



June 28, 2023

OEC 22-008

Carttera Management Inc. (“**Carttera**”) ZZEN Group of Companies Limited. (“**ZZEN**”)
20 Adelaide Street East, Suite 800 100 Zenway Boulevard
Toronto, ON M5C 2T6 Vaughan, ON L4H 2Y7

**RE: Proposal for Natural Heritage Compensation for Development
of 11260 & 11424 Jane Street, City of Vaughan, Region of York**

Dear Ms. Christina Basan of Carttera & Mr. Joseph Sgro of ZZEN

On June 13th we met with senior staff at the City of Vaughan (the “City”) to discuss an ecological compensation approach based on the cost of replicating natural heritage features using cost estimates from a plant material supplier, landscape contractor to undertake the work, estimates for land acquisition and project management. This approach was proposed because it provided a publicly defensible, consistent, and replicable methodology based on industry standards. At the conclusion of our meeting, City staff requested we submit a compensation proposal based on the aforementioned principles.

Orion Environmental Solutions is pleased to submit our proposed compensation methodology for the removal of natural heritage features on the property at 11260 and 11424 Jane Street. Our approach to compensation incorporates the objective of conservation authorities in Ontario to have development provide compensation for the loss of natural heritage features that could not be avoided. The goal of the compensation is to create or restore new comparable habitat so there is no net loss of natural features within the municipality. Compensation can be done by cash-in-lieu or providing compensating lands. Considering the private sector has no ability to acquire lands other than through a willing seller, providing compensating lands is generally not a viable option. Cash-in-lieu provides the municipality with the funds to enhance, restore or establish new natural heritage features on public lands. Given the proponents do not have surplus lands suitable for natural heritage creation/enhancement the proposed methodology is based on providing financial compensation for the creation of comparable natural features off-site on lands owned or acquired by the City.

Fundamental Objective

Review of compensation policies used by conservation authorities determined their consistent fundamental objective was to obtain compensating lands for enhancement or restoration or obtain cash-in-lieu from the proponent to pay for the creation of compensating natural habitat. Compensation or ecological offsetting for the loss of natural heritage features is to help ensure the municipality experiences no net loss of natural habitat to help achieve environmental sustainability.

Characteristics of Natural Heritage Features Affected

As part of the approval process for the development a multi-season ecological assessment was undertaken and the results were documented in the Environmental Impact Study (April 2023) prepared by Cunningham Environmental Associates and Azimuth Environmental. The report has been submitted to the City and Toronto Region Conservation Authority and is currently undergoing review.

Wetlands

On November 5, 2014 Ministry of Natural Resources and Forestry staff undertook a site visit to delineate the wetland boundaries for six properties in Block 34, City of Vaughan. On the subject properties five wetland units were identified (172, 713, 176, 177, 179). Units 172, 713, 177 and 179 were all under 2 ha in size and therefore were too small to be evaluated under the Ontario Wetland Evaluation System (OWES). Unit 176 was 3.69 ha in size and was comprised of Reed Canary Grass graminoid marshes and cattail marshes. All the units were classified as provincially significant because there were hydrologically connected by contributing intermittent flow within 750m of the downgradient East Humber River Wetland Complex. In 2022 the OWES was revised to only recognize hydrologically connected wetlands within 30m of a provincially significant wetland. All the wetland units on the subject property do not meet the 30m requirement for complexing.

Ecological field studies undertaken in 2022 confirmed the wetlands were dominated in invasive Reed Canary Grass, lacked ground water discharge and provided only intermittent flow based on rain events and spring runoff, contained no amphibian habitat, no significant vegetation, no fish habitat and no significant wildlife species. Appended are photos of the wetlands (Appendix A), specifically Photo 39 showing unit #176. The photo clearly shows the unit dominated by Reed Canary Grass and the lack of any vegetative diversity or habitat that would make the wetland ecologically significant.

In conclusion, the wetlands were originally classified as provincially significant based solely on the intermittent flow contribution downstream and being within 750m of the downgradient wetland complex. The current field studies confirmed the wetlands are devoid of any significant ecological features or functions.

Woodland

The woodland on the property is dry fresh Sugar Maple Hardwood Deciduous Forest approximately 4.3ha in size. It is an isolated woodlot surrounded by active agricultural land and immediately adjacent to Highway 400. Appended is the figure from the EIS with the Ecological Land Classification designations (Appendix B). The woodlot has no significant or rare vegetation. The woodlot does provide habitat for Eastern Wood-pewee, as species of conservation concern and has Species at Risk bats (Little Brown Myotis, Northern Myotis) using some of the older trees with decay for maternity roosting. Eastern Wood-pewee is commonly found in woodlots in the agricultural areas of southern Ontario. The significance of the species at risk bat habitat is currently being assessed by the Ministry of Environment Conservation and Parks. Bat usage of older decaying trees in Ontario forests is commonly found.

In summary, the woodlot composition and functions are common to isolated woodlots throughout southern Ontario.

Compensation Principles

The assessment of ecological significance is based on guidelines and evaluation methodologies that are objective, apply protocols and standards for inventory and assessment, and provide a consistent decision-making process. The evaluation of the significance of a natural heritage feature is often subject to public scrutiny so the methodology must be defensible based on ecological principles.

The replacement of natural heritage features must include sufficient funds to create the feature at another location. Undertaking a replacement project requires the following basic components:

- Characterization of the feature and its ecological function;
- Development of a planting/enhancement plan that will replicate the feature;
- The selection of public lands or the purchase of lands suitable for the planting project;
- Development of a schedule for project implementation;
- Post construction monitoring to ensure suitable plant survival and features are functioning to provide the ecological benefit; and
- A mechanism for ensuring the lands are protected in perpetuity.

The compensation proposed is based on the cost to acquire poor quality agricultural lands upon which to establish the new features. Lands within designated settlement areas or prime agricultural lands were not considered due to the provincial and municipal guidelines that protect these lands for their intended use.

Our approach to compensation is to provide the funds that will enable the municipality to implement the compensation plan. To determine the appropriate compensation, we integrated the following components:

1. Cost of the Planting Stock – The vegetation list from the EIS was used to define the species present and develop the planting material list to replicate the vegetation community. Because the wetlands were dominated by invasive species and had low ecological function, we used a wet shrub thicket wetland recommendation from the Toronto Region Conservation Authority Guideline for Determining Ecosystem Compensation (Appendix C). To provide an objective cost we contacted two nurseries to obtain costs for the proposed plant list. The plant list and the cost of the plant material is provided on the attached Excel spreadsheet.
2. Cost of Construction - An independent landscape contractor was provided with the plant list and wet shrub thicket wetland example and asked to provide a cost for planting and site preparation on a per hectare basis for the woodland and wetland.
3. Compensation Ratio – In recognition of the time frame required for the new natural heritage feature to function at a comparable ecological value we applied a compensation ratio. For woodlands we applied a 2:1 ratio given the years it will take to create a comparable forest ecology. A ratio of 1:1 was used for the wetland because of its low ecological function and predominance of invasive vegetation. Creation of a wet shrub thicket with native wetland plants will be a significant enhancement to the low functioning wetland that will be removed. The native species that will be planted will mature and propagate faster than the woodland feature which supports a lower compensation ratio. The creation of permanent pools for aquatic species will significantly enhance the ecological function beyond what was lost.
4. Ecological Service Value – The Lake Simcoe Region Conservation Authority in developing their ecological compensation strategy undertook a collaborative study with the David Suzuki Foundation, the Friends of the Greenbelt Foundation and their LSRCA authority staff to assess the non-market value of ecological features. In 2017 the LSRCA updated the natural capital value of vegetative units. Ecosystems provide an annual benefit such as carbon storage, flood attenuation, water purification, biodiversity, nutrient cycling and soil stabilization. The study defined an approximate annual ecosystem service value/ha. This value was applied for the woodland and the wetland and was applied at a value for one year in recognition once the compensating units are established with will begin contributing to the aforementioned ecological benefits.
5. Land Acquisition – An assumption was made that low quality agricultural land would be purchased for the compensating lands. Use of defined settlement

areas or prime agricultural lands would be contrary to provincial land use guidelines. In addition, poor quality agricultural lands often have poor drainage that would help support establishment of a wetland feature or slopes unsuitable for cultivation upon which a woodland could be established. The cost of acquisition is based on the cost per hectare of agricultural land in rural areas.

6. Administration – Administration project costs would comprise staff time to coordinate and supervise the implementation of the plan. The estimated cost per hectare was based on typical consulting fees to undertake comparable work. We did not include development of the planting plan because we have provided the basics of a planting plan in this compensation submission. The site preparation and grading plan would be undertaken under the administrative cost.

Proposed Compensation Value

The six compensation components were placed in the appended Excel spreadsheet that includes the independent plant material costing (Appendix D). The areas of the woodland and the wetland are from the Arborist report and the MNRF documentation respectively. Ecological services value is from the Valuing Natural Capital in the Lake Simcoe Watershed (2017). Construction and planting costs were provided by Bruce Wilson Landscaping Ltd. and Insight Ecological Solutions Inc. based on the plant list and the TRCA guidelines for restoration plantings. Land acquisition is based on an estimate of the cost of low-quality agricultural land in southern Ontario. Administration costs are estimated based on consulting fees and time to coordinate and supervise the plan implementation.

The value of each of the factors is added to determine the compensation value. The proposed compensation value for the creation of 4.3ha of deciduous forest and 3.69 ha of wetland is \$1,193,793.88.

If you have any questions or require further information, please do not hesitate to call.

Yours truly,
ORION ENVIRONMENTAL SOLUTIONS, INC.



Paul Neals, B.Sc. Agr.
Principal

PCN:

REFERENCES

Cunningham Environmental Associates in association with Azimuth Environmental Consulting, Inc. Environmental Impact Study 11424 Jane Street (Livall Holdings Limited) & 11260 Jane Street (OP Trust Jane Street Trust), April 2023.

Green Analytics, Valuing Natural Capital in the Lake Simcoe Watershed, Lake Simcoe Region Conservation Authority, December 2017.

Lake Simcoe Region Conservation Authority, Ecological Offsetting Policy, July 2021.

National Capital Research & Consulting, Lake Simcoe Basin's Natural Capital: The Value of the Watershed's Ecosystem Services, June 2008.

The mbtw group, Arborist Report, December 2022.

Toronto and Region Conservation, Guideline for Determining Ecosystem Compensation, June 2018.

APPENDIX A



Photograph 37. View of part of EHRWC Wetland #173, situated just north of FODM5-9 and connected by an intermittent drainage swale, dominated by reed canary grass, panicled aster, cattails, and purple-stemmed aster



Photograph 38. Northward view of west arm of EHRWC Wetland #176, showing defined intermittent channel, with reddish willow and green ash, along with reed canary grass, spotted jewelweed, ferns and cattails



Photograph 39. Northward view of west arm of EHRWC Wetland #176 which extends onto the property from the 11260 Jane Street, part of a wide valley with steep to gentle slopes, with the channel lying within floodplain



Photograph 40. North view of part of south end of EHRWC Wetland #177, dominated by a dense sward of reed canary grass, along with other wetland forbs, grasses, sedges and ferns

APPENDIX B

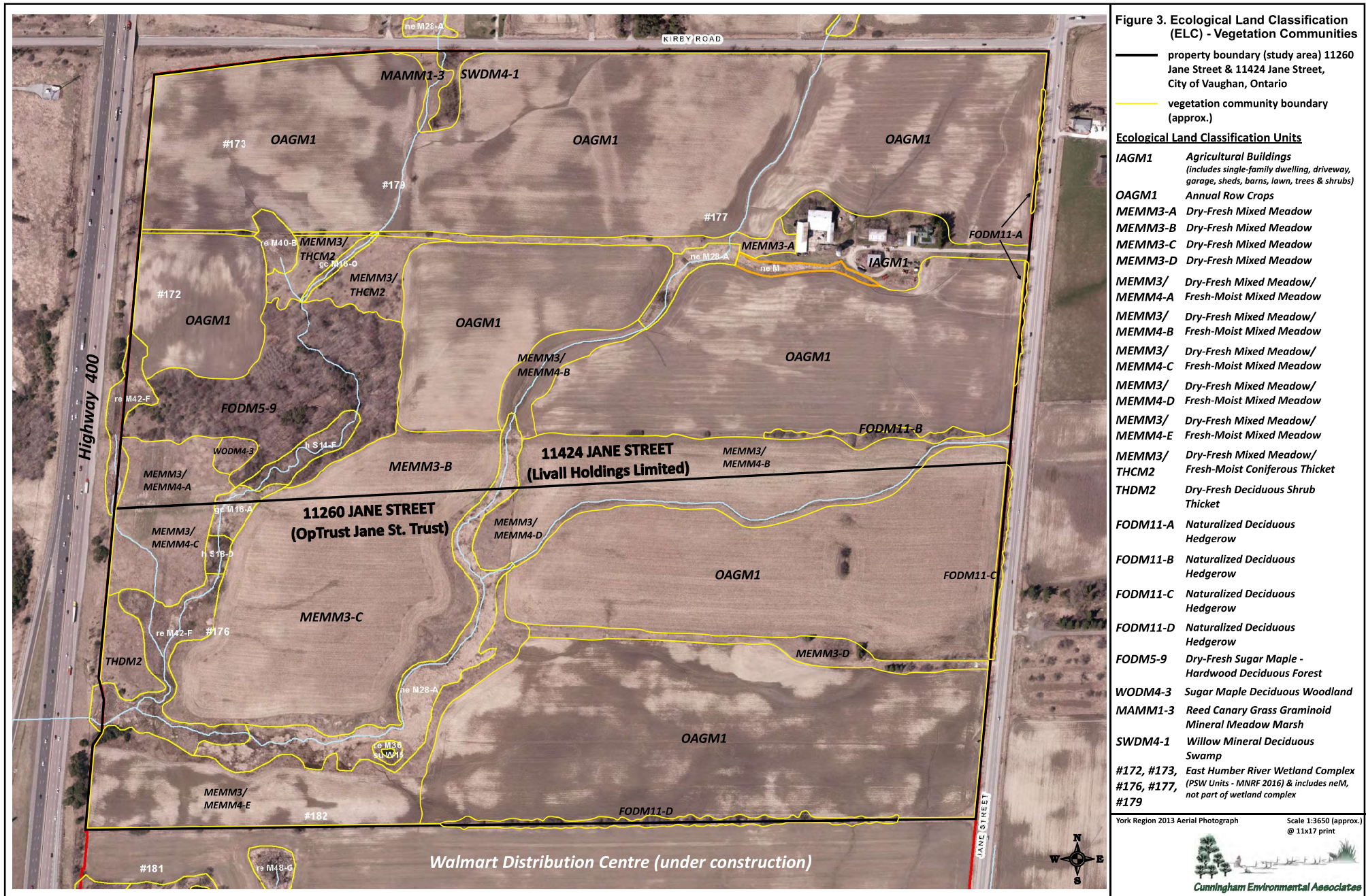


Figure 3. Ecological Land Classification (ELC) - Vegetation Communities

— property boundary (study area) 11260 Jane Street & 11424 Jane Street, City of Vaughan, Ontario
 — vegetation community boundary (approx.)

Ecological Land Classification Units

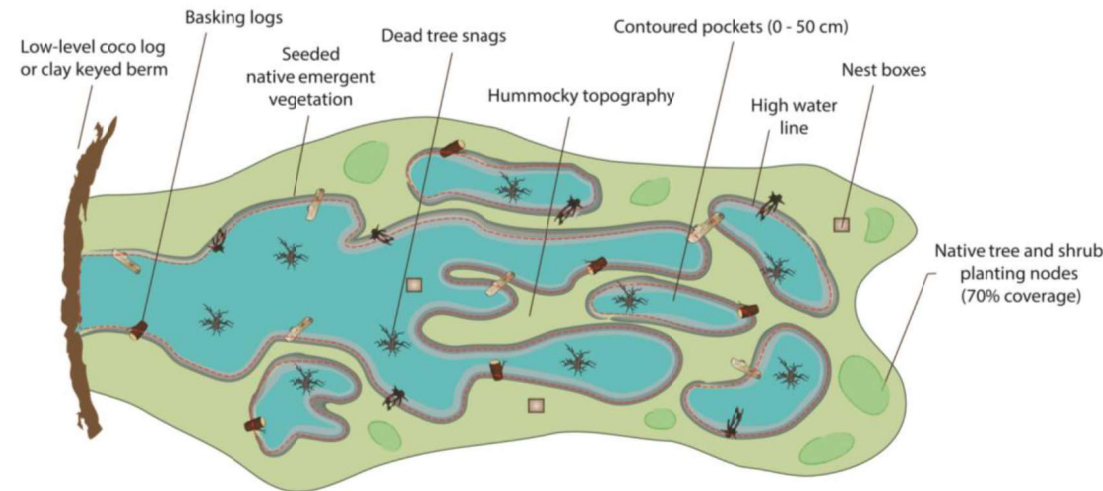
- IAGM1** Agricultural Buildings (includes single-family dwelling, driveway, garage, sheds, barns, lawn, trees & shrubs)
- OAGM1** Annual Row Crops
- MEMM3-A** Dry-Fresh Mixed Meadow
- MEMM3-B** Dry-Fresh Mixed Meadow
- MEMM3-C** Dry-Fresh Mixed Meadow
- MEMM3-D** Dry-Fresh Mixed Meadow
- MEMM3/ MEMM4-A** Dry-Fresh Mixed Meadow/ Fresh-Moist Mixed Meadow
- MEMM3/ MEMM4-B** Dry-Fresh Mixed Meadow/ Fresh-Moist Mixed Meadow
- MEMM3/ MEMM4-C** Dry-Fresh Mixed Meadow/ Fresh-Moist Mixed Meadow
- MEMM3/ MEMM4-D** Dry-Fresh Mixed Meadow/ Fresh-Moist Mixed Meadow
- MEMM3/ MEMM4-E** Dry-Fresh Mixed Meadow/ Fresh-Moist Mixed Meadow
- MEMM3/ THCM2** Dry-Fresh Mixed Meadow/ Fresh-Moist Coniferous Thicket
- THDM2** Dry-Fresh Deciduous Shrub Thicket
- FODM11-A** Naturalized Deciduous Hedgerow
- FODM11-B** Naturalized Deciduous Hedgerow
- FODM11-C** Naturalized Deciduous Hedgerow
- FODM11-D** Naturalized Deciduous Hedgerow
- FODM5-9** Dry-Fresh Sugar Maple - Hardwood Deciduous Forest
- WODM4-3** Sugar Maple Deciduous Woodland
- MAMM1-3** Reed Canary Grass Graminoid Mineral Meadow Marsh
- SWDM4-1** Willow Mineral Deciduous Swamp
- #172, #173, #176, #177, #179** East Humber River Wetland Complex (PSW Units - MNR 2016) & includes neM, not part of wetland complex

York Region 2013 Aerial Photograph Scale 1:3650 (approx.) @ 11x17 print

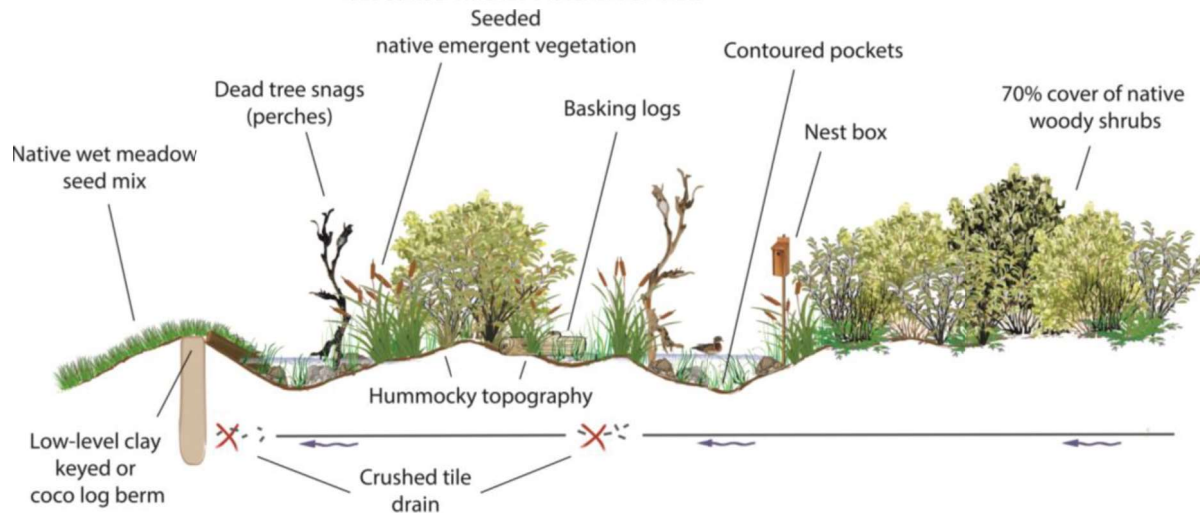


APPENDIX C

Wet Shrub Thicket Wetland



WET SHRUB THICKET TYPICAL: TOP VIEW



WET SHRUB THICKET TYPICAL: CROSS SECTION

Restored wet shrub thicket wetland, post-construction (pre-planting)



Project Goals:

- Restore ecosystem form and function
- Restore soil and soil processes
- Restore natural hydrologic processes
- Enhance and restore natural cover and critical habitat

Details:

Project planning and development (permits, survey, detailed design and project mgmt.), site preparation (sediment & erosion control, etc.), berm construction, wetland topography contouring and grading, habitat structure installation, planting and seed application.

- 0.3 ha aquatic
- 0.7 ha terrestrial (50% of area planted with shrubs (3,500 pots))

Suggested plant species:

Plant native early successional riparian shrub species, such as willow, red berry, high bush cranberry and button bush.

Wet Shrub Thicket Typical *Budget Items (1 ha)		
Construction	Notes	*Costs
Planning and Design	Permits, survey, archaeology, engineering, and project design	
Equipment	2 days of site preparation and 6 days of construction (Truck, trailer, excavator, loader, water pump)	
Materials	Aggregate, erosion and sediment control, filter cloth, round stone, woody debris, and habitat structures	
Labour	2 days of site prep, 6 days of construction, 1 day each for start up and tear down	
Contingency	10%	
Tree and Shrub Planting		
Equipment	Truck, trailer, ATV	
Materials	3,500 shrubs potted (2 gal), (50 kg) cover crop, (6 kg) of native seed, and mulch	
Labour	Plan design and installation	
Contingency	10%	
Plant Replacement	25% replacement of material	
Planning		
Project Management	Initiating, planning, executing, controlling, and closing	
Monitoring	3 visits (year 1, 3 and 5) with reporting	

*Typical Budget Items and Costs – although typical budget items are listed for each restoration type, the costs for each item are not. The costs are subject to market price changes (e.g., for fuel, materials, etc.), and are therefore not listed. For the most current costs, please contact TRCA staff.

Features to include in design:

- Reversal of altered hydrology (crushed tile drains, burying straightened ditches)
- Proper and stable water level control
- Proper erosion and sediment control methods
- Varying/hummocky topography including shallow open water (0 - 50 cm depth)
- 20 - 30 Habitat structures (dead trees, snags, basking logs, log perches, nest boxes, etc.)
- Site preparation for planting and removal of invasive species
- Native terrestrial and emergent vegetation
- 50% of terrestrial planting area planted with shrubs in 350 groups of 10 at 1 m spacing (3,500 potted shrubs)
- Native wetland/wet meadow seed mix for disturbed soils

APPENDIX D

Wetland Restoration 1ha												Nursery 1 - Native Plants in Claremont				Nursery 2 - Uxbridge Nurseries Ltd.			
Common Name	Scientific Name	Form	Coefficient of Wetness	Tolerance	Soil	Height (m)	Spread (m)	Size (height cm) or pot size	Cost/Unit	Quantity	Total Cost		Size (height cr	Cost/Unit	Quantity	Total Cost			
Eastern Buttonbush	<i>Cephalanthus occidentalis</i>	SH	-5	P	S L C	2	2	2 gallon	\$20.00	110	\$2,200.00	price for 11+	40	11.5	110	1265 price for 25+			
Red-osier Dogwood	<i>Cornus sericea</i>	SH	-3	F	S L C	3	3	2 gallon	\$20.00	300	\$6,000.00	price for 11+	50	11.5	110	1265 price for 25+			
Common Winterberry	<i>Ilex verticillata</i>	SH	-3	F/P	S L C	2	2	2 gallon	\$20.00	125	\$2,500.00	price for 11+	40	14.5	105	1522.5 price for 25+			
Swamp Rose	<i>Rosa palustris</i>	SH	-5	F	S L C	1.2	1.2	2 gallon	\$20.00	110	\$2,200.00	price for 11+	2 gallon	12.5	110	1375 price for 25+			
Pussy Willow	<i>Salix discolor</i>	SH	-3	F	S L C	5	2	Not available			\$0.00		50	9.5	110	1045 price for 25+			
Cottony Willow	<i>Salix erocephala</i>	SH	-3	F	S L	5	4	Not available			\$0.00		50	9.5	110	1045 price for 25+			
Common Elderberry	<i>Sambucus canadensis</i>	SH	-3	F/P	S L C	3	4	2 gallon	\$20.00	120	\$2,400.00	price for 11+	50	10.5	110	1155 price for 25+			
White Meadowsweet	<i>Spirea alba</i>	SH	-3	F	S L C	1.5	1.5	2 gallon	\$20.00	110	\$2,200.00	price for 11+	40	12	110	1320 price for 25+			
										875	\$17,500.00				875	9992.5			
				Shrub Planting Area (50% of 0.7ha)	Shrubs at 2m on center spacing														
TRCA Guideline	0.7 ha of terrestrial planting (50% of area with shrubs)	1ha = 10000m2	0.7ha = 7000m2	3500	875														
	0.3 ha open aquatic contoured pockets																		
Woodland Restoration 1ha																			
Trembling Aspen	<i>Populus tremuloides</i>	T	0	F	S L C	15	8						175 Potted	65	200	13000 smallest option			
Sugar Maple	<i>Acer saccharum</i>	T	3	P	S L	20	15						175 Potted	95	100	9500 smallest option			
White Spruce	<i>Picea glauca</i>	T	3	F	S L C	25	5						60cm	48	50	2400 smallest option			
White Pine	<i>Pinus strobus</i>	T	3	F	S L	25	10						100cm	76	50	3800 smallest option			
															400	28700			
TRCA Planting Recommendations					Trees at 5m on center														
Number of Trees Required					400														

	Area Removed (ha)	Compensation Ratio	Plant Purchase/ Planting Cost (ha)	Aquatic Construction Cost (ha)	Ecological Service Value (ha)	Land Acquisition (\$20,000/acre)	Administration / \$10,000 ha	Total Compensation
Woodland Restoration	4.3	2	\$285,950.00	\$129,000.00	\$36,631.70	\$212,420.00	\$43,000.00	\$707,001.70
Wetland Restoration	3.69	1	\$122,692.50	\$110,700.00	\$34,213.68	\$182,286.00	\$36,900.00	\$486,792.18
								TOTAL COMPENSATION \$1,193,793.88

Note: wetlands 173,172,179,177 all less than 2 ha so not evaluated as significant under OWES

MNRF wetland unit #176 - 3.69 ha

Woodland Area Source - Arborist Report, the mbtw group (December 2022)

Ecological Service Value - Woodland \$5,819/ha Valuing Natural Capital in the Lake Simcoe Watershed (December 2017)

Ecological Service Value - Wetland \$9,272/ha Valuing Natural Capital in the Lake Simcoe Watershed (December 2017)

Planting List with soil and plant species and characteristics and associated costs from Nursery 1 and 2 (Insight Environmental Solutions)

Construction Cost - estimated at \$10/square metre, TRCA example recommends 0.3 ha aquatic/ha, for 3,000 square metres x \$10 = \$30,000/ha

Planting Cost (Bruce Wilson Landscaping) = \$33,250/ha for wetland and \$33,250/ha for woodland