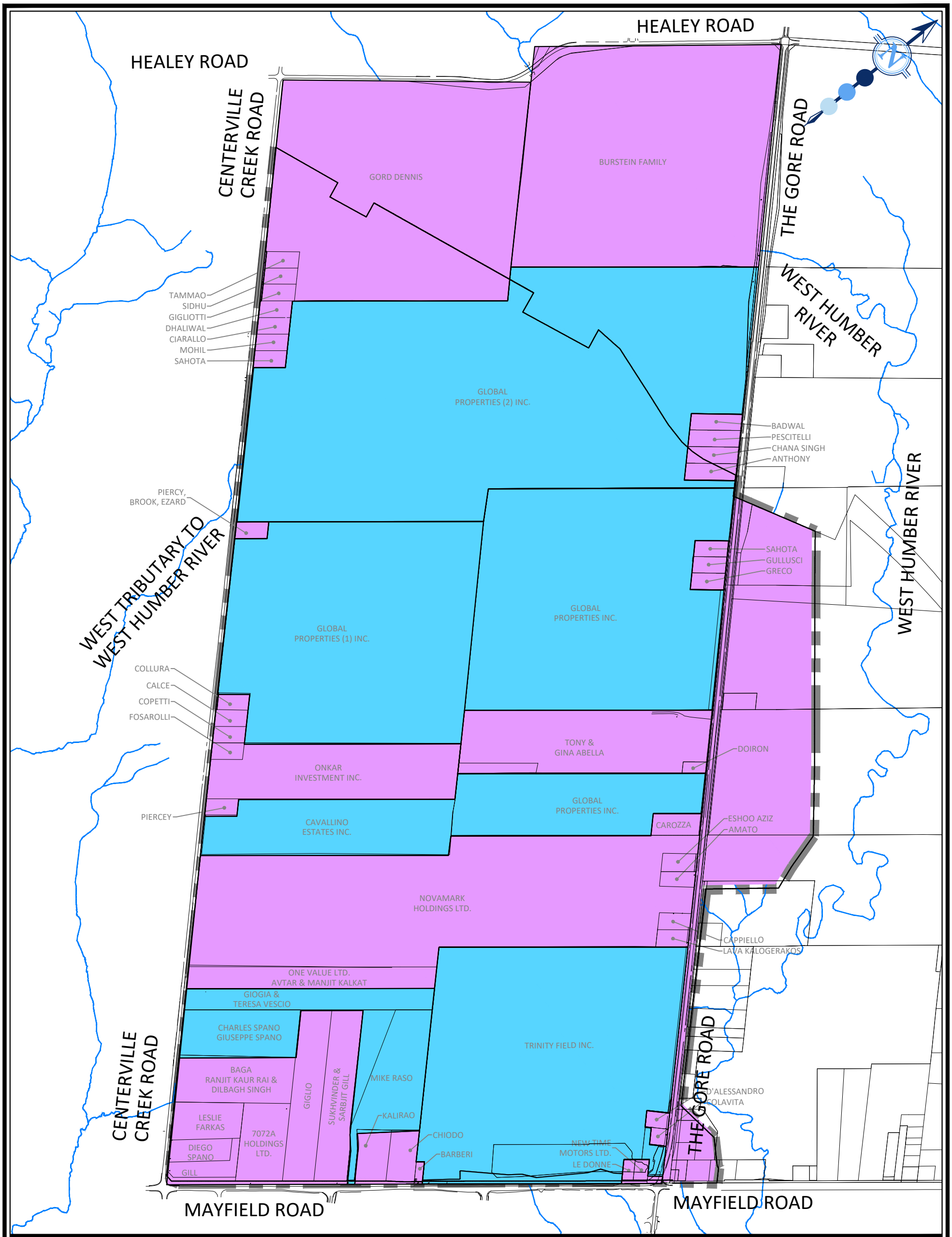

LEGEND:

- WILDFIELD VILLAGE SECONDARY PLAN (WVSP) AREA LIMITS
- WATERCOURSE (TRCA, 2018)
- PARTICIPATING LANDOWNERS
- NON-PARTICIPATING LANDOWNERS

WILDFIELD VILLAGE

OWNERSHIP PLAN

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SCALE: 1:10000	DATE: DECEMBER 2024		

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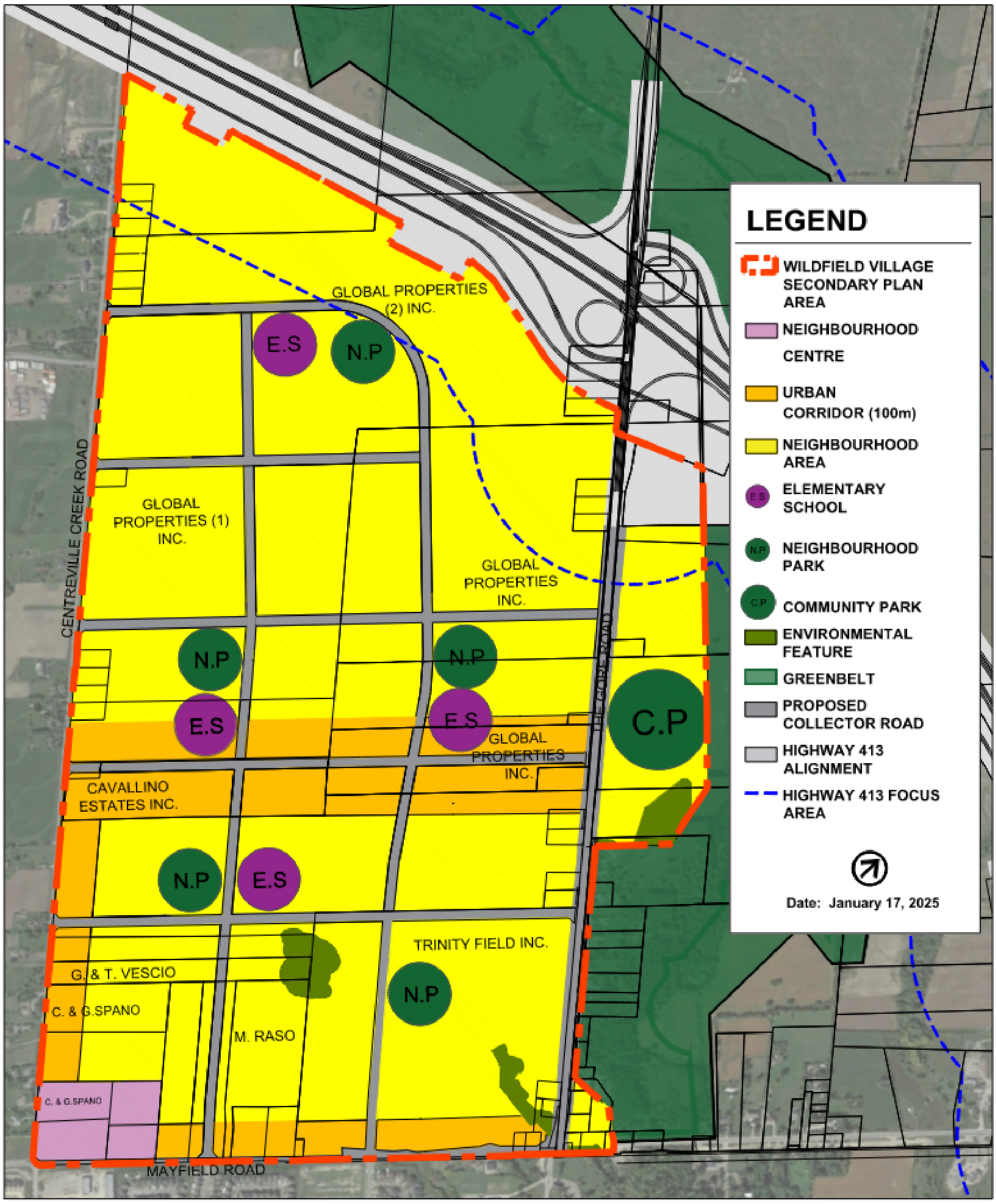

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WILDFIELD VILLAGE

PROPOSED LANDUSE PLAN

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SCALE: NTS	DATE: JANUARY 2025		

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