

Tree Conservation Report Richmond West

Final Report

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Submitted To:

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Caivan

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EXECUTIVE SUMMARY

The Caivan Richmond West site is a 54 ha parcel located in the northwest corner of the Village of Richmond. It is currently owned in two parcels, north and south of Perth Street, by Richmond Village (North) Ltd. and Richmond Village (South) Ltd. respectively, and, subject to planning approval, will be developed as a housing subdivision. There are no existing conservation designations on or near this site (e.g., Provincially Significant Wetland, Area of Natural and Scientific Interest, NESS or UNAESS area, Natural Environment Area, Urban Natural Feature, Rural Natural Feature). This Tree Conservation Report has been prepared for Caivan, to satisfy the City's requirements for a Plan of Subdivision application.

The site has previously been extensively studied within the Village of Richmond CDP and the corresponding City of Ottawa OP amendment. The site was visited on May 27 2011 to confirm the currentness of the previous reports, to count and measure individual trees on site and to search for butternut.

The area consists primarily of active agricultural fields on clay soils. Hedgerows follow much of the east and west sides of the site and a small (1 ha) woodlot is located along the north side. In the open areas, 26 trees or small tree clusters were found with DBH > 10 cm. On the entire site, 21 trees may be large enough to be considered specimen trees (i.e. > 50 cm DBH and in reasonably good health), although none of the species were unusual or regionally significant.

The development plan calls for the removal the woodlot and all individual trees in open areas. The hedgerows on the sides of property straddle the property line and would be reduced in width.

Recommendations to offset the loss of trees and other site vegetation include:

- Maintain (where possible) existing hedge rows on the east and west sides of the site;
- Where possible given operational constraints, the south east corner of the site, currently reserved for storm water management ponds, and the Van Gaal Drain corridor should be naturalized with native shrubs and trees;
- Individual lots in the development will be planted with appropriate native tree species as per City guidelines.

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1.0 SITE CONTEXT

The Caivan Richmond West site (Figure 1) is described as 6335 Perth St. (Plan 4D21 Units 13 15 16 20; and 21 Pt Unit 23), owned by Richmond Village (North) Ltd., and the north western end of 6431 Ottawa St (Plan D25 PT Units 9 and 10; RP 4R23166 Parts 2 TO 7), owned by Richmond Village (South) Ltd. This is an approximately 55 ha parcel located in the northwest corner of the Village of Richmond. The site is currently designated part of a Development Reserve Zone (Sections 237-238) within the City of Ottawa Official Plan. This Tree Conservation Report has been prepared by Kilgour & Associates Ltd. on behalf of Caivan as part of the Plan of Subdivision and Zoning applications. Subject to planning approval, the site will be developed as a housing subdivision by Caivan.

There are no existing conservation designations on or near this site (e.g., Provincially Significant Wetland, Area of Natural and Scientific Interest, NESS or UNAESS area, Natural Environment Area, Urban Natural Feature, Rural Natural Feature).

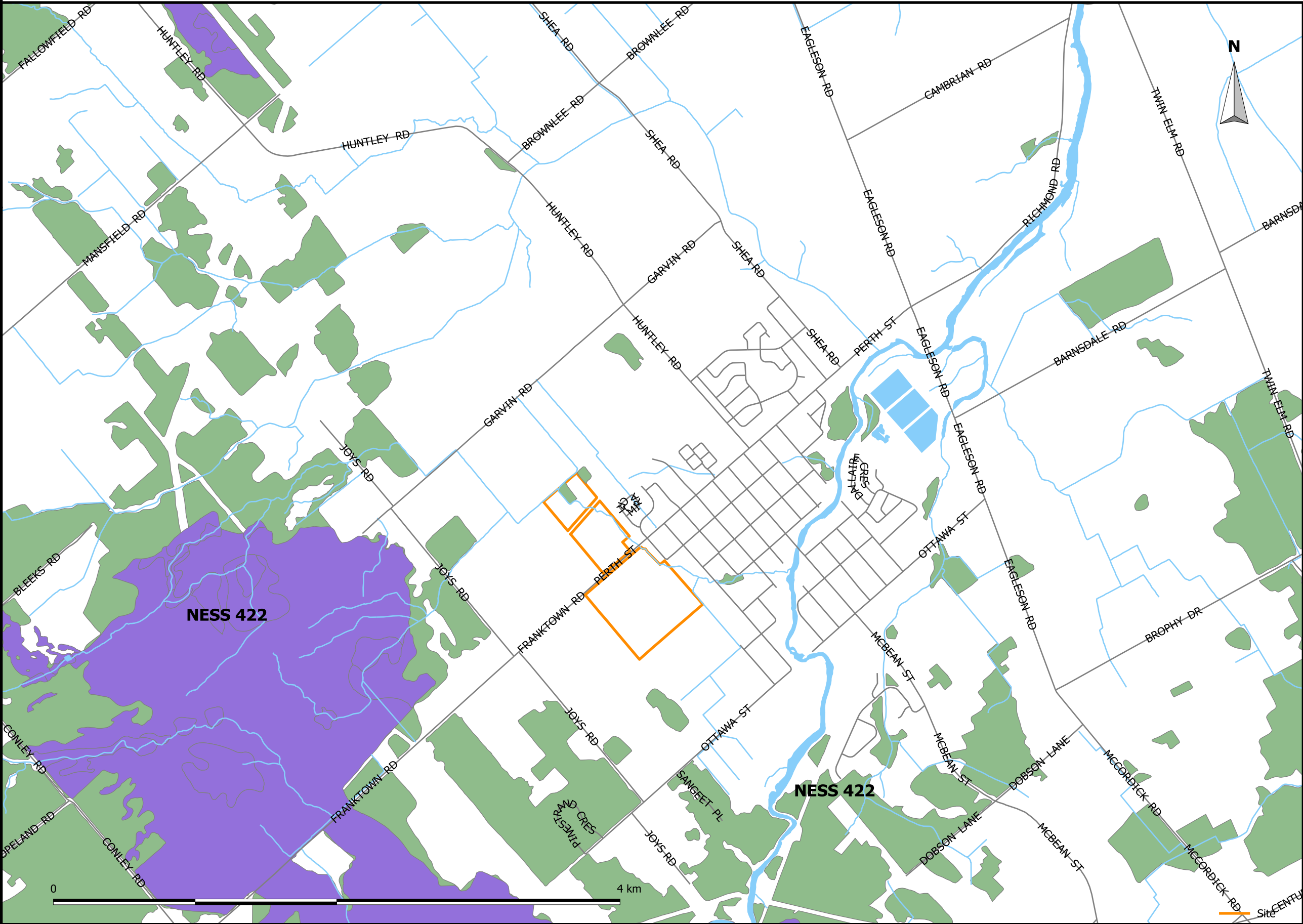
The site has previously been extensively studied within the Village of Richmond CDP and the corresponding City of Ottawa OP amendment. Natural features of the site and the surrounding area are described within the *Mattamy Richmond Lands Natural Environment Report and Impact Assessment Study* (herein the Richmond Report, publicly available at http://webcast.ottawa.ca/plan/All_Image%20Referencing_OP%20Amendment%20Application_Image%20Reference_Natural%20Environment%20%26%20Impact%20Assessment%20Study%20D01-01-09-0002.PDF).

2.0 SURVEY METHODOLOGY

Colour digital aerial photographs, Ontario Base Maps, Ottawa eMap and the Richmond Report were used to identify site features. The NHIC database on was searched on May 23 2011 in order to determine whether any new species at risk observations had been documented on the site or in the vicinity since NHIC searches were last conducted for the Richmond Report.

The site was visited on May 27 2011 by Anthony Francis and Liza Hamilton. The area was examined to generally compare the vegetation on the site relative to descriptions within the Richmond Report and to map the location of trees greater than 10cm in diameter and other features as outlined by the Tree Conservation Report guidelines. Trees were identified by Anthony Francis following summer keys in *Trees in Canada* (Farrar, 1995). While identifying and enumerating site trees, butternut trees were specifically looked for.

Figure 1. Area context



Legend

- Site
- Significant Wetlands
- Wooded areas

Project: Cairo - Richmond West

Scale: As shown

Date: June-13-11

Drawn: AF

Checked: BK



3.0 SITE OBSERVATIONS

3.1 Existing Site Vegetation

The site consists primarily of active agricultural fields on clay soil. The area had been recently ploughed. Fields south of Perth Street were growing soybeans; fields north of Perth Street did not appear to have been sown yet. The natural and/or treed areas on the property were previously described in the Richmond Report. These include (following the existing naming system) H1, H2, H5, the north end of H6, the VanGaal Drain, and Community 1 (Figure 2). Our field study indicated no significant change from the previously identified species lists. The vegetation descriptions from the Richmond Report for these areas are included in Appendix 1.

3.2 Inventory and Condition of Trees on the Site

Apart from a few individual trees along the VanGaal Drain and the southern edge of the site, all trees were located within the fairly dense hedge rows and Community 1 woodlot. All trees over 10 cm DBH standing in open areas were individually noted, however, the woodlot and hedgerows contain too many trees to practically list every individual over 10 cm DBH. For these areas, only significantly sized trees (i.e., >50 cm DBH) were individually identified. Tree records are detailed in Table 1. Trees on site were generally healthy unless specifically noted otherwise.

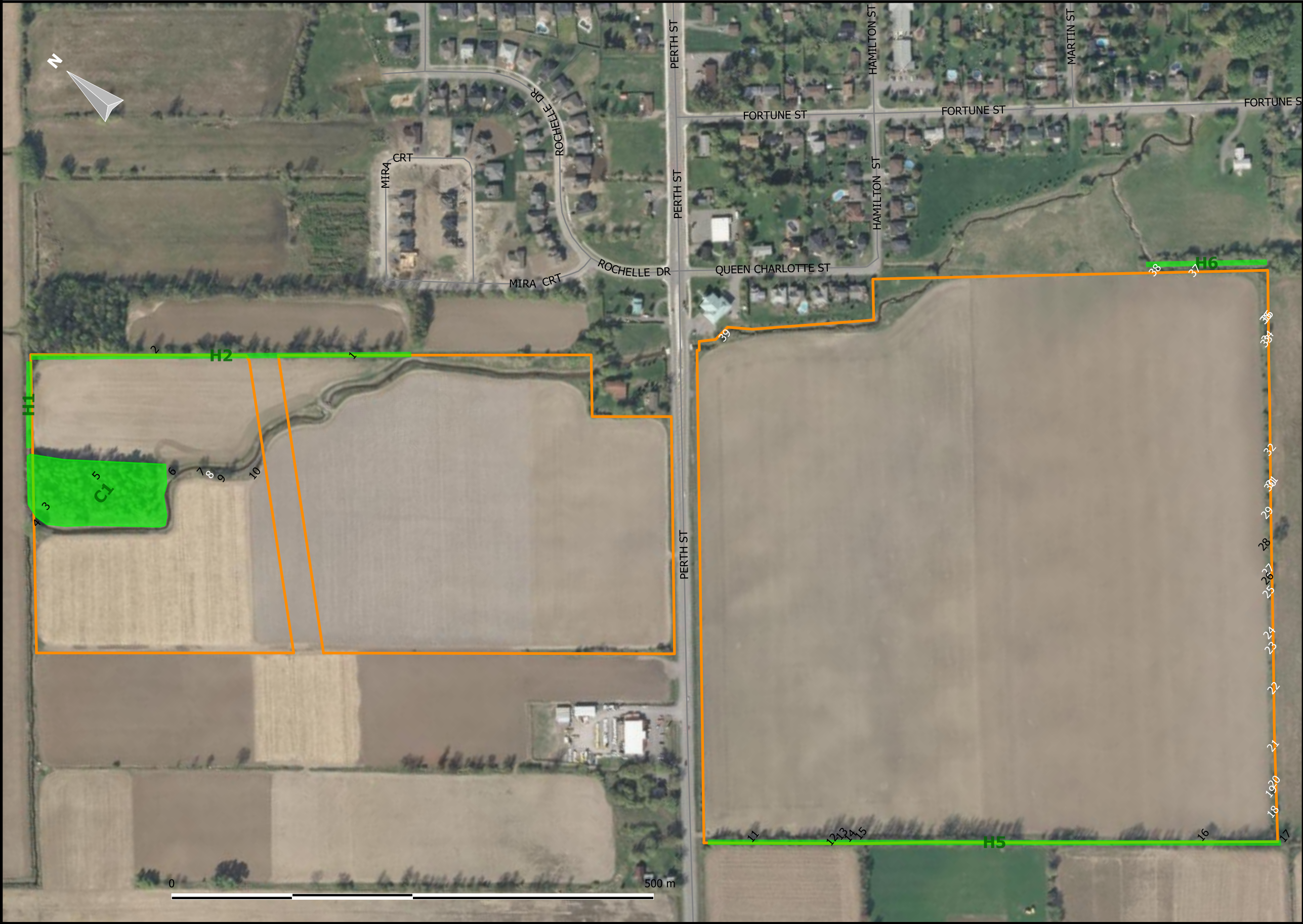
Table 1 Trees and small tree clusters on the site.

Tree Number	Tree Description	Size (DBH in cm)
1*	Green Ash	91
2*	White Ash	50
3*	Burr Oak	83
4*	Crack Willow	162
5*	White Ash	58
6*	Crack Willow	76
7*	Burr Oak	62
8*	3 Green Ash	s
9*	Green Ash	91
10*	Green Ash	112
11*	Green Ash	82
12*	4 Green Ash	55, 52, m, m
13*	4 Green Ash	56, 51, m, m
14*	Green Ash	54
15*	Green Ash	xl
16*	Burr Oak	105
17*	Burr Oak	105
18	Trembling Aspen	s
19	Hawthorn	s

Tree Number	Tree Description	Size (DBH in cm)
20	Burr Oak	m
21	Black Ash	s
22	Hawthorn	s
23	Green Ash	s
24	Burr Oak	s
25	Green Ash	m
26*	White Elm	52
27	Black Ash	s
28*	White Elm	107
29	Snag	m
30	Common Apple	s
31	Black Ash	s
32	Manitoba Maple	s
33	Burr Oak	s
34	4 Green Ash	s
35	Black Ash	s
36	Common Apple	s
37	Green Ash	s
38	Green Ash	s
39	2 Manitoba Maple	s

Tree sizes: s=10-34cm DBH, m=35-49cm DBH, xl > 75 cm DBH but with multiple stems splitting near breast height and fencing complicating direct measure. * indicates a specimen tree (>50 cdm DBH, reasonably healthy, non-invasive).

Figure 2. Site trees.



Legend

- Site
- Treed Areas - Current
- Tree Number
 - Black - > 50cm DBH
 - White - < 50cm DBH

Project: Cairo - Richmond West

Scale: As shown

Date: June-13-11

Drawn: AF

Checked: BK



3.2.1 Open Areas

The agricultural areas (53 ha, including the Van Gaal Drain corridor), consist almost entirely of tilled fields. The few trees in this area occur scattered along the drain corridor or in a line along the southern border of the site (though not in sufficient numbers to constitute a hedge). Along the VanGaal, tree species include two large crack willows (*Salix fragilis*), green ash (*Fraxinus pennsylvanica*) and Manitoba maples (*Acer negundo*, most under 10 cm DBH). The southern row of trees includes, trembling aspen (*Populus tremuloides*), hawthorn (*Crataegus punctata*), bur oak (*Quercus macrocarpa*), black ash (*Fraxinus nigra*), green ash (*Fraxinus pennsylvanica*), white elm (*Ulmus Americana*), apple (*Mallus domestica*) and Manitoba maple (*Acer negundo*). One elm in the center of the line is very large and was quite beautiful. However, the tree has both over the years and quite recently suffered significant wind damage.

Along portions of the eastern and western sides of the property run hedgerows H1, H2, H5 and H6. These hedges are composed primarily of green ash (*Fraxinus pennsylvanica*) and Manitoba maple (*Acer negundo*). While these hedges contain many trees over 35 cm DBH, there are only 9 trees with a DBH greater than 50 cm, all of which are ash species. Other trees, including several bur oaks (*Quercus macrocarpa*), appearing to be greater than 50 cm DBH are found within the H2 and H5 but are located just off the property. Other tree species found in the hedge rows include trembling aspen (*Populus tremuloides*), white elm (*Ulmus Americana*), black ash (*Fraxinus nigra*), hop hornbeam (*Ostrya virginiana*), white birch (*Betula papyrifera*) and black cherry (*Prunus serotina*), with shrubs including nannyberry (*Viburnum lentago*), hawthorn (*Crataegus punctata*) and dogwoods (*Cornus* sp.).

3.2.2 Woodlot

A small woodland (1 ha), previously described in the Richmond Report as Community 1, is located at the north end of the property along the eastern bank of the VanGaal Drain. The forest is almost entirely deciduous composed primarily balsam poplar (*Populus balsamifera*) and trembling aspen (*Populus tremuloides*). Other tree species include green ash (*Fraxinus pennsylvanica*), white ash (*Fraxinus americana*), white elm (*Ulmus americana*), bur oak (*Quercus macrocarpa*), hop hornbeam (*Ostrya virginiana*), bass wood (*Tilia americana*), European buckthorn (*Rhamnus cathartica*), black cherry (*Prunus serotina*), and Manitoba maple (*Acer negundo*). While there many trees over 35 cm DBH, only two trees had a DBH greater than 50 cm, a white ash and bur oak.

This community has been moderately disturbed in the past. Although vegetation is thick in places, and there are no pathways through it, there is a large area at the south end that has until recently been used to dump larger pieces of trash (e.g. fencing, corrugated metal sheets, etc).

3.3 Ecological Significance of Trees on the Site

While 21 trees on site may be large enough to be considered specimen trees (i.e. > 50 cm DBH and in reasonably good health), none of the species was unusual or regionally significant. The main ecological functions of the existing trees are:

- To provide some cover, food (e.g., flowers, insects) and perching areas for field birds and small mammals that use the site.
- To provide shelter, shade, and a windbreak for birds and small mammals that use the site.

Hedge rows on site provide only very minor corridors for common wildlife, such as squirrels, raccoons, foxes, and deer. They also provide some nesting area for common bird species. However, the hedge rows do not contain provide significant linkages or connections as identified in Ottawa's Greenspace Master Plan and are not ecologically significant.

The small woodlot (Community 1) was not described during NESS or other studies. This area does not possess features typically used to identify areas of ecological significance (e.g. large area, presence of interior forest, close proximity to other wooded areas, proximity to riparian areas) and does not fulfill the proposed criteria for Significant Woodlands. The woodlot is not ecologically significant.

3.4 Other Significant Features

There were no previously identified significant ecological features or functions identified for this site:

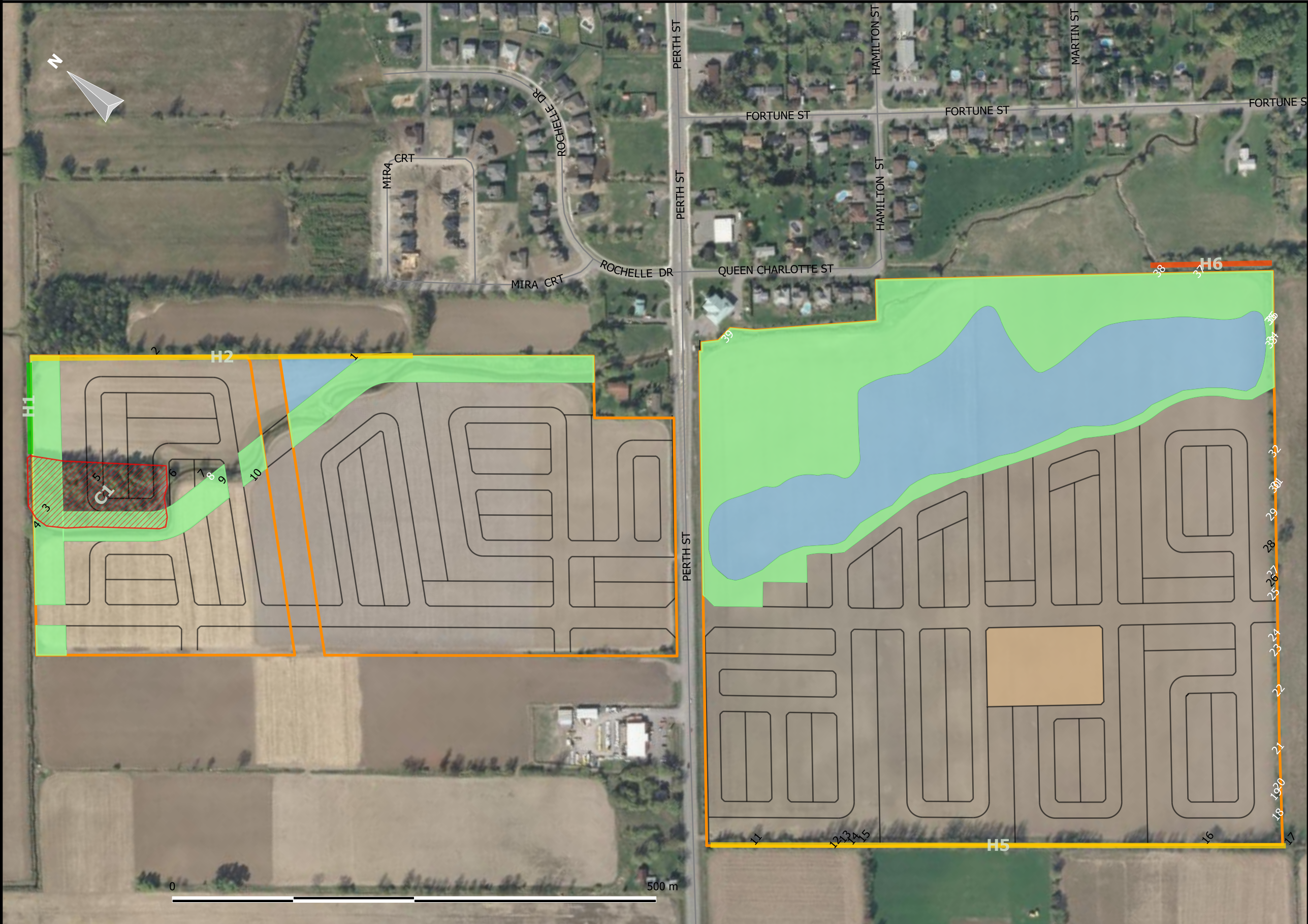
- No Significant Woodlands are present on the site (as defined by the City of Ottawa in OPA 76): there is no interior forest on the site.
- No significant valley lands or ANSIs occur on the site.
- A broad search (~5 km radius around the property) was completed for records of species at risk, using the database of the Natural Heritage Information Centre of the Ministry of Natural Resources. This search resulted in no new or additional documented records beyond those identified within the Richmond report for species at risk (SAR) or rare vegetation communities in the local area. Bobolink, recently added to the protected Ontario SAR list, are highly unlikely to be present on the site given that the surrounding agricultural fields are (and have been) sown for soybean crops or kept clear of vegetation entirely. The Richmond Report concluded that there were no SAR or SAR habitats on this portion of the property, a conclusion that still stands.
- No butternut trees (SAR – Endangered) were observed at the site and the heavy, wet clay soils are likely unsuitable for this species.

4.0 SITE CONCEPT PLAN

4.1 Proposed Development

The current subdivision concept plan is shown in Figure 3.

Figure 3. Community Design



Legend

- Site**
 - Orange line
- Community Plan**
 - Brown area: Community Park
 - Blue area: SWM Pond
 - Black line: Block Layout
- Treed Areas - Changes**
 - Yellow area: Reduced
 - Orange area: Restablished
 - Green area: Retained
 - Light green area: Reclaimed
 - Red hatched area: Removed
- Tree Number**
 - Black - > 50cm DBH
 - White - < 50cm DBH

Project: Cairo - Richmond West

Scale: As shown

Date: June-29-11

Drawn: AF

Checked: BK

4.2 Impacts and Mitigation

Under the development plan (Figure 3), grading requirements and the realignment of and bridge construction over the VanGaal Drain will require the removal of 26 individual trees along the southern property line and along the VanGaal corridor. Approximately 70% of the current Community 1 woodlot area (1.0 ha) will be replaced by housing. Because of the minimal remaining size and the relatively low quality of the remaining trees, the preferred approach will be to remove all the current trees from the woodlot. However, the remaining 0.3 ha are contiguous with the Van Gaal corridor (total area north of Perth St. of 2.6 ha) that will be entirely replanted according to a landscaping plan indicating appropriate local specimens to provide and improve the buffer functionality for the drain.

Hedgerow H1, located well into the required Van Gaal setback will remain untouched (unless required for SWM usage). Existing or replacement trees will be incorporated into the landscape plan for the Van Gaal corridor. Hedgerow H6 will be removed entirely during the construction of the proposed area storm water management pond on the south eastern portion of the property, but will be replanted as part of the overall landscape plan for the new outflow of that facility.

Hedgerows H2 and H5 straddle the property line. Many trees, including trees of significant size occur immediately off site and must therefore remain. The largest of these offsite trees appear to be approximately 50cm in DBH. The critical root zone (CRZ) of these offsite trees extends then to a distance of 5 m onto the site for trees immediately adjacent to the site. Thus a 5 m buffer zone with minimal regrading along these hedges, including the possible retention of some smaller trees within the protected CRZ will help maintaining the limited ecological functionality of the two hedgerows. However, many on-site small trees, and all of the larger trees indicated within the hedgerows in Figure 2, will be removed because of their proximity to new housing and due to grading requirements.

The following mitigation and compensation measures are recommended:

1. Maintain where possible existing hedge rows down the east and west sides of the site. To minimize impact to the remaining trees in hedgerows H1, H2 and H5 during construction, the following protection measures for retained trees will be implemented:
 - Erect a fence at the CRZ 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.
2. Implement a landscape plan to create naturalized areas replete with native shrubs and trees along the Van Gaal corridor and the lands surrounding main SWM pond in the southeast

corner (9.3 ha). These areas currently have minimal tree cover. The landscape plan will provide for trees sufficient to compensate for those lost from Community 1. Moreover, trees along the Van Gaal will provide additional ecological wildlife corridor functionality similar that within H2 and H5, thus mitigating any reduction in corridor capacity resulting from lost trees from those hedges. Trees planted in these areas will also incorporate or replace and augment existing trees with in H1 and H6.

3. Each residential lot will be planted as per City of Ottawa requirements, with native trees.

Under the current property arrangement, the agricultural area (53 ha) has only 27 trees (i.e., 0.5 trees per hectare). Under the development plan, the total amount of forest cover lost and not directly replanted at similar tree density is 0.7 ha with some additional loss of individual trees along the hedgerows. The above mitigation should result in a significant overall increase in the density of native trees over most of the site.

5.0 REFERENCES

Farrar, John L. (1995) *Trees in Canada*. Fitzhenry & Whiteside Ltd. Markham.

Appendix 1
Site Descriptions from the *Mattamy Richmond Lands*
Natural Environment & Impact Assessment

The following site descriptions are quoted directly from the *Mattamy Richmond Lands Natural Environment & Impact Assessment*.

Community 1: Fresh-Moist Poplar Deciduous Forest Type (FOD 8-1)

This small mid-successional woodland of approximately one hectare lies at the northern boundary of the Mattamy lands, north of Perth Street and just to the east of the Van Gaal Drain. This forest is almost entirely deciduous and its overstorey is dominated by a mixture of Poplar species, especially Balsam Poplar (*Populus balsamifera*) and Trembling Aspen (*Populus tremuloides*) (Appendix 1). Other common overstorey species are also characteristic of moist forests and include Green Ash (*Fraxinus pennsylvanica*), White Elm (*Ulmus americana*) and Manitoba Maple (*Acer negundo*), especially along the edges. The shrub layer includes species such as Wild Black Currant (*Ribes americanum*), Beaked Hazel (*Corylus cornuta*) and Tartarian Honeysuckle (*Lonicera tatarica*). There is a good diversity of understorey species for a woodland of such small size. Common ground flora includes Enchanter's Nightshade (*Circaea quadrisulcata*), Ostrich Fern (*Matteucia strutheropteris* – forming a large monoculture in the centre of the community), Stellate Sedge (*Carex radiata*), White Avens (*Geum canadense*), Dwarf Raspberry (*Rubus pubescens*). This woodland has a few regionally uncommon species such as Highbush Cranberry (*Viburnum trilobum*), Spikenard (*Aralia racemosa*) and a large area of Nodding Trillium (*Trillium cernuum*). This community has been moderately disturbed in the past. Although vegetation is thick in places, and there are no pathways through it, there is a large area at the south end that has until recently been used as a garbage dump. A discarded pile of sheet metal was providing a den site for a coyote in May 2008. Some invasive species are present here, especially around the margins of the woodland (e.g., Tartarian Honeysuckle, European Buckthorn, and Manitoba Maple).

Hedgerow 1 (H1)

This hedgerow provides a very narrow link between Community 1 (above) with an adjacent woodland to the east, off Mattamy property. It is about 3 to 5 m wide, and provides only limited and intermittent cover for wildlife, consisting of scattered shrubs (e.g., Hawthorn, *Crataegus punctata* and Nannyberry, *Viburnum lentago*), as well as vines like Virginia Creeper (*Parthenocissus inserta*) and Riverbank Grape (*Vitis riparia*). At the east end, trees such as Green Ash (*Fraxinus pennsylvanica*) and White Elm (*Ulmus americana*) dominate (Appendix 1). Frequent forbs and grasses are largely non-native field species, including Smooth Brome (*Bromus inermis*), Cow Parsnip (*Pastinaca sativa*), Lamb's Quarters (*Chenopodium album*), and Orchard Grass (*Dactylis glomerata*).

Hedgerow 2 (H2)

This hedgerow links W2 (off Mattamy lands) with the Van Gaal drain. Again, it is made up of larger trees such as Green Ash (*Fraxinus pensylvanica*) and White Elm (*Ulmus americana*) (Appendix 1), with an understorey composition similar to H1. This hedgerow is a maximum of about 5 m wide.

Hedgerow 5 (H5)

This hedgerow also consists mainly of mature trees, especially at its northern end (Appendix 1). Common species are Green Ash, some Black Ash, and Bur Oak, with some Basswood and White Birch. Shrub and ground flora species are Nannyberry (*Viburnum lentago*), Hawthorns (*Crataegus* sp.), Riverbank Grape (*Vitis riparia*), Virginia Creeper (*Parthenocissus inserta*), as well as pasture grasses and weeds.

Hedgerow 6 (H6)

This is a treed hedgerow, quite wide in places (approximately 8 to 10 m) with drainage through the centre of it, mostly stagnant shallow standing water by mid-August (Appendix 1). Trees are mature, especially towards the southern end of this hedgerow, including Green Ash, Manitoba Maple, and White Elm, and a shrub layer of Hop Hornbeam, Prickly Ash (*Zanthoxylum americanum*), Hawthorns (*Crataegus* sp.), Wild Red Currant (*Ribes triste*) and Canada Plum (*Prunus nigra*). Along the edges of the hedgerow, the ground flora include field species such as Burdock (*Arctium minus*), Deadly Nightshade (*Solanum dulcamara*), Common Milkweed (*Asclepias syriaca*), Calico Aster (*Symphyotrichum lateriflorus*) and some wetland vegetation along the drainage line (e.g., Reed Canary Grass (*Phalaris arundinacea*), Narrow-leaved Cattail (*Typha angustifolia*)). Under the canopy there are shade-tolerant understorey species such as Snowberry (*Symphoricarpos albus*) Pennsylvania Sedge (*Carex pensylvanica*), Common Speedwell (*Veronica officinalis*), Enchanter's Nightshade (*Circaea quadrisulcata*) and two large patches of non-native Lily-of-the-Valley (*Convallaria majalis*). The drainage line shows signs of beaver activity and human disturbance (i.e., garbage dumping), and the alien invasive shrub, Glossy Buckthorn (*Rhamnus frangula*), is present in low numbers throughout. This hedgerow likely provides some wildlife habitat, although it does not connect any large natural areas.

Appendix 2
Qualifications of Report Authors

This report was written by Anthony Francis Bickerton, with maps produced by Anthony Francis, and reviewed by Bruce Kilgour.

Anthony Francis, PhD

Dr. Francis is an ecologist with over 12 years experience in both terrestrial and aquatic projects. He has worked on diverse ecological projects including literature reviews of forestry management and species at risk; environmental studies of contaminants (metals and suspended particulates); geomatic and statistical analyses for federal and provincial ministries as well as for private industry; and aquatic and terrestrial species inventories. He has contributed to environmental impact statements, and federal environmental screening assessments for creek realignments and other infrastructure projects across Ontario. He has peer-reviewed numerous scientific articles and authored peer-reviewed studies in leading journals. He currently serves as a technical editor for the journal *Global Ecology and Biogeography*.

Bruce Kilgour, PhD

Dr. Kilgour is an ecologist, with a background in monitoring, study design and ecological inventory. He has applied his 20 years of experience in natural environment studies to the full life-cycle of industrial and government projects. He has conducted Municipal Class, Provincial, and Federal process environmental assessments in support of proposed infrastructure and industrial facilities including dams, piers, roads, and other linear corridors. As part of those EA processes, he has procured, on behalf of proponents, required environmental permits and approvals, often involving the development of environmental mitigation, restoration and/or compensation strategies.