TRAILSEDGE 3, 4 AND 5,
PART LOT 3, 4 AND 5 CONCESSION 3
CITY OF OTTAWA

INTEGRATED ENVIRONMENTAL REVIEW STATEMENT

Prepared for:	Richcraft Group of Companies
Submitted by:	Niblett Environmental Associates Inc.
File:	PN 11-039
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Niblett Environmental Associates Inc.
Biological Consultants

04 November 2015 PN 11-039

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Project: Integrated Environmental Review Statement
Proposed Residential Subdivision
Part Lot 3, 4 and 5, Concession 3
City of Ottawa

Dear Mr. Castro:

We are pleased to submit the Integrated Environmental Review (IER) statement for the residential subdivision located within the City of Ottawa on part lots 3, 4 and 5, Concession 3. This document is required for the major re-zoning of the subject property to fulfill the requirements of the City of Ottawa.

Sincerely,

Amanda Smith

Amanda Smith
Niblett Environmental Associates
Fisheries and Aquatic Biologist

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INTEGRATED ENVIRONMENTAL REVIEW STATMENT

1.0 Introduction

Niblett Environmental Associates Inc. (NEA) was retained by Richcraft Group of Companies to complete an Integrated Environmental Review Statement (IER) to fulfill the City of Ottawa's Condition #15(b) of Richcraft's and Minto's Draft approved Page Road Subdivision (Trail's Edge West) at 6151 Renaud Road (# D07-16-07-0018 & D07-16-12-0021).

This Integrated Environmental Review Statement is provided where Condition # 47 of Richcraft Homes' Draft approved Page Road Subdivision at 6151 Renaud Road states:

The Owner agrees to prepare and implement an "Integrated Environmental Review Statement" as set out in the Official Plan prior to registration demonstrating how all the studies in support of the application influence the design of the development with respect to the effects on the environment.

After consultation with the City of Ottawa it was determined that sub-section "f" was a new policy element applied after the 2007 draft plan of approval. However, sub-section "d" and "f" were not required in the project IER because of miscommunication between the City of Ottawa and project consultants, and the pressing deadline to fulfill this condition for an IER and lift the inhibiting order.

The integrated environmental review statement will provide:

- A brief overview of the results of individual technical studies and other relevant environmental background material;
- A graphic illustration, such as an air photo, summarizing the spatial features and functions (e.g. natural vegetation, watercourses, significant slopes or landform features, recharge/infiltration areas) as identified in the individual studies;
- A summary of the potential environmental concerns raised, the scope of the environmental interactions between studies, and the total package of mitigation measures, including and required development conditions and monitoring, as recommended in individual studies;
- An indication that the statement has been reviewed and concurred with by the individual sub consultants involved in the design team and technical studies.

As of the writing of this report (November 2015) all clearing is complete and took place at

the appropriate time(s) of year with protection measures implemented and inspected by the City before any work took place. The Landscape Plan has been completed/approved and includes only native and indigenous species as well as additional plantings between the woodland and development.

The following technical study reports were provided by Richcraft and Minto in the preparation of this letter report.

Environmental Impact Study and Fisheries Compensation Plan

- Trail's Edge Plan of Subdivision, East Urban Community, City of Ottawa-Environmental Impact Study (NEA, 2009)
- Environmental Impact Study-Addendum (NEA, 2011)
- Fisheries Compensation Plan (NEA, 2013)
- DFO Fisheries Act Authorization (DFO, 2015)

Tree Preservation

- Richcraft TrailsEdge West, Tree Conservation Report (Lashley & Associates, 2014)
- Minto-TrailsEdge Stage II, Tree Conservation Report (Lashley & Associates, 2015)
- Tree Removal Tally – Trails Edge (IFS Associates, 2015)

Environmental Site Assessment

- Phase I-Environmental Site Assessments (Paterson Group, 2007)

Archeology Studies

- Stage 1 & 2 Archaeological Assessment (Ground Truth Archaeology, 2007)

Traffic Studies

- TrailsEdge Addendum No.3, Traffic Impact Review (Castle Glenn Consultants , 2008).
- TrailsEdge Development, Addendum No. 4 (Castle Glenn Consultants , 2014)

Noise Studies

- Noise Impact Assessment for Site Plan Approval (UAL, 2013).
- Environmental (Road Traffic) Noise Assessment (UAL, 2014).
- Addendum B to Richcraft TrailsEdge Noise Study (UAL, 2015).

Geotechnical Investigation

- Geotechnical Report, Eden Park-Middle Portion-Renaud Road (Paterson Group, 2008).

- Geotechnical Report, Proposed TrailsEdge, Phase 2 (Paterson Group, 2009).
- Geotechnical Report, Proposed Residential Development, East of Belcourt (Paterson Group, 2012).

Planting Plan for Mud Creek

- TrailsEdge Stage II-Landscape Plan. Levstek Consultant, Drawing L1.01 and L1.02, February 2014.
- TrailsEdge Rideau Valley Conservation Foundation Planting Plan (Sept. 18, 2015) Site Plan Drawings

2.0 Development Plan

The lands are owned by Minto Developments Inc. and Richcraft Group of Companies. The lands are located on Lots 3, 4 and 5, Concession 3, and known casually as Renaud and Eden Park. These lands form part of Ottawa's East Urban Community. The lands are designated Developing Community and are subject to the policies of the East Urban Community (EUC) Community Design Plan (CDP).

The proposed subdivision will consist of primarily residential housing with a mixed use centre, multi-residential area, and school and park area.

The general boundaries of the area include the subject lands, Mud Creek upstream to the headwaters, the lands east of Page Road, the entire UNA #97 and the lands west of Mer Bleue Road. A larger Study Area was deemed necessary for the EIS in order to assess the features and functions of the woodlands, wetlands and the extent of fish habitat within the various tributaries of Mud Creek and McKinnon's Creek. The property included wetland, forest, field and meadow habitats. Vegetation was quite diverse and overall, the site was poorly drained.

3.0 Environmental Impact Statement

Niblett Environmental Associates Inc. (NEA) prepared an Environmental Impact Study (EIS) "*Trail's Edge Plan of Subdivision, East Urban Community, City of Ottawa, Environmental Impact Study*" in February of 2009 with an addendum completed May 2011. The statement concluded that the proposed draft plan of subdivision would not have a significant impact on the natural features provided the recommendations of the report were implemented.

4.0 Summary of Technical Studies

All of the studies and resulting reports for the TrailsEdge development were in support of development and provided recommendations and mitigation measures targeted to achieve development goals while minimizing impacts to the natural environment. Key reports providing environmental context have been presented in this section and discussed in the context of the IER objectives.

4.1 Environmental Impact Study (NEA, 2009) (NEA, 2011) (NEA, 2013)

The Environmental Impact Study was completed by NEA in 2009 with an addendum completed in 2011 to address the UNA # 97 designation and the natural features and functions associated with the woodland, as well as fish habitat within Mud Creek and McKinnon's Creek. The submission of the development applications included this Environmental Impact Statement as per the Consolidated City of Ottawa Official Plan (s. 4.7.8). The components of the EIS include detailed inventories of the flora and fauna, a description of the natural features, description of the environmental values and mitigation measures and recommendations.

The City of Ottawa OP (2003) does not designate any portion of the subjects lands Urban Natural Feature (UNF). However, in the City's Urban Natural Area Environmental Evaluation Study (Muncaster Environmental Planning and Brunton Consulting Services, Mar. 2005), the woodlot, which is partially within the boundary of the subject lands, was identified as Urban Natural Area #97 – a woodlot of "high" importance. As UNA #97 is reflected in the East Urban Community – Community Design Plan (EUC CDP), an EIS is required in support of the proposed development.

Page 26 of the EUC CDP states that "if the natural feature is deemed to be significant, City Staff will explore options for protection. This could include: acquisition, exchanging lands of similar value, negotiating conservation agreements….". Further, the CDP states that: "If the natural feature cannot be protected in part or in whole by the City through the various securement options, development of the land will proceed in accordance with the underlying direction set out in the Community Design Plan", as illustrated on Figure 14, Demonstration Plan.

The EIS was completed to address the new UNA designation and the natural features and functions associated with the woodland, as well as fish habitat within Mud Creek.

The review of the options presented and mitigation measures was completed by RVCA. In a letter dated November 28th, 2008 to Steve Gauthier at the City of Ottawa, they stated:

The Urban Natural Areas Environmental Evaluation Study undertaken by the City of Ottawa in 2002 identified this parcel (#97 - Navan Road at Page Road) as having a high environmental value. In the "Eden Park - East Urban Community Development, Final Environmental Study" by Niblett Environmental Associates Inc. dated July 2007 there were 4 options presented, however the city and the developer have agreed upon Option 2 in the study. This option was reflective of Plan A in the "Tree Preservation and Protection Plan for Renaud and Eden Park Subdivisions of the East Urban Community" by Lashley & Associates, dated July 26, 2007. It is our understanding that the City has initiated efforts to acquire this feature. We will not be providing any further comment regarding the Urban Natural Feature, other than to note that we fully support the conveyance of the Urban Natural Feature to the City.

The developer chose to proceed with Option 2 which provided for a contiguous green space. During this process the final eastern boundary was refined after participation from the City of Ottawa in order to accommodate the most amount of woodland versus the funds available for its purchase by the City.

Subsequently, NEA prepared an addendum (Sept. 25th, 2008) based on a new site plan prepared by Richcraft that reflected Option 2 for the woodland. This included the retention of 7.63 ha (18.9 acres) of the woodland feature.

NEA has reviewed the revised site plan for the TrailsEdge draft plan of subdivision (date Sept. 3rd, 2008). We have also reviewed our Environmental Impact Study report of July 2007 and the conclusions and recommendations.

The new plan of subdivision uses Option 2 for the woodland as the basis for the overall plan. This area of woodland was noted in our EIS as meeting the main biological objective of preserving a significant portion of the woodland (in particular the mature red maple swamp and forest and the forest area along the creek corridor) and maintaining a diversity of habitats. It also provides for a contiguous green space along the Mud Creek watercourse. The City of Ottawa has recommended a 30 metre setback along the watercourse west of the new north south collector road and 15 metres to the east. The 30 metre setback will capture the forested area of the Option 2 woodland and provide further protection of the forest cover.

Overall the plan is similar to Option 2 reviewed as part of our initial EIS. All of the recommendations and mitigation measures in that report are still valid (other than Mud Creek fisheries, see Section 4.2 in this report) for the latest draft plan of subdivision plan.

4.1.1 Natural Features System

The property included a total of 12 vegetation communities. There were wetland, forest, field and meadow habitats present. Vegetation was quite diverse, and there is a total of 201 plant species. Overall, the site was poorly drained. No significant vegetation communities were found in the study area (Refer to Appendix I for site features).

4.1.2 Significant Natural Features, Function and Significance

The subject property contains approximately 32 ha of forest cover and an additional 8 ha of successional forest and regenerating meadow. The key features and functions of this area were:

- Core natural area
- Interior bird habitat (approx. 2 ha)
- 4 regionally rare plant species
- Wildlife habitat
- Amphibian breeding habitat
- Endangered butternut tree
- Wildlife corridor
- Fish habitat
- Diversity of plant species and communities
- Connected to woodlands to the north, south and west
- Large contiguous woodland area
- Seven area sensitive bird species

The combination of woodlands, regenerating fields and wetlands create a diverse habitat for wildlife and plants. The main wooded area includes communities 1a, 1b and 1c which are bisected by Mud Creek. The combination of features adds to the diversity of species recorded by NEA and in other reports on the EUC area. The size, diversity and location in proximity to other woodlands make this an important feature. Core natural areas are large contiguous features that provide habitat for a number of species and are large enough to support high populations of certain plants and animals. The connectivity allows these species to disperse to other natural areas. These core areas act as a population "source" for bird, mammals and herpetiles that distribute to smaller interconnected patches in the surrounding landscape.

While not as significant as some of Ottawa's regional core natural areas, such as Mer Bleue, it does provide a number of natural heritage functions. The smaller parcels of natural

woodlands can be important when in close proximity and if connected by fencerows or meadow. As the woodland size is reduced bird populations may not be able to breed successfully resulting in a "sink" area where no young are produced.

An analysis of the features and functions found that most of these are present within the mature swamp and deciduous forest on the property; communities 1a, 1b and 1c. Preservation of community 1a is recommended as the core of the woodland. Community 1b and 1c have several functions, particularly as amphibian habitat and are of secondary importance in terms of preservation. The younger age of the forest and less diverse vertical structure and plant and wildlife species make these communities lower in significance.

4.1.3 Species at Risk (NEA, 2009) (NEA, 2011)

NEA conducted a background review for any Species at Risk within the study area in the original EIS, NEA 2009. Only three rare species were identified the NHIC database, two of which were dragonflies, arrowhead spiketail (*Cordulegaster oblique*) and ocellated emerald (*Somatochlora minor*). An additional, unidentified "sensitive species" was also present.

In 2011, Richcraft Group of Companies requested information on the newly listed species, the bobolink *(Dolichonyx oryzivorus)* and its presence or absence in the study area for the TrailsEdge Plan of Subdivision to be investigated. NEA prepared an addendum letter to NEA, 2009 EIS to determine the presence/absence of the species.

At the time, bobolink was listed both federally and nationally as a Threatened species and as such was protected under the Species at Risk Act (SARA S.C. 2002) and the Ontario Endangered Species Act (S.C. 2007), which provides protection for the species and their habitats.

Although bobolinks are known to occur in the general area, no records of bobolink were recorded on the project site and is was the opinion of NEA that bobolinks are not found on the property during field investigation due to lack of suitable habitat. The addendum provided a general recommendation that no cutting or removal/grading of grass fields during the peak breeding bird season occur from May 1st to July 31st, as per Environment Canada guidelines. This allows birds such as the bobolink to finish breeding a leave the habitat by the end of July. Farming operations are exempt from this policy and are permitted to continue normal operation of the farm under an amendment to the Ontario Endangered Species Act until 2015.

The addendum Bobolink recommendation remained in-line with the EIS, 2009 general breeding bird season timing windows and didn't conflict with the EIS or other project report recommendation. The EIS and addendum SAR recommendations were considered in the Tree Conservation Reports (Section 4.3 of this report) and demonstrate integration of environmental findings throughout development of environmental recommendations across sub-consultants.

4.1.4 Mud Creek Fishery (NEA, 2013)

Mud Creek was surveyed on the upstream side of the Page Road culvert. The Mud Creek mainstem is a sinuous, low-flow system that meanders through UNA 97. Channel widths ranged from 0.5 to 1.5 m. Depths varied as well, with little flow in some areas and pools with depths of depths of 1 m or greater in other areas. Steep banks are present at Page Road, but otherwise, Mud Creek exhibited shallow, u-shaped banks bordered by forest and shrub species.

A review of the list of fish species documented for the study area found that none are considered significant on a national, provincial or regional level. The nine (9) species of fish captured are considered common and widespread throughout warm and cool water systems in Ontario.

Comprehensive mitigation, recommendations and maintenance measures were identified and have been provided in, Section 5.0 of this report.

Of the listed recommendation measures, the 30m stream buffer and building envelope constraint from the high water mark of Mud Creek was not assumed by developer. The intermittent watercourse located directly upstream of the Mud Creek Stormwater Management Ponds created a pre-existing fragmented aquatic environment and fishery. Therefore, RVCA, DFO, OMNR and NEA supported Richcraft's decisions to remove the watercourse and compensate for the habitat loss on-site and off-site through the Fisheries Act Authorization process in place at the time. The resulting project Authorization (DFO Authorization #10-HCAA-CA4-00350) was developed by the above project group and resulted in creation of compensatory restoration works (offsetting) of Brewer Pond. Brewer Pond compensation works were completed in the spring of 2015 and the post-construction monitoring program commences in the spring of 2016.

Additional stream restoration planting works were agreed upon between Minto and Richcraft and the Rideau Valley Conservation Foundation. A planting plan was prepared (dated Sept. 18, 2015. The overview from the report lists 3 related projects that cover

reforestation of phases 2, 3 and 4 within the Mud Creek corridor, soil remediation in those zones if necessary and a 5 year maintenance schedule. In total more than 5300 native trees and shrubs are to be planted. The Foundation was provided with the funds to undertake this project by the development team...

It should be noted, engineering changes to allow stormwater conveyance along the Mud Creek corridor between Compass St and Belcort Blvd were agreed upon with the City of Ottawa. The following paragraph summarizes the changes and process.

The proposed development is situated east of the existing East Urban Community (EUC) Stormwater Management Pond 1, north of existing Mud Creek and south of the Hydro Easement / Brian Coburn Boulevard Extension.

The existing EUC Pond 1 was constructed in 2010 based on a design by Stantec Consulting. As noted in the EUC Pond 1 Design Brief, changes to the drainage area characteristics, modeling methods and City of Ottawa standards have resulted in a need for increased storage in the existing SWM Facility. Under interim conditions, existing Pond 1 will be modified to support the development of the TrailsEdge Subdivision, south of the Hydro Easement / Brian Coburn Boulevard Extension.

As detailed in the DSEL's EUC Pond 1 Design Brief, the south forebay and south main cell of the SWM facility will be re-constructed and the portion of Mud Creek between the existing facility and Compass Street will be constructed. This portion of Mud Creek will become part of the SWM Facility, once constructed. These modifications are required to support the TrailsEdge West subdivision development.

Subsequent to the proposal to close Mud Creek upstream of Compass Street, agreements have been reached with the City of Ottawa and RVCA to extend the conveyance channel between Compass Street and Belcourt. The proposed conveyance channel is deeper than the existing Mud Creek channel, in order to support the proposed grading of the site and the provision of required freeboard between building footings and the 100 year Hydraulic Grade Line. The channel is to be deepened and stabilized via three unique designs: a full channel with 3:1 slopes, culverts, and a 'half-channel' featuring retaining walls and a channel bottom. Where slopes are greater than 3:1 a combination or retaining walls and geo-grids are proposed.

The intent of the stormwater conveyance channel is to widen and deepen the existing Mud Creek channel corridor in order to safely convey stormwater runoff from the proposed subdivision to EUC Pond 1. The proposed modifications offer an opportunity to direct low

flows (e.g. from frequent events, foundation drains, etc.) to the former Mud Creek channel, in order to maintain the contributions of the Mud Creek corridor to EUC Pond 1. As part of early consultation with RVCA, it was determined that in order to gain RVCA approval for the modifications to the channel, natural channel design principles must be incorporated into the conveyance channel design. As detailed designs progress for the corridor, landscape planting plans are required to re-vegetate the disturbed area, and the construction footprint must be analyzed and minimized to avoid impacts from machinery, timing, and erosion and sediments.

The design also considers the addition of flows from future development area to the east entering the storm system. Through the design of the storm system in the DSEL Servicing Report, it was determined that future flows from the east of Belcourt Boulevard would be conveyed down Belcourt Boulevard to Mud Creek.

The retained City owned portion of UNA 97 aligns with the environmental management recommendations provided in the CDP and Brunton Consulting Services (2008) with respect to the retained woodlot. However, the conversion of Mud Creek corridor watercourse into a stormwater conveyance channel was negotiated with the City of Ottawa, RVCA and Department of Fisheries Oceans staff, where all groups were aware of the City's recommendation documents. The decision to remove the watercourse feature and associated vegetation corridor, were not directly reflective of the CDP and Brunton (2008) recommendations, however, the required permitting agreements associated with the removal of the features were reflective of their identified value, resulting in extensive fish compensation (off and on-site), tree fencing mitigation/protective measures, and RVCA tree planting requirements.

4.2 DFO Compensation (DFO, 2015)

NEA developed the TrailsEdge Development Fish Habitat Compensation Plan in 2013 as required by DFO and, at the time Rideau Valley Conservation Authority (RVCA) to compensate for permanent loss of fish habitat, mitigated impacts and monitored implementation of the permitted works. The compensation plan stipulates that all fish will be salvaged and released live downstream prior to any in water works and construction and post construction monitoring plans are conducted and reports are submitted to DFO.

To date, the construction monitoring of the TrailsEdge and Brewer Pond compensation site have been completed by NEA and post-construction monitoring is scheduled for spring 2016. Fish salvage works were also completed by NEA for Mud Creek in 2015 and Brewer Pond in 2014. Fish collection permits and reporting required by OMNRF were acquired,

implemented and reporting submitted to OMNRF for all salvage works. During all site visits photographs were taken to document site conditions and sediment and erosion control measures.

All in-water work recommendations, mitigation and monitoring outlined in the Fish Compensation Plan were carried forward into the Fisheries Act Authorization Permit. No conflicting recommendations were brought forward by supporting project studies and therefore no conflicts were present to report in this IER with respect to fish and fish habitat.

4.3 Tree Conservation Report (Minto and Richcraft) (Lashley & Associates, 2014) (Lashley & Associates, 2015)

As of the writing of this report (August 2015) after a lengthy negotiation process and using the Tree Preservation and Protection Plan produced by Lashley and Associates as a guiding document the Mud Creek tree retention areas have been set with detailed reforestation plans in process.

During construction, IFS Associates (2015) associates were asked document all trees behind Lots 49 and 50. Trees were marked for removal regardless of their condition. This was due to their close proximity to the houses on these two properties. IFS Associated, recommended that all remaining trees along the entire conserved area should be inspected regularly for structural integrity. Being located on a newly created forest edge they are prone to stem and full tree failure. This is particularly true for the retained poplars.

All fencing has been erected and inspected by the City of Ottawa. The plans and resulting fence locations protect the flagged trees in the future Minto backyards. They also ensure the grading at the rear of those lots taper to match existing ground elevations before the fence line.

A stabilization plan for the Mud Creek Stormwater Channel has been developed with a rehabilitation plan nearing completion and approval. Side slopes will be protected with erosion control fabric, a Geoweb system and hydro mulching and planted using the recommended species of plant material, see Appendix II of this report.

Recommendations were provided and have been listed in Section 5.0 of this report. No conflicts were present between the two reports and other sub-consultant reports.

Rear-yard tree retention on the lots adjacent to Mud Creek in the Enclave Subdivision was

provided in the Phase II Tree Preservation Report and was shown on the accompanying drawings (TrailsEdge Stage II-Landscape Plan. Levstek Consultant, Drawing L1.01 and L1.02, February 2014). The report contained the following recommendations.

> *Erect a fence around the proposed Park site (Block 140) until such time as an activity program and design options are approved for the development of the property. The City of Ottawa should require a tree conservation report for the park site when submitting for Site Plan Application. See Appendix 'B' for areas of tree retention.*
> *2. Erect fencing around the Mud Creek tree retention areas. See Appendix 'B' for areas of tree retention.*
> *3. Erect a fence in the rear properties to protect the flagged trees. Ensure the grading at the rear of lots is tapered to match existing ground elevations before the fence line. Coordinate the erection of the fence with the fencing of the Mud Creek areas to limit the amount of fencing. See Appendix 'A' for trees to be retained.*
> *4. Coordinate the fencing with silt fencing requirements.*
> *5. Develop a stabilization and rehabilitation plan for the Mud Creek Stormwater Channel.Side slopes should be protected with erosion control fabric, a Geoweb system or hydro mulching and planted using the recommended species of plant material (see Appendix 'F' for applicable examples).*

<u>*Richcraft Property (Lashley & Associates, 2014)*</u>

The Richcraft TrailsEdge West Tree Conservation Report, dated August 12, 2012 was written as a supplement to the Tree Preservation and Protection Report originally submitted on July 26, 2007. This supplement is a detailed investigation and recommendation for the trees on the Richcraft portion of the Minto/Richcraft 'TrailsEdge' development.

The subdivision plan indicates a medium density development consisting of single-family dwellings and town homes. Refer to Appendix 'A' of the report provided in Appendix II of this report. The areas designated for housing have already been cleared, but trees may be retained in the blocks designated as a 'Park' and 'Woodlot', and along the southern and western edge of lots bordering the woodlot. The woodlot is designated as an Urban Natural feature and comprises 6 hectares of land. It is owned by the City of Ottawa and will be protected into the future for its environmental value and diversity of species.

To direct on-site water, the 'Mud Creek Stormwater Management Corridor' block is to be re-graded. The affected area extends beyond the subdivision limit and no trees within the area

will be retained. Attention should be directed towards restoring the channel with site appropriate species that respond to the new grading plan. Mud Creek Corridor. In reviewing the Engineering drawings showing the meandering channel design and the parallel recreation path, it is evident that no trees will be retained within the corridor.

Wildlife protection was assessed within the report, integrating Niblett Environmental Associates Inc. findings that no evidence of Species at Risk, specifically bobolink were found on the site due to a lack of suitable habitat.

Comprehensive mitigation, recommendations and maintenance measures were identified and have been provided in Section 5.0 of this report.

Minto Property (Lashley & Associates, 2015)

The final Tree Conservation Report (Phase II) for Minto Property was written as a supplement to the Tree Preservation and Protection Report submitted on March 26th, 2012 and revised April 15th, 2014. It provides a detailed investigation and recommendation for the trees on the Minto component of the Minto/Richcraft 'TrailsEdge' development.

The report provides a description of the existing tree community consisting of pioneer species tolerant of wet heavy soils (Poplar-Red Maple-Birch-Ash) and stands of more mature vegetation (DBH +\- 40cm) particularly on the West side of Mud Creek. There were no butternuts identified during the field visits. Opportunities to retain existing trees in the Park block, the Mud Creek Corridor block, and in the back lots along the South side of the Mud Creek Corridor were discussed. However, immediate grade changes required for storm-water management around the School block necessitated all trees to be cut. Final tree retention areas were approved by the City of Ottawa in the Mud Creek Corridor block running from Compass Street to Belcourt Boulevard to provide a recreational link for residents and function as a vegetative asset to the community by retaining a maximum number of healthy existing trees and replanting areas disturbed by grading with native vegetation. City approved tree retention areas are illustrated in the resulting tree preservation plan updated based on stormwater constraints identified by IBI Group in Appendix A and B of the Tree Preservation Report and in Appendix II of this document.

Wildlife protection was also assessed within the report, integrating Niblett Environmental Associates Inc. findings that no evidence of bobolink, a Species at Risk, was found at the site due to a lack of suitable habitat.

Comprehensive mitigation, recommendations and maintenance measures were identified

and have been provided in Section 5.0 of this report.

4.4 Environmental Site Assessment (Paterson Group, 2007)

In June 2007, Paterson Group conducted a Phase I Environmental Site Assessment of the vacant property located north of Renaud Road between Page Road and Mer Bleue Road in Ottawa, Ontario.

The Environmental Site Assessment was conducted on the vacant property. The purpose of the environmental assessment was to determine historical use of the site and to identify any existing potential concerns associated within the site and or adjacent properties that had the potential to impact the subject property. The key findings during the assessment were as follows;

- No fuels or chemicals observed on the subject property, in turn the level of concern is low.
- No water discharges observed onsite.
- No waste production on site. Waste refuse including rolls of metal fence, an old AST and other odd items observed onsite; there was no level of concern.
- One structure was identifies on site, an old slab of grade concrete foundation that was located on the western portion of the site, there was no level of concern.

Recommendations were provided and have been provided in Section 5.0 of this report, no comprehensive mitigation, or maintenance measures were identified within this study. No conflicts were present between the original report and other sub-consultant reports.

4.5 Archeology Studies (Ground Truth Archaeology, 2007)

Ground Truth Archaeology was retained by FoTenn Consultants on behalf of Richcraft and Minto in April 2007 to complete a Stage 1 Archaeology Assessment of approximately 61 hectares. The Stage 1 assessment was completed on May 11th 2007. It determined that due to the presence of three intermittent streams and a widespread deposit of sandy soils onsite, the entire Renaud Subdivision property had a moderate to high potential for the presence of prehistoric archaeological resources. As a result, a Stage 2 assessment was recommended. The Stage 2 assessment was completed over eight days in June and July 2007.

The entire property was test pitted at 5m intervals. The Stage 2 assessment was conducted over an eight day period in June and July of 2007. The assessment showed no prehistoric or

19th century artifacts, additionally no subsurface archaeological features or deposits were identified in the test pits. The foundation of a Euro-Canadian structure was identified during testing, the structure was a shed from the late 20th century.

Recommendations were identified and have been provided in Section 5.0 of this report, no comprehensive mitigation, or maintenance measures were identified within this study. No conflicts were present between the Phase I or II reports and other sub-consultant reports.

4.6 Traffic Study (Castle Glenn Consultants , 2008) (Castle Glenn Consultants , 2014)

Addendum No. 3: Renaud/Naven Road Development-Proposed TrailsEdge Development: Traffic Impact Review

The Traffic Impact Review Addendum, dated September 29th, 2008 was written by Castle Glenn Consultants Inc. in regards to the proposed sub-division plan proposed by Richcraft and Minto to develop the TrailsEdge sub-division. The addendum was written after works had begun in the immediate vicinity of the Navan Road/Renaud Road area. The City of Ottawa requested a letter-report that addressed the most recent changes to the original plan and comment on the significance, if any, of the changes from the original assumptions made.

The key changes and conclusions from the original "*assumptions*" are as follows;

- *It is CastleGlenn's opinion that the net effect of these 10 additional dwelling would be negligible in term of traffic impact.*

- *Richcraft's most current plans have therefore reinstated Street 5 within the local roadway network.*

- *It is CastleGlenn's opinion that the net effects of the changes to the local internal roadway network east of Navan Road and west of Bilberry Creek are negligible in term of traffic impact*.

- The TrailsEdge Community plan changes, the previous study showed a total of 1,082 dwellings (90 low density units, 830 medium-low density units, 39 medium density units, 123 high-density units), 108 jobs, 13 acres of park and 8.8 acre elementary school. The new plan provides less park space in lieu of greater woodlands and larger area for the elementary school, approximately 100 less dwellings and new institutional land use.

- Traffic generated by TrailsEdge Community:

  In conclusion, the overall impact of the redesign of the land uses within the TrailsEdge community in terms of traffic generation has been a:

  - *25 [(569-435)/569] percent reduction in morning peak hour traffic volumes generated in the outbound direction from the community; and*
  - *7 [(627-580)/627] percent reduction in afternoon peak hour traffic volumes generated in the inbound direction toward the community.*
- It is CastleGlenn Consultants Inc. conclusion that:
  - *the traffic volume estimates, analysis and resulting study recommendations as outlined in previous work remain unchanged by the modifications to Minto's and Richcraft site plans as contained in this document; and*
  - *the City of Ottawa is encouraged to assemble the appropriate conditions necessary to permit the integrated Richcraft/Minto development plans of the TrailsEdge Community to proceed keeping in mind the potential staging implications associated with the larger study area.*

Addendum Letter No. 4 - Phase II TrailsEdge Development-Richcraft Group of Companies

The Addendum letter No.4- Phase II TrailsEdge Development, dated February 4th 2014 was written by Castle Glenn Consultants Inc. to provide a general assessment of the traffic and transportation impacts associated with the additional 14 units being proposed within Block "67" of the Phase II TrailsEdge development.

In conclusion, it is Castle Glenn's opinion that the traffic and transportation effect of the additional 14 town homes to the proposed Phase-II TrailsEdge development is anticipated to have a negligible impact on the local roadway network. The City of Ottawa is encouraged to assemble appropriate conditions necessary to permit the Phase-II of the TrailsEdge development to proceed.

No comprehensive mitigation, recommendations and maintenance measures were identified within this study. No conflicts were present between the original report, its addendum or other sub-consultant reports.

4.7 Noise Study (UAL, 2014) (UAL, 2015)

UAL Urban Aerodynamics Ltd. completed two separate Noise Impact Assessments for Site Plan Approval for both Richcraft and Minto. The outcome of the assessments indicated both

significant and insignificant noise levels. Along with those projected noise levels were a series of Warning Clauses and noise barriers required in certain areas of the development. The locations of the barriers are shown in Appendix E of the report and Appendix III of this report.

Recommendations were provided and have been provided in Section 5.0 of this report, no comprehensive mitigation, or maintenance measures were identified within this study. No conflicts were present between the two reports and other sub-consultant reports.

As part of the servicing of the subdivision the fences will be erected as soon as possible. All subterranean utility servicing needs to take place with proper grades attained in order to achieve proper installation and implementation of the Grading Plan(s). Once completed the fences will be certified by a qualified engineer with those reports provided back to the City of Ottawa to clear any outstanding letter or credit.

4.8 GeoTech Study(Paterson Group, 2008) (Paterson Group, 2009) (Paterson Group, 2012)

Paterson Group was first commissioned in 2006 to conduct a geotechnical investigation. The objective of the investigations was to:

- Determine the subsoil and groundwater conditions at this site by means of test holes
- Provide geotechnical recommendations for the design of the proposed development including construction considerations, which may affect its design.

Proposed Residential Development, Eden Park-Middle Portion-Renaud Road, Ottawa, Ontario. Reports: PG0861-2

The field work was conducted in August 2008, 11 boreholes were advanced to a depth of 9.6m below the ground and 16 test pits were completed within the site. Each borehole was used to collected soils samples as well as monitor groundwater levels. Groundwater infiltration levels were noted at the time of excavation at the test pit locations.

The subsoil conditions within the site consist of deep sensitive silty clay deposits throughout the entire site. Due to the presence of the sensitive silty clay layer, the site is subjected to grade raise restrictions. If higher than permissible grade raises are requires, preloading with or without a surcharge, lightweight fill and/or other measures should be investigated to reduce the risk of unacceptable long-term post construction total and differential settlements.

Recommendations were identified and have been provided in Section 5.0 of this report, no comprehensive mitigation, or maintenance measures were identified within this study.

Proposed Trail's Edge, Residential Development-Phase 2, Renaud Road, Ottawa, Ontario. Reports:PG1605-2

The field work was conducted in May 2009, three boreholes were advanced to a depth of 10m below the ground and seven hand augered holes were dug where access was limited. Each sample location was used to collected soils samples as well as monitor groundwater levels. Flexible PVC pipes were installed at each borehole location to monitor groundwater levels.

The soil conditions consisted of silty sand underlain by deep silty clay deposits. The silty clay deposit was not fully penetrated at any of the current borehole locations, which extended to a maximum depth of 9.6 m below existing grade. Due to the presence of the sensitive silty clay layer, the site is subjected to grade raise restrictions. Permissible grade raise areas will be defined upon completed of a more comprehensive geotechnical investigation when access restrictions are no longer present across the subject site. If higher than permissible grade raises are requires, preloading with or without a surcharge, lightweight fill and/or other measures should be investigated to reduce the risk of unacceptable long-term post construction total and differential settlements.

Recommendations were identified and have been provided in Section 5.0 of this report, no comprehensive mitigation, or maintenance measures were identified within this study.

Proposed Residential Development, TrailsEdge-Phase 2, Renaud Road, Ottawa, Ontario. Report: PG2392-1

The field work was conducted in August 2011 and February 2012, boreholes were drilled. Each sample location was used to collected soils samples as well as monitor groundwater levels. Flexible PVC pipes were installed at each borehole location to monitor groundwater levels.

Due to the presence of the sensitive silty clay layer, the subject site will be subjected to grade raise restrictions. Where exceedances of the permissible grade raise occur, lightweight fill (LWF) can be utilized below garage and porch floor slabs, as well as, around the perimeter of the buildings, where required. LWF dimensions, if required, will be determined on a lot by lot

basis for the current phase. Alternatively, a surcharging program could be implemented where grade raise exceedances occur.

The Geotechnical Investigations have deemed the area suitable for the proposed development.

Recommendations were identified and have been provided in Section 5.0 of this report, no comprehensive mitigation, or maintenance measures were identified within this study. No conflicts were present between the three (3) reports and other sub-consultant reports. However, the grading recommendations and resulting creation of a stormwater management channel were a key consideration when deciding to infill the Mud Creek watercourse within the study area and developing the tree conservation plans.

5.0 Summary of Environmental Recommendations, Mitigation Measures and Monitoring Commitments

Based on Section 4.0 only studies that identified recommendations, mitigation and monitoring are discussed in this section of the report.

5.1 Recommendations

5.1.1 Environmental Impact Study (NEA, 2009) (NEA, 2011) (NEA, 2013)

5.1.1.1. Significant Natural Features, Function and Significance (EIS)

- The maintenance of linkages to other natural areas is a critical component of the preservation area as birds, plants, wildlife and genetic material are dispersed across the landscape via these linkages and corridors. The connection to the north to the woodland north of the hydro corridor, to the west along the Mud Creek valley and to the south to woodlands and headwaters of Mer Bleue feeder creeks are important to maintaining this connectivity. Option 1 ties into each of these linkages (Figure 4 of NEA, 2009). Future development including the transitway, stormwater pond and possible upgrades to Renaud Road or Page Road may impact on the effectiveness of these linkages.

- The preservation of a core area is necessary to maintain the functions of the woodland and the UNA. A detailed analysis of the plan of subdivision was conducted using the UNA criteria and the natural features and functions derived from NEA's field inventories.

- Two options were recommended for preservation of a core area of UNA #97,

Recommendations Specific to Option 2 (Final Option Adopted)

- The core area of the woodland, as shown on Figure 4 (Appendix I in this report) be maintained. The edge is defined by the creek to the south and a new edge along the eastern portion.

- The core area be contiguous with the 30 m setback along the creek and all vegetation between the creek and the core wooded area be maintained, as shown on Figure 4 (Appendix I in this report).

- The outer limit of the woodland be staked in the field prior to any activities on site (including tree clearing) and fencing applied to the outer edge to clearly delineate that the area is to be preserved.

- No activities are to occur in this woodland during the construction phase.

- The tree preservation plan should include edge management techniques and specific measures to protect the outer trees from disturbance during and post construction.

- The units that back onto the preserved area have a fence along the rear property line.

- The stormwater block to the west to be designed to complement the core woodland being preserved and protect the edge trees.

5.1.1.2. Fish and Fish Habitat (NEA, 2009)

- Development envelope be located a minimum of 30 m from the banks of Mud Creek.

- Within the 30m buffer zone no construction activities, site grading, tree removal or storage or dumping of soil, stumps, brush or refuse is to occur.

- Maintain baseflow in Mud Creek within the study area that provides permanent fish habitat. This may be accomplished in part by measures to collect or convey groundwater to the tributary and its watershed. Grassed swales could also be used to help maintain baseflow.

- Temporary sediment and erosion control needs to be installed prior to site preparation and construction because the length of the construction time period has the potential to cause a HADD through the release of deleterious substances into fish habitat for the duration of the construction phase.

- If trails or other uses of the creek corridor and setback are proposed in the future, the impact on the fisheries should be considered and a qualified biologist consulted.

5.1.2 DFO Authorization Act (DFO, 2015)

No recommendations were made, only mitigation and monitoring requirements, See Section 5.2 and 5.3 of this report.

5.1.3 Tree Conservation Report (Lashley & Associates, 2014) (Lashley & Associates, 2015)

Richcraft Property (Lashley & Associates, 2014)

- Erect a fence around the existing vegetation in the proposed Park site (Block 248) until such time as an activity program and design options are approved for the development of the property. The City of Ottawa should require a tree conservation report for the park site when submitting for Site Plan Application. See Appendix 'A' for areas of trees to be protected.

- Erect a fence around the Woodlot Block and provide a 4m buffer between the edge of the woodlot and the tree protection fence. Trees that fall within the buffer or that straddle the edge of the buffer should be retained.

- Coordinate the fencing with 'silt' fencing requirements.

- Develop a stabilization and rehabilitation plan for the Mud Creek Stormwater Channel. Side slopes should be protected with erosion control fabric or hydro mulching and planted using the recommended species of plant material for the Creek Corridor indicated in Appendix 'F' of the report.

- Tree protection measures should be implemented as per the mitigative measures. Blocks where trees should be preserved are:

    - Park Site: Groupings of vegetation cover portions of the site and should be preserved in clumps to prevent potential blowdowns from increased exposure. Further investigations and analysis should be conducted when the programming for the Park has been developed.

    - Woodlot: The entire Woodlot block is an Urban Natural Feature that is City owned and will be preserved. It will be an important, mature vegetative presence in the new community.

    - Southern and Western edge of the lots bordering the Woodlot: Trees along the southern and west edge of the lots bordering the woodlot should be

considered for retention on-site if construction activity will not hinder their ability to grow and remain healthy.

- Mud Creek Corridor: No trees located along the Mud Creek Corridor will be retained due to changes in grade. Efforts should be focused on the restoration of the corridor.

- Within the Mud Creek stormwater management corridor an asphalt path will be provided and will be a recreational asset to the community. Slopes within the corridor along the pathway and newly engineered channel are mostly 3:1. A list of suggested species to be reviewed during the preparation of the Landscape Plan for the corridor is attached as Appendix 'F'. The planting scheme should focus on achieving slope stabilization and ensure adequate vegetative coverage to limit the potential for erosion and seeding of invasive species.

Minto Property (Lashley & Associates, 2015)

- Erect a fence around the proposed Park site (Block 140) until such time as an activity program and design options are approved for the development of the property. The City of Ottawa should require a tree conservation report for the park site when submitting for Site Plan Application. . A map of trees to be retained was provided in Appendix 'B' of the Tree Preservation Report and Appendix II of this document.

- Erect fencing around the Mud Creek tree retention areas. See Appendix 'B' for areas of tree retention.

- Erect a fence in the rear properties to protect the flagged trees. Ensure the grading at the rear of lots is tapered to match existing ground elevations before the fence line. Coordinate the erection of the fence with the fencing of the Mud Creek areas to limit the amount of fencing. A map of trees to be retained was has been provided in Appendix 'A' of the Tree Preservation Report and Appendix II of this document.

- Coordinate the fencing with silt fencing requirements.

- Develop a stabilization and rehabilitation plan for the Mud Creek Stormwater Channel. Side slopes should be protected with erosion control fabric, a Geoweb system or hydro mulching and planted using the recommended species of plant material. Examples have been provided in Appendix 'F' of the Tree Preservation

Report.

- The requirements for planting street trees in the TrailsEdge community is set forth in the guidelines Planting in Areas of Sensitive Marine Clay (Appendix 'G'). No Amur Maples should be planted due to the invasive nature of the specie and proximity to an important natural area.

- Within the Mud Creek stormwater management corridor a 3-meter wide pathway will be provided and will be a recreational asset to the community (see Appendix 'J'). Slopes within the corridor along the pathway and newly engineered channel vary between 3:1 and 2:1. A list of suggested species to be reviewed during the preparation of the Landscape Plan for the corridor is attached as Appendix 'F'.

5.1.4 Environmental Site Assessment (Paterson Group, 2007)

- It was recommended any debris including scrap metal and concrete should be properly disposed of during the development of the site.

This recommendation has been followed during the construction phase of the development, all debris, scrap metal and concrete has been properly disposed of.

5.1.5 Archeology Studies (Ground Truth Archaeology, 2007)

- No further assessment is required for archaeological concerns for the entire subject property.

- If deeply buried or undetected archaeological remains are found during excavation work on the subject property the proponent or their agent should immediately notify the Archaeology Section of the Ontario Ministry of Culture (416) 314-7146.

- If human remains are encountered during excavation work on the subject property the proponent should immediately contact both the Cemeteries Registrar of the Ministry of Consumer and Commercial Relations (416) 326-8394 and the Ontario Ministry of Culture.

These recommendations have been followed during all excavation works and any other associated work being conducted on site.

5.1.6 Noise Studies (UAL, 2013) (UAL, 2014) (UAL, 2015)

- *All building facades adjacent to and facing the Bypass/Transitway and facing the Belcourt Extension will need special design to provide sufficient acoustic attenuation to meet the indoor noise criteria of the ENCG. This requirement applies whether the rooms on these facades are subject to daytime or night time criteria. These units will also require the installation of central air conditioning and a Type D notice on title.*

- *Facades exposed to noise from parts of the Bypass/Transitway on buildings in blocks immediately south of the buildings immediately adjacent to this roadway can be constructed to meet Ontario Building Code standards only, will require provision for central air conditioning in their heating systems and a Type C notice on title.*

- *Façades on buildings immediately adjacent to Renaud Road can be constructed to meet Ontario Building Code standards only, will require provision for central air conditioning in their heating systems and a Type C notice on title.*

- *Outdoor Living Areas in the units immediately adjacent to the Bypass/Transitway will require protection by barriers to meet the requirements for OLAs in the ENCG. Three metre high barriers are required to bring the noise levels in the OLAs to less than Leq16hr =60dBA, which will require a Type B notice on title. It is recommended that the City of Ottawa be requested to permit 3 metre noise walls at these locations, rather than noise barriers (wall on top of berm), since they are located along the side of the property, and the requirements for stability of a berm would require the berm to encroach considerably on these properties.*

- *Outdoor Living Areas in the units adjacent to Belcourt Extension will require noise barriers 2.2 metres high at Lot 123 and 2.6 metres high for Lots 124 to 127, together with a Type B notice on title for all these units since the noise reduction would not achieve less than 55dBA. A 2.6 metre barrier at Lot 123 would further reduce the noise level in the OLA below 60dBA but still require a Type B notice on title. However, the noise barrier would be the same height from Lot 123 to Lot 127. It is recommended that the City of Ottawa be requested to permit 2.6 metre noise walls at these locations, rather than noise barriers (wall on top of berm), since they are only 0.1 metre above the maximum height of 2.5 metres without a berm.*

- *Under the ENCG, noise barriers are not required on the OLAs adjacent to Renaud Road, since the noise levels without barriers are between 55dBA and 60dBA. However, if no barriers are installed, a Type B notice on title for the indicated units where their OLA is*

exposed to traffic noise from Renaud would be required. A 2.2 metre barrier would be sufficient to reduce noise below 55dBA, so no notice on title would be needed. A 1.4 metre barrier is the lowest that could still achieve a noise level in the OLA less than 55dBA.

As part of the servicing of the subdivision fences will be erected as soon as possible. All subterranean utility servicing will take place with proper grades attained in order to achieve proper installation and implementation of the Grading Plan(s). Once completed, the fences will be certified by a qualified engineer with those reports provided back to the City of Ottawa to clear any outstanding letter or credit.

5.1.7 Geotechnical Investigation (Paterson Group, 2008) (Paterson Group, 2009) (Paterson Group, 2012)

Proposed Residental Development, Eden Park-Middle Portion-Renaud Road, Ottawa, Ontario. Reports:PG0861-2 & Proposed Trail's Edge, Residential Development-Phase 2, Renaud Road, Ottawa, Ontario. Reports:PG1605-2

- *Review master grading plan from a geotechnicalperspective, once available.*
- *Review detailed grading plan(s) from a geotechnical perspective.*
- *Observation of all bearing surfaces prior to the placement of concrete.*
- *Periodic observation of the condition of unsupported excavation side slopes in excess of 3 m in height, if applicable.*
- *Observation of all subgrades prior to backfilling and follow-up field density tests to ensure that the specified level of compaction has been achieved.*
- *Sampling and testing of the bituminous concrete including mix design reviews.*
- *Suggest foundation alternatives based on the potential long term settlements.*

Proposed Residential Development, TrailsEdge-Phase 2, Renaud Road, Ottawa, Ontario. Report:PG2392-1

- Review detailed grading plan(s) from a geotechnical perspective.
- *Observation of all bearing surfaces prior to the placement of concrete.*
- *Periodic observation of the condition of unsupported excavation side slopes in excess of 3 m in height, if applicable.*

- *Observation of all subgrades prior to backfilling.*

- *Field density tests to ensure that the specified level of compaction has been achieved.*
- *Sampling and testing of the bituminous concrete including mix design reviews.*

All recommendations have been strictly adhered to throughout the approvals process. The Civil Engineer's drawings and plans have also followed all recommendations with construction expected to follow suit.

5.2 Mitigation Measures

5.2.1 Environmental Impact Study (NEA, 2009) (NEA, 2011) (NEA, 2013)

General

- *Clearing of vegetation and tree cover occur outside the peak breeding bird season as recommended by Environment Canada (May 1-July 31).*

- *A Tree Conservation and Protection Plan be completed as required by the City of Ottawa Official Plan. This may include an edge management plan to prevent impacts to the newly formed edge.*

- *Prior to clearing of individual developments, a qualified biologist should walk the site during the growing season to determine if any significant plants or breeding birds are present. If rare plants are found a plant salvage plan should be prepared and submitted to the City for approval.*

- *Plantings within the facilities and streetscapes should use native tree and shrub species that are indigenous to the Ottawa area.*

- *The woodland and vegetation within the 15 m setback from Mud Creek be left in its natural state.*

Sediment and Erosion Control

- *A detailed sediment and erosion control plan be prepared for the site preparation, construction and post-construction phases.*

- *Silt fence and sturdy temporary fencing be placed along the 30m setback line on both sides of the creek prior to any site preparation activities.*

- *Silt fence be regularly inspected and maintained as necessary until construction is completed and the soil stabilized with vegetation.*

- *Specially designed silt fence and other erosion control measures will be utilized at the upstream end (beginning) of Mud Creek to prevent sedimentation within the channel.*

- *No vehicles will be stored or stockpiles of materials including topsoil be located within 60 meters of the woodland being preserved and the 30 m creek setback.*

- *No refueling of vehicles or storage tanks will be located within 30 meters of the existing forest edge and creek setback.*

5.2.2 *Fish Compensation Plan (NEA, 2013)*

- *All materials and equipment used for the purpose of site preparation and project completion should be operated and stored in a manner that prevents any deleterious substance from entering the water.*

- *Stockpiled materials should be stored and stabilized away from the water.*

- *Vehicle and equipment re-fuelling and maintenance should be conducted away from the water in a controlled manner to prevent fuel spillage.*

- *Any part of equipment entering the water should be free of fluid leaks and externally cleaned and degreased to prevent any deleterious substance from entering the water.*

- *All equipment operating near the water should be equipped with a spill kit.*

- *Only material free of fine particulate matter should be placed in the water.*

- *Sediment and erosion control measures should be implemented prior to work and maintained during the work phase, to prevent entry of sediment into the water.*

- *Details of the proposed construction staging, dewatering plan and the sediment and erosion control plan and the Emergency Action Plan are to be provided in detail at the detailed design stage.*

- *Sediment erosion control (silt fencing) should be installed prior to and maintained during restoration works.*

- *All works on the new redesigned channels should be completed prior to water being rerouted from temporary channels/ditches into the channel.*

- *Dredged or excavated material should be disposed of on land above the high water level and suitably contained and/or stabilized to prevent the material from re-entering the water.*

- *All in-stream works should be conducted in the dry by de-watering the work area and diverting and/or pumping flows around cofferdams placed at the limits of the work area. Existing stream flows should be maintained downstream of the dewatered work area without interruption, during all stages of the work. There should be no increase in water levels upstream of the de-watered work area. Fish should be removed from the work area prior to de-watering and released immediately downstream of the furthest downstream coffer dam. Fish removal will be conducted by isolating sections with cofferdams (i.e. hay bales, steel plates, or rock check dams), pipes, or temporarily constructed channels. Several passes with the most effective method of fish capture will be performed until it is determined that an adequate level of effort to remove all fishes has been achieved. Capture methods used will include electrofishing, dip-netting, seining, and any other effective methods.*

- *Any silt accumulated around cofferdams should be removed prior to withdrawal.*

- *Sediment laden discharge water should be pumped to a stilling basin or filtering system well away from the watercourse and allowed to settle and/or filter through the riparian vegetation before re-entering the watercourse downstream of the construction area.*
- *Flow dissipaters and/of filter bags or equivalent should be placed at water discharge points to prevent erosion and sediment release.*

- *All sediment and erosion control measures should be inspected daily to ensure that they are functioning properly and are maintained as required.*

- *Inspections and repair of sediment and erosion controls will be conducted as soon as possible following any rain events.*

- *If the sediment and erosion control measures are not functioning properly, no further work should occur until repairs are made.*

- *Works will not be considered complete until all sediment controls are removed.*

- *To protect fish habitat during sensitive spawning and rearing times, the following timing is recommended for the proposed works: No in-water work to occur from March 15th to June 30th, to protect local fish populations during their spawning periods. In-water work or activity to occur from July 1st up to and including March 31st, or as otherwise directed by the Ministry of Natural Resources.*

5.2.3 Tree Conservation Report (Lashley & Associates, 2014) (Lashley & Associates, 2015)

Richcraft Property (Lashley & Associates, 2014)

- *The protection measures listed below should be used for retained trees. These measures apply to trees within the Park Block and Woodlot Block. Please note that in addition to these measures the protection fence along the Woodlot Block should have a 4m buffer between the edge of the woodlot and the tree protection fence. Trees that straddle the edge of the buffer should be retained, along with the trees within the buffer. See Appendix 'A' for areas of tree protection.*

    - *Erect a fence at the critical root zone (CRZ)1 of trees;*
    - *Do not place any material or equipment within the CRZ of the tree;*
    - *Do not attach any signs, notices or posters to any tree;*
    - *Do not raise or lower the existing grade within the CRZ without approval;*
    - *Tunnel or bore when digging within the CRZ of a tree;*
    - *Do not damage the root system, trunk or branches of any tree;*
    - *Ensure that exhaust fumes from all equipment are NOT directed towards any tree's canopy.*

- *Heavy duty tree protection fencing must be erected around the existing vegetation in the park site until it is developed and around the woodlot as illustrated in Appendix 'A' and Appendix 'B'.*

- *No vehicular access or construction storage is permitted in these areas. Once development plans are prepared for these areas tree preservation will be determined at a more appropriate scale.*

- *Specific Site Development: During the Planning and Development process once a final Draft Plan of Subdivision is approved and Lotting is undertaken, further investigation should be undertaken prior to Construction to locate and identify significant individual trees that might be in locations of possible preservation.*

- *Tree Protective Barrier: Fencing must be erected around the areas designated for preservation at the edge of the critical root zone (CRZ) of the trees to be preserved. No vehicular access or construction storage is permitted in these areas. Once construction has been completed and the terrain stabilized the areas can be opened to pedestrian and maintenance access. Please note that along the Woodlot Block, the tree protective fence should be erected 4m from the edge of the woodlot. Trees that straddle the edge of the 4m buffer should be retained along with the trees within the buffer.*

- *Excavation: If excavation must take place within a tree's drip line or critical root zone whichever is greater, a trench should be dug carefully by hand or with a root-cutting (stump grinder) or stone cutting (cut-off) machine along the furthest reach of the cut. If any tree roots are exposed during construction, they must be immediately reburied with soil or covered with filter cloth or woodchips and kept moist until they can be buried permanently Slope and Erosion Control Recommendations: Siltation fencing must be installed around each development area to prevent sediment from contaminating the wooded areas to be preserved or the creek.*

- *Generally the maintenance measures listed below should be used for trees to be retained and new vegetation. It is recommended that these practices be applied in particular to the park site where residents will be present. In respect to the Woodlot, it is recommended that the City's Forestry Services department inspect the edge of the woodlot and remove any hazardous trees before residents move into the subdivision and/ or start using the pathway along the Mud Creek Corridor.*

- *Branches should be trimmed, pruned or thinned in accordance with proper horticultural practices to the extent necessary to maintain clearances and protect structures*
- *Trees that are dead, damage, diseased or present a risk to the public should be removed and replaced with site-appropriate species (see Appendix 'F' of the report- Appendix II of this report)*
- *Prior to any vegetative removals or site alternations that will affect existing trees, ensure that protective measurements are in place in accordance with the mitigation measures stipulated in the tree conservation report or Appendix II of this report.*

- *The requirements for planting street trees in the TrailsEdge community is set forth in the guidelines 'Planting in Areas of Sensitive Marine Clay (Appendix 'G'). No Amur Maples should be planted due to the invasive nature of the specie and proximity to an important natural area.*

Minto Property (Lashley & Associates, 2015)

- *Use the following protection measures for retained trees (see Appendix 'B' of the Tree Preservation Report or Appendix II of this report for areas of trees to be protected):*

  - *Erect a fence at the critical root zone (CRZ) 1 of trees;*
  - *Do not place any material or equipment within the CRZ of the tree;*
  - *Do not attach any signs, notices or posters to any tree;*
  - *Do not raise or lower the existing grade within the CRZ without approval;*
  - *Tunnel or bore when digging within the CRZ of a tree;*
  - *Do not damage the root system, trunk or branches of any tree;*
  - *Ensure that exhaust fumes from all equipment are NOT directed towards any tree's canopy.*

- *Heavy duty tree protection fencing must be erected as indicated in Appendix 'A' of the Tree Preservation Plan or Appendix II of this report for the Park and Stormwater Management Corridor. No vehicular access or construction storage is permitted in these areas. Once development plans are prepared for the Park site tree preservation will be determined at a more appropriate scale.*
- *Tree Protective Barrier: Fencing must be erected around the areas designated for preservation at the edge of the critical root zone (CRZ) of the trees to be preserved. No vehicular access or construction storage is permitted in these areas. Once* construction

has been completed and the terrain stabilized the areas can be opened to pedestrian and maintenance access.

- *Use the following maintenance measures for retained trees and new vegetation:*
    - *Branches should be trimmed, pruned or thinned in accordance with proper horticultural practices to the extent necessary to maintain clearances and protect structures*
    - *Trees that are being retained within the Park site and Mud Creek Corridor that are dead, damaged, diseased or present a risk to the public should be removed and replaced with site appropriate species (see Appendix 'F'). Any non-diseased tree material can be left within forested areas to decompose.*
    - *Prior to any vegetative removals or site alternations that will affect existing trees, ensure that protective measurements are in place in accordance with the mitigation measures stipulated in this document.*

- *The requirements for planting street trees in the TrailsEdge community is set forth in the guidelines 'Planting in Areas of Sensitive Marine Clay (Appendix 'G'). No Amur Maples should be planted due to the invasive nature of the specie and proximity to an important natural area.*

5.3 Monitoring Commitments

5.3.1 Environmental Impact Study (NEA, 2009) (NEA, 2011)

No monitoring recommendations were presented within the report.

5.3.2 DFO Compensation Monitoring (NEA, 2013) (DFO, 2015)

Within the study area, Mud Creek and its upstream tributaries are currently upstream of an existing online stormwater pond. In the post construction environment, Mud Creek mainstem will be dehydrated and its upstream tributaries will be in-filled, eliminated all fish habitat within the study area. Given the absence of fish habitat and presence of an on-line stormwater pond, post-construction fisheries monitoring has been deemed unsuitable. Post construction monitoring should focus on the compensation habitat.

A *comprehensive monitoring program should be developed and implemented by a qualified fisheries biologist to ensure the on-site mitigation measures are installed maintained and function as intended, and not negatively impacting the aquatic environment. At a minimum*

the monitoring program should include:

- *Effectiveness of the sediment and erosion controls are to inspected at a minimum once a week by a professional Fisheries Biologist or Technologist during in-water works including but not limited to: Mud Creek crossings and headwall installation, infilling of Mud Creek tributaries (Except during substantial sediment release events, at which time inspections or a meeting with the site supervision should occur once a day, until the site is stabilized).*

- *A photographic record showing that all works and undertakings have been completed according to the proposal and conditions of the authorization shall be prepared.*

    - *The photographic record shall include, but not be limited to, a record of the existing conditions, the work phase including sediment and erosion control measures, and completed works including site stabilization and restoration. Compensation measures (Brewer Pond) will be documented and in separate report, see compensation construction monitoring.*
    - *The photographs for each period of documentation shall be taken from the same vantage point(s), direction and angle of view.*
    - *All photographs shall be clearly labelled with the date, location and viewing direction. The photographic locations and viewing direction shall be indicated on a plan view drawing of the work site and clearly indexed to the photographs.*

- *The photographic record should include a record of existing conditions, the work phase including sediment and erosion control measures, and completed works including site stabilization and restoration.*

- *Fish salvaged plan should be designed and implemented by a qualified fisheries biologist for all tributaries containing enough water to directly support fish during construction that are scheduled for infilling.*

- *Should construction monitoring identify a deficiency in the effectiveness of any of the mitigation measures, appropriate remedial action should be implemented to correct the deficiency.*

- *A construction monitoring report should be submitted to DFO in the months of January, following completion of all in-water works.*

5.3.3 Tree Conservation Report

Richcraft and Minto Property (Lashley & Associates, 2014) (Lashley & Associates, 2015)

Minimal monitoring was proposed for both the Richcraft and Minto properties, composing the entire study property. One monitoring requirement was outlined in both Tree Conservation Reports (Appendix II of this report). The existing trees in the Mud Creek Corridor Block and Central sector have been growing in a forest situation. Future potential blowdowns after approved clearing of the Mud Creek Corridor Block will require monitoring and maintenance to remove hazardous trees.

6.0 Concurrence of Project Team

The final Integrated Environmental Review Statement will be reviewed and concurred with all consultants involved in the design team and technical studies, listed in Section 4.0 of this report, see Appendix III for signature sheet.

7.0 References

Castle Glenn Consultants . (2008, September 29). Addendum No. 3: Renaud/Naven Road Development-Proposed TrailsEdge Development: Traffic Impact Review. Ottawa, Ontario, Canada: Castle Glenn Consultants Inc.

Castle Glenn Consultants . (2014, February 4). Addendum Letter No. 4 - Phase II TrailsEdge Development-Richcraft Group of Companies. Ottawa, Ontario, Canada: Castle Glenn Consultants Inc.

DFO. (2015, March). Fisheries Act Authorization, 10-HCAA-CA4-00350, PR-10-0350. Sarnia, Ontario, Canada: Fisheries and Oceans Canada.

Ground Truth Archaeology. (2007, July 23). A Stage 1/2 Archaeological Assessment of The Renaud Subdivision-Parts of Lots 3,4 and 5, Concession III, Ottawa Front, Gloucester, Township, Carleton County, City of Ottawa-Carletion. Trenton, Ontario: Ground Truth Archaeology.

Lashley & Associates. (2014). *Richcraft TrailsEdge West, Tree Conservation Report.* Ottawa: Lashley & Associates, Landscaping Architecture and Site Engineering.

Lashley & Associates. (2015). *TrailsEdge Stage II, Tree Conservation Report.* Ottawa: Lashley & Associates, Landscaping Architecture and Site Engineering.

NEA. (2009). *Environmental Impact Study-Trail's Edge Plan of Subdivision, East Urban Community, City of Ottawa. .* Lindsay, Ontario: Niblett Environmental Associates Inc.

NEA. (2011, April 15). Addendum-Environmental Impact Study. Lindsay, Ontario, Canada: Niblett Environmental Associates Inc.

NEA. (2013, March 18). TrailsEdge Development Fisheries Compensation Plan. Lindsay, Ontario, Canada: Niblett Environmental Associates Inc.

Paterson Group. (2007). *Phase I-Environmental Site Assessment, Propsed Residental Development, Page Road at Renaud Road, Ottawa, Ontario. PE0975-REP.02.* Ottawa: Paterson Group Inc.

Paterson Group. (2008). *Geotechnical Investigation, Proposed Residental Development, Eden Park-Middle Portion-Renaud Road, Ottawa, Ontario. Reports:PG0861-2.* Ottawa: Paterson Group Inc.

Paterson Group. (2009). *Geotechnical Investigation, Proposed Trail's Edge, Residential Development-Phase 2, Renaud Road, Ottawa, Ontario. Reports:PG1605-2.* Ottawa: Paterson Group Inc.

Paterson Group. (2012). *Geotechnical Investigation, Proposed Residential Development, TrailsEdge-Phase 2, Renaud Road, Ottawa, Ontario. Report:PG2392-1.* Ottawa: Paterson Group Inc.

UAL. (2013). *Noise Impact Assessment for Site Plan Approval-Trails Edge. Proposed Blackburn Bypass and Belcourt Extension, Ottawa.* Ottawa: Urban Aerodynamics Ltd.

UAL. (2014, February). Environmental (Road Traffic) Noise Assessment, Trails Edge Residential Development. Ottawa, Ontario, Canada: Urban Aerodynamics Ltd.

UAL. (2015, May). Addedum to Richcraft TrailsEdge Noise Study. Ottawa, Ontario, Canada: Urban Aerodynamics Ltd.

APPENDIX I:FIGURE 4, CORE WOODLANDS DEVELOPMENT PLAN OPTION 2, NEA 2009

Figure 4: Core Woodlands Development Plan Option 2

04-060, East Urban Community (Ottawa, ON)

Reference and Source Information

Listed below is the referencing info for the layers used in this map. The source and currentness of the data are listed to the right of each layer.

Waterline (Land Information Ontario, current)
Airphoto (DigitalGlobe, current)
Vegetation Community (NEA, current)
15m Setback (NEA, current)
ORN Segment (Land Information Ontario, current)
Plan of Subdivision (Fotenn, current)

For metadata regarding this map please contact NEA.

Legend

ORN Road Segment *

Waterline

Waterline Type

- Water Line, Intermittent
- Water Line, Permanent
- Plan of Subdivision *

15m Setback

Core Woodland Options

- Option 2
- Vegetation Community

* White line is used for the symbol of this particular layer.

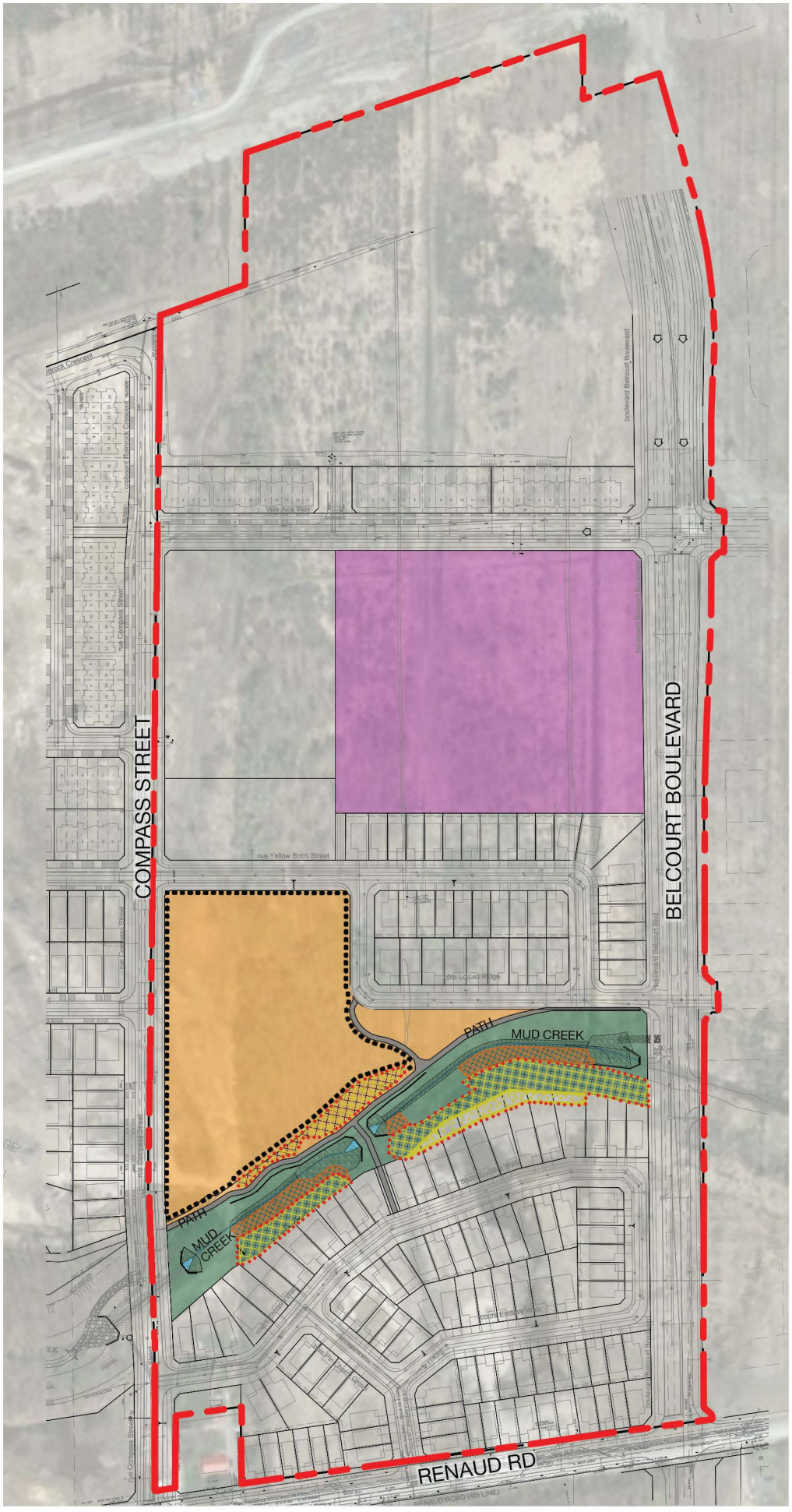
Datum: NAD83 Proj: MTM Zone 9

Will Pridham, 2007

GIS and Cartography

APPENDIX II: TREE CONSERVATION REPORTS FOR RICHCRAFT AND MINTO PROPERTIES FIGURES

LASHLEY & ASSOCIATES (MARCH 2015 AND AUGUST 2014 REPORTS)



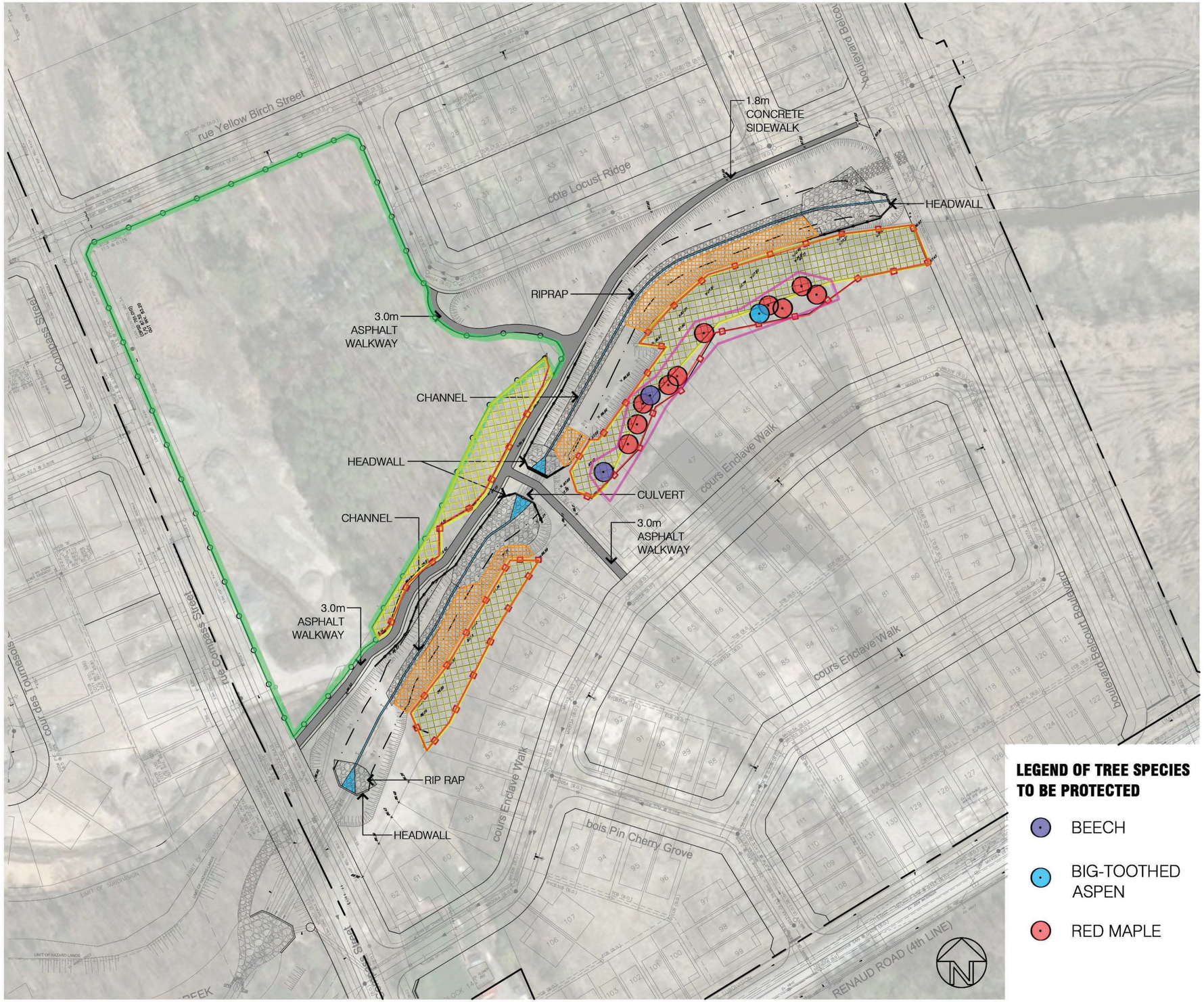
LEGEND

- PROPERTY LINE
- PARK PROTECTION FENCE
- TREE PROTECTION FENCE
- GEOWEB SYSTEM
- CITY APPROVED TREE RETENTION AREAS
- SURVEYED TREE RETENTION AREAS WITHIN LOTS
- SCHOOL BLOCK
- PARK BLOCK
- MUD CREEK CORRIDOR BLOCK

SCALE 1:3500
0 50 100 m

N

MINTO'S TRAILSEDGE
SUBDIVISION ON 2011 AERIAL
APPENDIX 'B'
Revised March 2015



LEGEND OF TREE SPECIES TO BE PROTECTED

- BEECH
- BIG-TOOTHED ASPEN
- RED MAPLE

GRAPHIC SCALE 1:1500

0 5 10 25 50 100 m

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LEGEND

- LIMIT OF MINTO SUBDIVISION
- 100 YEAR FLOOR LIMIT
- PARK PROTECTION FENCE
- TREE PROTECTION FENCE
- RETAINING WALL
- GEOWEB SYSTEM
- CITY APPROVED TREE RETENTION AREAS
- SURVEYED TREE RETENTION AREAS WITHIN LOTS

PROJECT:

TRAILSEDGE DEVELOPMENTS
MINTO GROUP INC.
RENAUD ROAD
OTTAWA, ON

DRAWING TITLE:

TREE CONSERVATION MAP
SOUTHERN SECTOR

DATE: Revised Mar.13.2015	**DRAWING NO.:**
SCALE: 1:1500	**TP-01**
DRAWN BY: JC/LT	
LA PROJECT NO. 14477-2	

APPENDIX 'A'

APPENDIX III: SUB-CONSULTANT PROJECT TEAM IER REVIEW SIGNATURE SHEET