1.0 Introduction

The South March Highlands (SMH) is an outcrop of Canadian Shield on the western edge of Ottawa's urban boundary, in the old City of Kanata (Figure 1). It covers approximately 895 ha and is bounded by March Road in the north, Second Line Road to the east, Kanata Avenue in the south, and Huntmar Drive to the west (**Figure 1**). It is a continuation of a ridge that runs northwest for approximately 30 km to Fitzroy Harbor on the Ottawa River. The exposed bedrock base of the SMH has not been extensively developed for agriculture and likely has had little commercial logging since the late 1800's. Consequently, much of its forest cover has reached maturity, and portions are beginning to acquire old-growth characteristics. According to a review of the existing conditions conducted for the City of Ottawa (Brunton, 2008), there are 10 vegetation types, with much of the SMH area being comprised of Deciduous and Mixed Forests. The area also has two provincially significant wetland - complexes centered around - Shirley's Brook and the Kizell Wetland. The combination of maturity, multiple vegetation types and wetlands results in a high level of native biodiversity. This includes nine known species at risk with a conservation ranking of threatened or endangered, and nine additional species with a conservation ranking of "special concern" (Brunton, 2008).

The City of Ottawa has protected 400 ha of the South March Highlands as the South March Highlands Conservation Forest (**Figure 2**). However, urban development has occurred in the past in the SMH and continues. In the past thirty years, consistent population growth in Kanata has created an increasing demand for land to accommodate commercial and residential development. Development planning within the urban portion of the SMH is partly constrained by a legal agreement and OMB decision establishing the ratio of developable land to "greenspace" land at 60/40. In 1983, the Ontario Municipal Board (OMB), in response to a development application, was asked to consider the impact of the Kanata Lakes (KNL) development on natural areas, primarily the Kizell Wetlands and the associated forest lands. The OMB decided that 40% of the Kanata Lakes land holding was to be protected permanently as Natural Environment, and that the remainder could be developed for residential housing and associated infrastructure (OMB, 1983). This decision was reinforced in a 2006 decision by the OMB, which ordered that the draft plan of subdivision should proceed as proposed (OMB, 2006). Major municipal infrastructure developments like the expansion of Terry Fox Drive (TFD), electricity transmission corridors and the planned realignment of Goulbourn Forced Road (GFR) have relied on the 40% rule to define the developable land limits, their spatial layout and zoning composition since the 1983 decision.

The Kanata Lakes development has proceeded as planned on the south side of the Kizell Wetland. However, the draft plan of subdivision for the areas north of the Kizell Wetland – KNL Development Inc., Phases 7, 8 and 9 – has been delayed by environmental concerns. The 2006 draft plan proposed to divert most of the surface water drainage (i.e., stormwater) on Phases 7 and 8 from the Shirley's Brook subwatershed to the Kizell Wetland – Watt's Creek subwatershed, to alter the Kizell Wetland to accommodate additional stormwater, and to relocate a long section of Shirley's

Brook. The Kizell Wetland is already a licensed City of Ottawa stormwater facility, servicing areas of the development to the south of the wetland. However, in early 2012, the City of Ottawa released a study that raised questions regarding compliance of the facility with its Certificate of Approval. In addition, the Blanding's turtle population monitoring work conducted for Terry Fox Drive had identified a significant number of Blanding's turtles and their habitat in the Kizell Wetland and in KNL Phases 7 and 8. Consequently, KNL Developments Inc. advises that it is revising its plan of subdivision for Phases 7 and 8 and redesigning its stormwater management plan to address the requirements of the Ministry of Environment and the Ministry of Natural Resources.

The urban boundary currently lies along Terry Fox Drive. However, Ottawa City Council has identified a new urban expansion study area immediately north of Terry Fox Drive, between the edge of the South March Highlands and the Carp River. Final inclusion of that property in the urban boundary is conditional upon acceptable environmental studies and impacts, including potential impacts on species at risk.

Urban development permanently alters natural landscapes and the habitats that are necessary for the survival of most plant and animal species in the SMH. Direct impacts consist of such activities as vegetation clearing, root grubbing, removal of topsoil, blasting and grading. Construction can also generate large volumes of sediment in storm water run-off. Noise, dust, vibration, and spills of gasoline and oils from construction equipment further degrade the remaining habitat. Once development is complete, disturbances from domestic animals, increased human activities, motor vehicle emissions, noise and vibration, and the use of chemicals further degrade habitat resources. Mitigation measures can reduce or minimize many effects, but most habitat losses are permanent. Compensation can also be used to counter-balance some of the unavoidable negative impacts of land development, and if property planned and implemented, can provide a net benefit to some species in certain cases.

Development is always accompanied by the construction or improvement of roads. In 2011, the City completed the extension of Terry Fox Drive through the SMH in an arc from Hazeldean Road to March Road (**Figure 2**). Currently completed as a two lane collector, the road base has been built for an eventual four lane arterial road, with the roadbed, culverts and stormwater servicing already occupying the ultimate footprint. Future water and sanitary sewer pipes may be placed within the right-of-way without removing or altering additional habitat. Construction of the road required extensive tree cutting, the destruction of two small portions of the South March Highlands Provincially Significant Wetland Complex, and loss of floodplain along the Carp River. It also resulted in the severing of the urban portion of the South March Highlands from the Conservation Forest. Compensation for the lost wetlands, floodplain and forest has been provided by the City along the Carp River to offset these impacts. In addition, a system of wildlife passages was constructed under Terry Fox Drive, consisting of dry passages and enhanced wet culverts, along with an integrated guide system of fencing and stone walls.

Plans also exist for the realignment of Goulbourn Forced Road through the urban portion of the South March Highlands. The 2005 environmental assessment (Dillon 2005) proposed to improve the road as a two lane collector and to route the road to connect with the Terry Fox Drive extension 400 m west of the TFD/Second Line Road intersection. This route was intended to protect the highly-diverse Trillium Woods, currently owned by KNL Developments Inc., and intended for transfer to the City under the 60:40 agreement. However, based upon the results of the Blanding's turtle monitoring work, it may be necessary to update the environmental assessment to assess the potential impacts of the realignment on the Blanding's turtle population and habitats.

Second Line Road, Old Carp Road and Huntmar Drive also surround the South March Highlands Conservation Forest. Second Line Road was recently extended south to connect to the Terry Fox Drive extension. Further improvements to create an urban road cross-section are planned. No work is currently proposed for either Huntmar Drive or Old Carp Road. The latter road bisects the northern half of the South March Highlands, but because it is narrow and heavily forested on both sides it may not be a significant barrier to movement of Blanding's turtle in its' unimproved state.

In summary, the South March Highlands has experienced multiple, cumulative effects of urbanization, including direct loss of habitat, fragmentation, and alteration of drainage patterns. These impacts are projected to continue in the future, resulting in the permanent loss, isolation or degradation of approximately half of the natural landscape. The remaining 400 ha of Conservation Forest will be largely bound by urban development, arterial and collector roads, and estate lot developments. At present, a semi-natural landscape connection exists between the Conservation Forest and the floodplain of the Carp River. However, that connection could be lost if development were to occur in the newly approved urban expansion study area.

Blanding's turtles are particularly vulnerable to urbanization and the kinds of cumulative effects occurring in the South March Highlands. Due to their reproductive cycle, life history, movement behaviour and habitat requirements (described below), the species has experienced population decline and is considered to be at risk across much of its geographic range. In Ontario, the species is designated as "threatened" under the *Endangered Species Act, 2007*. Under that legislation, the animals are legally protected from harassment, harm or killing. On June 30, 2013, habitat protection will come into force for the Blanding's turtle under the ESA 2007, however some level of habitat protection during the planning process is already in place under the *Provincial Policy Statement, 2005* and Ottawa's Official Plan.

In 2011, as part of the permitting requirements for the extension of Terry Fox Drive, the City undertook a study to determine the population size, distribution and movements of Blanding's turtles in part of the South March Highlands. Using live trapping and release, tagging, as well as radio tracking, the study has revealed a much larger SMH population of Blanding's turtles than originally expected: thus far, 97 adults and juveniles have been identified and there are undoubtedly many more hatchlings and very young animals too secretive to observe. . The animals are found throughout the SMH, including the Conservation Forest, KNL Phases 7 and 8, the Carp River

Floodplain and the western half of the Kizell Wetland. Consequently, any future development activities within the SMH will almost certainly require permits from the Minister of Natural Resources under the ESA 2007.

The City has commissioned the preparation of this Blanding's Turtle Conservation Needs Assessment to provide general guidance and concrete recommendations for promoting the long-term viability of the SMH population of Blanding's turtles. It is a management document, intended to guide the City in the management of the Conservation Forest, adjacent City roads and City facilities. It is also a planning document, intended to provide information and guidance in planning processes and decisions to the City, the Ministry of Natural Resources, the Ministry of Environment, the Mississippi Valley Conservation Authority, and private landowners. As recommended by the Provincial *Natural Heritage Reference Manual 2010*, as well as best conservation practices, the Conservation Needs Assessment incorporates the *precautionary principle*, which requires a cautionary approach to species protection and conservation, especially in the absence of strong evidence or scientific consensus. The Conservation Needs Assessment also reflects the assumption that impacts on individual Blanding's turtles or their habitats in the South March Highlands cannot be evaluated piecemeal, but must be assessed in terms of their long-term, cumulative effects on the viability of the full SMH population. This assumption reflects a basic principle of conservation biology, which is that recovery for a species at risk, begins with the protection of existing, viable populations and their habitats.

Conservation management plans and needs assessments are developed to provide support for decisions that impact at risk species and their habitat; and are very much a resource tool. First, conservation management plans/needs assessments include background information related to the biology of the species, the risk of threats to it and its habitat, and any information related to monitoring history and known population dynamics. Second, long term population modeling is conducted to identify the most vulnerable stages of the life cycle, in order to identify when and where management actions will have the greatest benefit for long-term viability. Third, management plans/needs assessments recommend management strategies, identify research opportunities, educational imperatives and monitoring needs. Essentially, conservation management plans/needs assessments are a holistic approach to identifying the relevant information, data gaps, and managing a species population with the intent of promoting population longevity and sustainability.

Specifically, the intent of this Blanding's Turtle Conservation Needs Assessment is to:

1. Review existing literature on Blanding's turtle biology and habitat needs;
2. Investigate natural and anthropogenic risks which may negatively influence SMH Blanding's turtles, their critical habitats and reproductive life cycle;
3. Describe the state of the SMH Blanding's turtle population, their biology and their habitats;
4. Using a population growth model, complete a population viability analysis;

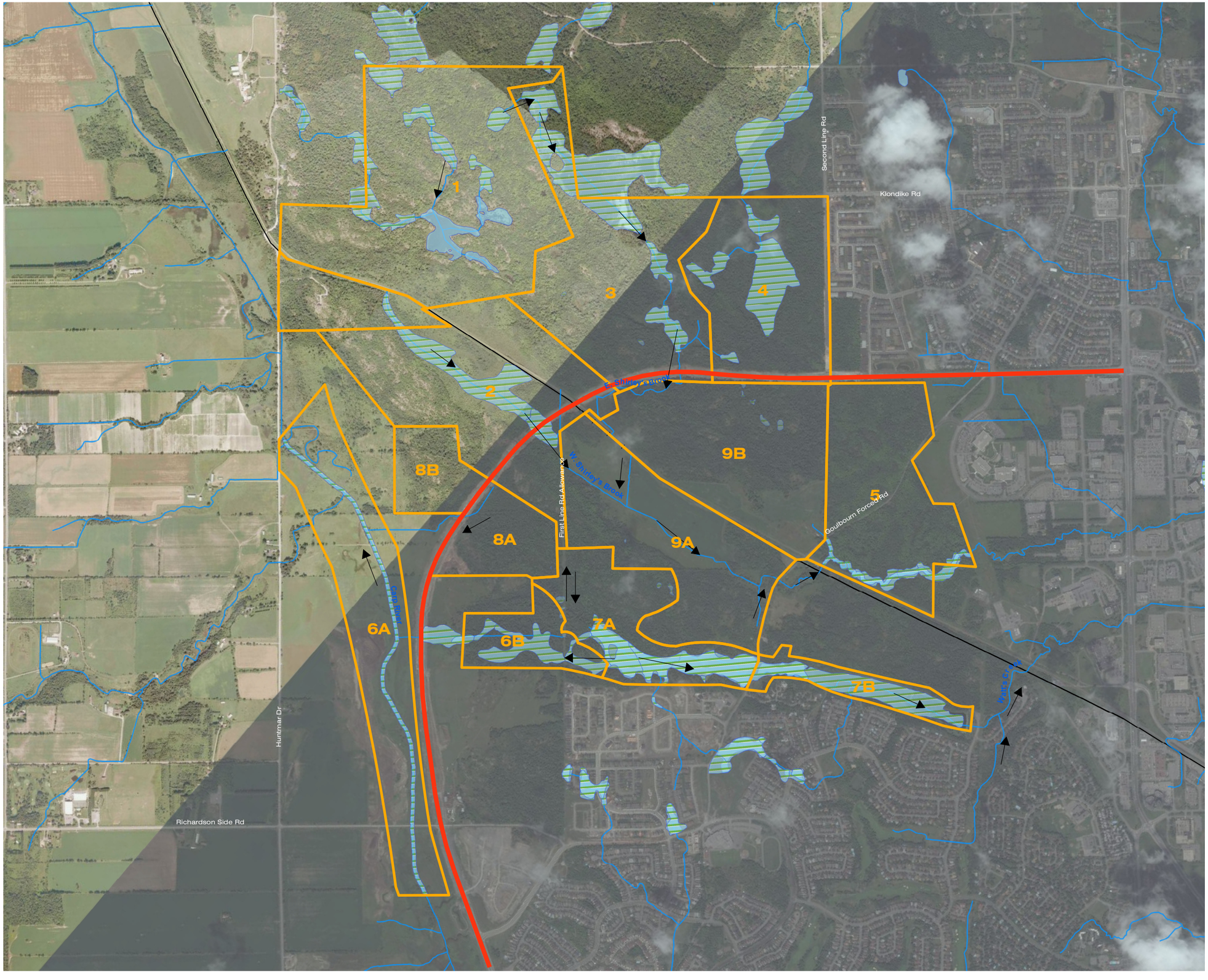
5. Determine the sensitivity of the model and model scenarios to assess the future of the SMH Blanding's turtle population;

6. Identify the core habitats for the SMH Blanding's turtle population;

7. Identify the extent of suitable habitat in the SMH and explore possible corridors to neighbouring Blanding's turtle populations; and,

8. Make long term planning recommendations based on specific objectives which are intended to support the long-term sustainability of the SMH Blanding's turtle population.

To assess the conservation needs assessment applicability to supporting the population, two research scientists have provided peer-reviews of the report. Their letters of review and *curriculum vitas* have been included in **Appendix A**.



Ottawa

City of Ottawa

South March Highlands Blanding's Turtle Conservation Needs Assessment

Study Area

Figure 1

- Study Area Boundary
- Terry Fox Drive
- Wetlands
- Watercourse
- Railway
- WaterFlowDirection

0 75 150 300 450 600
Meters

SCALE 1:17,000

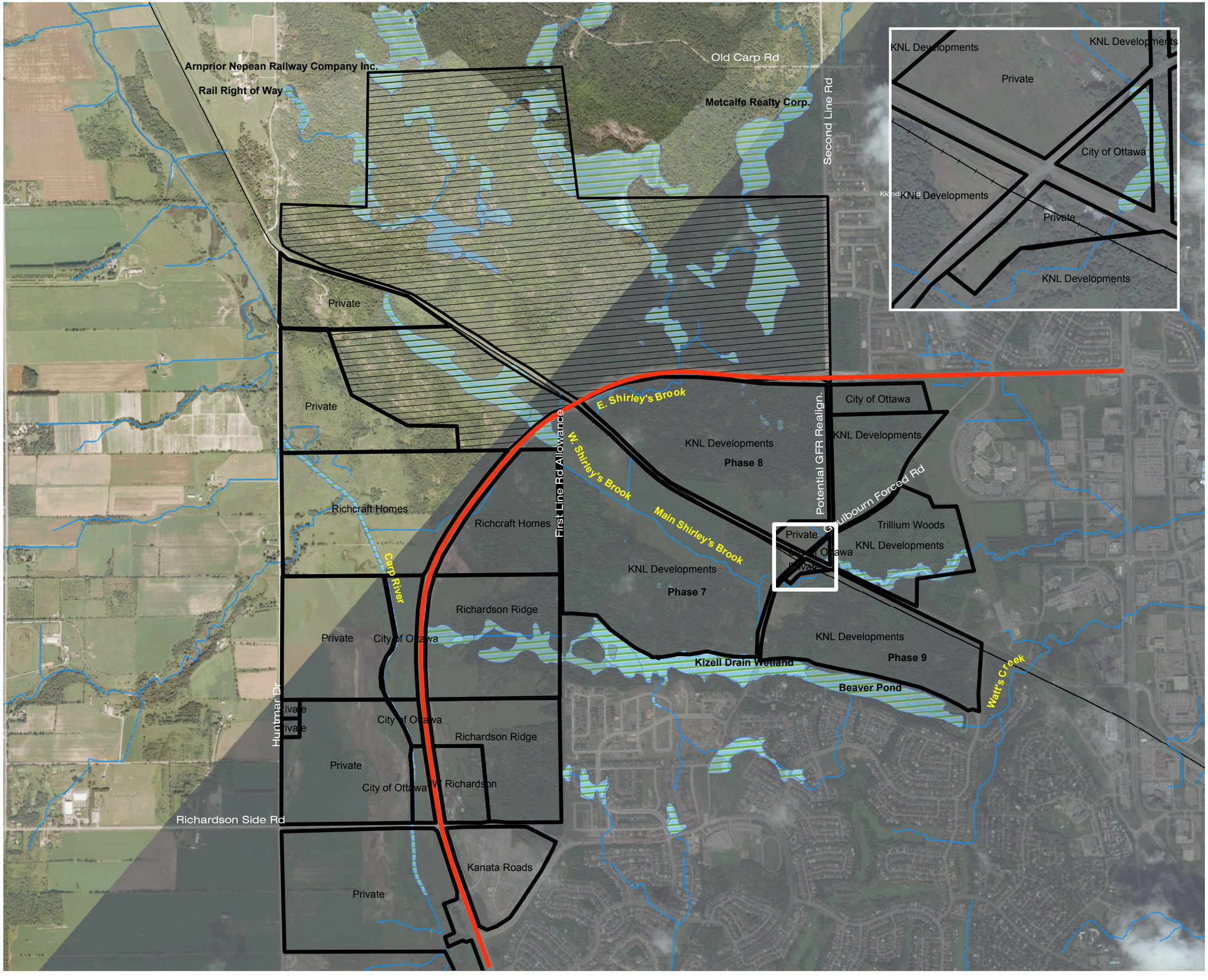
MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR, the City of Ottawa, and Dillon Consulting Limited

MAP CREATED BY: CTH
MAP CHECKED BY: ST
MAP PROJECTION: NAD 1983 UTM Zone 18N

FILE LOCATION: \\DILLON.CA\DILLON_DFS\OTTAWA\OTTAWA CAD\2012\126019 34\Design_GIS\MXDs\Report Maps\1-StudyArea and Ownership.MXD

DILLON CONSULTING

PROJECT: 12-6060
STATUS: FINAL
DATE: 01/07/13



Ottawa

City of Ottawa

South March Highlands Blanding's Turtle Conservation Needs Assessment

Property Ownership Map

Figure 2

- Terry Fox Drive
- Wetlands
- Watercourse
- Property Boundaries*
- Conservation Forest (City of Ottawa)

*Property lines and ownership has not been confirmed with City records

0 75 150 300 450 600
Meters

SCALE 1:17,000

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR, the City of Ottawa, and Dillon Consulting Limited

MAP CREATED BY: AJZ
MAP CHECKED BY: CTH
MAP PROJECTION: NAD 1983 UTM Zone 18N

FILE LOCATION: \\DILLON.CA\DILLON_DFS\OTTAWA\OTTAWA CAD\2012\126019 34\Design_GIS\MXDs\Report Maps\1-StudyArea and Ownership.MXD

DILLON CONSULTING

PROJECT: 12-6019
STATUS: DRAFT
DATE: 10/16/12