

**DUFFERIN MARSH OPEN SPACE MANAGEMENT PLAN  
NATURAL HERITAGE BACKGROUND REVIEW**

prepared by



for

**Schollen & Company Inc.**

June 2000

LGL Project TA2464

# **DUFFERIN MARSH OPEN SPACE MANAGEMENT PLAN NATURAL HERITAGE BACKGROUND REVIEW**

prepared by

J. Nisbet  
G.N Gáspárdy

**LGL Limited**  
**environmental research associates**  
P.O. Box 280, 22 Fisher St.  
King City, Ontario L7B 1A6  
905-833-1244, kingcity@lgl.com

for

**Schollen & Company Inc.**

June 2000

LGL Project TA2464

## TABLE OF CONTENTS

1.0 INTRODUCTION .....	1
1.1. Documentation of Background Information and Existing Conditions .....	1
1.2 Local and Regional Settings .....	2
2.0 NATURAL HERITAGE FEATURES AND FUNCTIONS .....	3
2.1 Physical Characteristics .....	3
2.2 Biological Conditions .....	4
3.0 EXISTING LAND USES .....	8
4.0 DISCUSSION .....	8
5.0 Literature Reviewed.....	9
Appendix 1 Wildlife List .....	12

# DUFFERIN MARSH OPEN SPACE MANAGEMENT PLAN

## NATURAL HERITAGE BACKGROUND REVIEW

### 1.0 INTRODUCTION

An Open Space Management Plan (OSMP) is being prepared for Dufferin Marsh and the adjacent lands in the community of Schomberg, Township of King. The purpose of the OSMP is to balance conservation, protection and enhancement of the wetland and significant adjacent lands with public access and local development.

Schollen and Company Inc. and LGL Limited, the study team, was retained by the Township of King to prepare the OSMP based to reflect the natural heritage functions of the wetland and open space community, and provide long term management planning for the site. The purpose of this Report is to document and assess existing information sources, and to assess and evaluate newly acquired information.

#### 1.1. **Documentation of Background Information and Existing Conditions**

Background information sources for environmental data respecting Dufferin Marsh and adjacent lands principally comprise two Reports prepared by the consulting firm of Cumming Cockburn Limited (1996 revised 1997; and 1997 revised in the same year), and one prepared by LGL Limited (1999). The CCL documents are titled:

- X *Environmental Impact Statement C Osin Property Development and Cooper Drive Extension*
  
- X *Environmental Study Report C Dr. Kay Drive Extension*

The LGL Report is titled:

- X *Dr. Kay Drive Extension C Fisheries Assessment*

Existing conditions are documented to varying degrees in all three Reports. Acquisition

of information also included recent aerial photo coverage of the site; aerial photos were interpreted to confirm reported characteristics of natural features and to delineate cultural features (land use/land cover types). Wetland mapping was taken from Cumming Cockburn Limited (1997), which was adapted from the OMNR updated evaluation data record for the Dufferin Wetland Complex. The wetland complex was evaluated originally in 1994 and revised by OMNR in 1996. Work undertaken by LGL has further delineated the boundary wetland components.

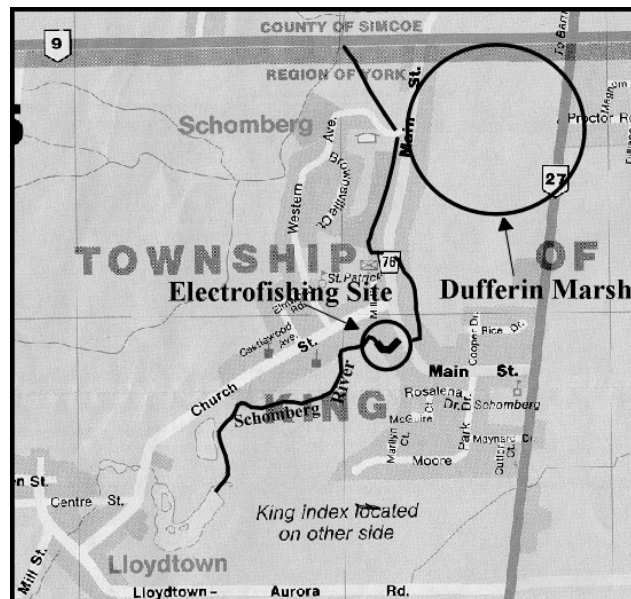
Reconnaissance site visits were undertaken as a part of the current study (25 and 28 April, 2, 5, 18 and 25 May, and June). Additional field observations were recorded on 10 May by the Schollen/LGL team during field meetings with representatives of the Dufferin Marsh Citizens Committee and other interested parties.

Information sources are listed below in Section 6.0 Literature Reviewed of this Report.

## **1.2 Local and Regional Settings**

The study area is located wholly within the community of Schomberg, Township of King, Regional Municipality of York (Figure 1), and is situated on the glacial feature known as the Oak Ridges Moraine. Surrounding community lands have been developed for residential, commercial, industrial and institutional uses. Dufferin Marsh is discontinuous on the landscape, being divided into north and south components by the existing unopened Dr. Kay road allowance. The site is privately owned but is visited commonly and regularly by local residents. The presence of free roaming companion animals often is a by-product of human use of urban natural heritage features; free roaming cats (2) and dogs (2) were confirmed as a part of the current study.

### **Figure 1. Key map.**



## 2.0 NATURAL HERITAGE FEATURES AND FUNCTIONS

Natural heritage conditions are described in detail in CCL 1996 (revised 1997) and 1997 (revised in the same year). The LGL assessment (1999) of fisheries and fish habitat includes details on culvert connections to and within the marsh site and provides current information respecting fish habitat conditions. The reader is referred to these sources for detailed descriptions of local environmental attributes and ecological functions.

Figure 2 in this Report reproduces key natural heritage information, including vegetation communities and wetland boundaries. This information is derived from CCL work; wetland delineation is further refined on this figure based on recent LGL field work.

### 2.1 Physical Characteristics

#### *Surficial Geology:*

The study area is underlain with shallow deposits of glaciolacustrine (silt and clay) materials, which overlie many tens of metres of fine-grained, compacted glacial till deposits, which cover the bedrock.

#### *Topography:*

Topographic relief is flat to rolling within the study area; the marsh complex is situated within a flat area with rising lands to the north, east and south. The most significant relief within the complex proper is the former railway line which bisects the marsh feature; the abandoned rail line today comprises the unopened Dr. Kay R.O.W.

*Soils:*

Surficial materials are described in CCL (1996) as being predominantly claying silts, although more sandy materials exist to the southwest. Correspondingly, infiltration rates across the study area are variable. Soils immediately adjacent to Dufferin Marsh are described as loamy, being underlain by clay/silt dominant glaciolaustrine deposits. In-marsh investigations confirmed the presence of sandy, gravelly, silty/sand seams; generally, substrate conditions north and south of the Dr. Kay R.O.W. are described as a mix of mineral and organic materials: silt, organic muck and detritus (LGL, 1999).

Tableland soils are moderately soft and are erodible when exposed to surface run-off, and to the erosive effects of wind.

*Drainage:*

Surface soils from moderately well drained to poorly drained, depending to an extent on soil type and micro-topographic conditions. Lower gradients tend to result in moderate to poor site drainage (run-off). This is particularly the case with the flat conditions which support the marsh complex. The lands surrounding the marsh on the south, east, and partially from the north, contribute surface run-off to the wetland complex, as does the Brownsville Junction parking lot (CCL, 1996). Surface flows in the marsh complex are south to north, following the direction of the former river meander. The north and south wetland features are linked hydro-geologically by a culvert which is located within the Dr. Kay Drive R.O.W. The marsh flows to the Schomberg River which drains into the Holland River; however, no direct surface drainage from the marsh complex to the Schomberg River is evident (LGL, 1999).

## **2.2 Biological Conditions**

Biological conditions are well described in CCL 1996, 1997 (the same 1996 field assessment is used in both Reports). The CCL study area was divided into units (34)

based on ecological attributes: topography, soils, moisture/flooding regime, and vegetation. The 34 ecological sub-units were grouped into five (5) principal areas; two of which are pertinent to the current study: the wetlands, small old fields and adjacent woods to the south of the Dr. Kay Drive R.O.W.; and the wetlands, small old fields and adjacent upland woods to the north of the R.O.W.

#### *Vegetation Communities: Marsh Complex and Adjacent Lands*

Vegetation communities located to the south of the Dr. Kay Drive R.O.W. comprise a mix of aquatic and terrestrial habitats, including open water areas of the old river channel, swamp, marsh (cattail and sedge), wet meadow, moist and dry old field, upland woods, fencerow, dug pond, and stormwater management facility. Together, they provide a relatively high diversity of habitat. Vegetation communities located to the north of the R.O.W. include a variety of wetlands, woods, shrub dominant features and fields; i.e. marsh and swamp, moist and upland woodlands, shrubby fencerows, moist old field and dryer, regenerating field. The interspersed wetlands and woodlands, in particular, provide a functional landscape mosaic which apparently attracts and supports a high diversity of wildlife. No evidence has been forthcoming from any of the studies reviewed by LGL, or from elsewhere, to confirm the presence of significant vegetation communities as defined under the Provincial Policy Statement.

#### *Plant Species of Management Interest*

Plant inventories undertaken by CCL in 1996 documented the presence of three vascular plant species of note: Hill's pondweed, manna grass (*Glyceria septentrionalis*), and a hawthorn species (*Crataegus submollis*). Only the pondweed and the hawthorn species are within the Open Space Management Plan area. The pondweed is the dominant species in the old river channel (Unit 1, see Figure 1). *Crataegus submollis* also occurs commonly on-site, growing in concert with another hawthorn species throughout units 11, 12, 13, 14, 18, 20, 21, 23 and 24 (Figure 1). The former of the two species is of national, provincial and local interest, the latter comprises a species of local concern (York Regional Municipality).

Neither Reports prepared by CCL and reviewed as a part of this exercise included working, vascular plant lists; representative plant observations are noted in the field

record sheets for each of the 34 ecological units. Vascular plant species were not the target of the current LGL Limited study.

### *Wildlife Habitat*

The diversity of habitats in-marsh and on adjacent lands provides a high degree of terrestrial and aquatic habitat diversity within a relatively small geographic area. Investigations undertaken by LGL in 1998 (fish habitat) and in 2000 (semi-aquatic and terrestrial wildlife) confirmed habitat conditions which support a wide range of migrant visitant, summer resident and permanent resident wildlife species. These conditions attract and host a high diversity of migrant species and a moderate diversity of summer resident or permanent residents. However, we cannot find any evidence which qualifies the site as significant wildlife habitat, as defined under the Provincial Policy Statement.

The diversity and quality of habitats provides an important stepping stone stopover site for spring and autumn birds (and bats) in particular, but also appears to support off-site urban birds (and local bat) populations which visit to forage loaf or shelter in various features.

Through extensive sampling efforts in permanent and seasonal water within Dufferin Marsh, LGL has found no evidence of fish using these areas. This status has been recognized by the Lake Simcoe Region Conservation Authority in review of the Dr. Kay Drive and Cooper Drive extensions. However, a common warm water community of fish species was documented in the Schomberg River at Main Street and was described as the receiving system from the Dufferin Marsh.

### *Wildlife Species*

Field inventories and surveys undertaken by CCL 1996, and LGL 1998 and 2000 have confirmed the use of the Dufferin Marsh Area by 129 vertebrate species of wildlife (excluding three unidentified species). Fifteen additional species have been documented by members of the Dufferin Marsh Committee (CCL, 1996). The total number of vertebrate species reported, therefore, is 147. Examination of the list of species suggests that migrant and winter visitant bird species diversity could be enhanced with timely and appropriate site surveys, or by consulting the local data record base.

Species diversity for frogs is exceptional, and is relatively high for mammals; selected salamander species should be present, as should several more snake species. It is unlikely that fish species would flourish if introduced to open water areas; however, invertebrate such as crawfish appear to have successfully colonized the area, notably

*Cambarus fodiens*.

The low incidence of conifers is a restricting factor in attracting early songbird nesters to the area (and species which favour evergreens) and reduces the attractiveness and function of the area as a destination for shelter during leaf-off periods.

Wildlife species documented on-site are appended.

#### *Wildlife Species of Management Interest*

In spite of strong species diversity within the local wildlife community, CCL and LGL have not identified significant numbers of species of management interest. For instance, neither investigation confirmed resident or summer resident species designated by COSEWIC or COSSARRO as Vulnerable (V), Threatened (T), or Endangered (E) or by OMNR as VTE, or by the Natural Heritage Information Centre (NHIC) as Rare in Ontario. The only exception to this pattern is the number of locally important species (York Regional Municipality) which have been identified through the Bird Studies Canada (BSC) assessment of breeding bird species in regard for their conservation relevance on a municipal basis in the land use planning process. Twenty bird species which have been designated by BSC for the York Regional Municipality jurisdiction were documented on-site. These species are annotated in Appendix 1 of this Report. The BSC designations are not supported by Regulation, but they are endorsed by CWS and OMNR as reasonable and appropriate lists of bird species to target for planning purposes at the local level. Species of local significance are promoted in the Natural Heritage Reference Manual as being of importance in building a case for the presence of significant wildlife habitat. The Regional Municipality of York apparently recognizes the BSC designations.

CCL 1996 discusses the occurrence on-site of the following significant wildlife species reported by the Dufferin Marsh Committee: loggerhead shrike, Cooper's hawk and red-

bellied woodpecker. We are unaware of the date or location of the shrike record and therefore, cannot comment fully; however, this species is designated in the Regulations as Endangered in the Province, and as such, planning and management authorities generally must protect individual birds and their habitat where they occur, in accordance with the Regulation. That aside, the habitat on-site is not optimum quality for nesting, and is not unique in its offering of foraging opportunities for migrants; additionally, the species has declined to such low numbers in the province that the probability of a re-occurrence is very remote. Accordingly, it seems reasonable to treat this record as an anomaly and simply deal with the loggerhead shrike issue, if and when the species demonstrate a regular pattern of occurrence and some reasonable measure of dependence on the site.

The Cooper's hawk recently has been de-listed nationally and provincially and is no longer considered Vulnerable in the province.

The red-bellied woodpecker observation is discussed in CCL, 1996. We have reviewed the text and we agree with the conclusion reached by the consultant: the occurrence of this species in this part of the province is sporadic and the individual in question appeared to be wandering on the landscape.

### **3.0 EXISTING LAND USES**

Passive landuses occur on-site. More active land uses occur on adjacent and nearby lands, e.g.: residential, agricultural, commercial, industrial, institutional and associated uses including parking lots and stormwater features.

### **4.0 DISCUSSION**

A review of background sources and recent field investigations confirms that the site and environs have been significantly affected by anthropogenic landuses over a prolonged period. The site continues to be influenced by human activity, e.g.: background (extraneous) light and noise, stormwater run-off, pedestrians, cyclists, companion animals and the ongoing assault from non-indigenous plant species, and to a lesser extent, non-indigenous wildlife. The anthropogenic impacts are an important factor in shaping the landscape and will continue to have an impact in that regard. The

positive management of this factor should be an important consideration in the Open Space Management planning process.

It is also important to recognize that we have very little empirical data respecting productivity in the marsh complex. The area hosts a diverse and, in some cases high, number of predators as well as plentiful numbers of the brood parasite, brown-headed cowbird. As such, it may be prudent to shape expectations for success at practical and reasonable levels. Additionally, it would be useful to establish a baseline of natural heritage data prior to initiating significant landscape alterations.

Development as proposed will permanently sever the north and south wetland features; linkages as proposed in the form of underpass culverts may restore current wildlife movement opportunities. However, these underpasses have the potential to serve as productivity sinks if users are predated at unreasonably high levels by opportunistic reptiles, mammals or birds. Planning measures intended to support underpass movement by selected species should be carefully thought out, and implemented only after a complete range of options has been explored.

## **5.0 Literature Reviewed**

Couturier, A. 1999. Conservation Priorities for Birds of Southern Ontario. Prepared for Bird Studies Canada for the Canadian Wildlife Service and the Ontario Ministry of Natural Resources.

Cumming Cockburn Limited. 1996 (revised 1997). Environmental Impact Statement – Osin Property Development and Cooper Drive Extension.

\_\_\_\_\_. 1997. Environmental Study Report C Dr. Kay Drive Extension. Prepared for the

Township of King. York Regional Municipality.

Gáspárdy, G.N. and J. Cavallo. 1999. Dr. Kay Extension C Fisheries Assessment.  
Prepared by LGL Limited for Ainley & Associates Limited.

Government of Ontario. 1999. Natural Heritage Reference Manual. OMNR.  
Peterborough.

\_\_\_\_\_. 1996. Provincial Policy Statement. OMMAH. Toronto.

Natural Heritage Information Centre. 2000. Working Lists of the Birds, Mammals,  
Reptiles and Amphibians of Ontario. Peterborough.

## ***APPENDIX 1***

### ***WILDLIFE LIST***

This list includes all of the amphibians, birds, fishes, mammals and reptiles which were documented by Cumming Cockburn Limited, and LGL Limited. Species in addition to those identified by CCL and LGL and previously recorded by the Dufferin Marsh Committee also are included. Breeding season occurrences of birds in areas of suitable habitat are denoted with an asterisk. Bird species encountered flying over this site were not included in this list. Species designated as Endangered in the Regulations of the Ontario Endangered Species Act are denoted as AE. @ Birds listed by Bird Studies

Canada (1999) as Species of Management Interest in York Regional Municipality are denoted as ABSC.@

1. Cumming Cockburn Limited information is derived from site investigations undertaken in May and June, 1996.
2. LGL Limited information was obtained through site investigations for fishes in August, 1998, and for amphibians, birds, mammals and reptiles in April, May and June, 2000.
3. Wildlife sightings attributed to the Dufferin Marsh Committee (by CCL) comprise records which were accessed by CCL in 1996 and constitute known occurrences of wildlife up to that year which were additional to those species documented by CCL. The Committee was not contacted formally as a part of the current study.

SPECIES	SOURCE OF INFORMATION			
	Common Name	Cumming Cockburn Limited <sup>1</sup>	LGL Limited <sup>2</sup>	Dufferin Marsh Committee <sup>3</sup>
<b>AMPHIBIANS</b>				
Note: Suitable habitat exists on-site and on adjacent lands for all species except bullfrog.				
unidentified salamander species				X
American toad		X		
spring peeper		X		
gray treefrog	X	X		
midland chorus frog	X	X		
wood frog	X	X		
northern leopard frog	X	X		
pickerel frog	X	X		
green frog	X	X		
bullfrog				X

SPECIES		SOURCE OF INFORMATION		
Common Name	Cumming Cockburn Limited <sup>1</sup>	LGL Limited <sup>2</sup>	Dufferin Marsh Committee <sup>3</sup>	
<b>BIRDS</b>				
Notes: Breeding Season Occurrence * Winter Season Occurrence**				
great blue heron		X	X	
green heron* BSC		X	X	
Canada goose*	X	X		
wood duck* BSC	X	X		
American black duck		X		
mallard*	X	X		
blue-winged teal* BSC	X	X		
northern shoveler	X	X		
sharp-shinned hawk		X	X	
Cooper=s hawk			X	
red-tailed hawk *			X	
American kestrel*		X		
sandhill crane			X	
Virginia rail* BSC		X		
sora* BSC	X	X		
common moorhen		X		
killdeer*	X			
spotted sandpiper*	X	X		
common snipe*	X	X		
American woodcock* BSC		X	X	
mourning dove *	X	X		
black-billed cuckoo		X		
great horned owl			X	

SPECIES	SOURCE OF INFORMATION		
	Common Name	Cumming Cockburn Limited <sup>1</sup>	LGL Limited <sup>2</sup>
chimney swift*	X	X	
ruby-throated hummingbird		X	
yellow-bellied sapsucker		X	
downy woodpecker *	X	X	
hairy woodpecker*	X	X	
northern flicker *	X	X	
eastern wood-pewee *		X	
yellow-bellied flycatcher		X	
willow flycatcher*	X	X	
least flycatcher	X	X	
eastern phoebe* BSC	X	X	
great crested flycatcher *		X	
eastern kingbird * BSC	X	X	
tree swallow *	X	X	
northern roughed-winged swallow*	X	X	
bank swallow			X
barn swallow * BSC	X	X	
blue jay *	X	X	
American crow *	X	X	
black-capped chickadee * BSC	X	X	
red-breasted nuthatch		X	
white-breasted nuthatch		X	
brown creeper		X	
house wren *		X	
marsh wren*		X	X

SPECIES	SOURCE OF INFORMATION		
Common Name	Cumming Cockburn Limited <sup>1</sup>	LGL Limited <sup>2</sup>	Dufferin Marsh Committee <sup>3</sup>
veery		X	
Swainson=s thrush		X	
hermit thrush	X	X	
wood thrush		X	
American robin *	X	X	
gray catbird * BSC	X	X	
brown thrasher * BSC		X	
cedar waxwing *		X	
loggerhead shrike E			X
European starling *	X	X	
solitary vireo		X	
warbling vireo *	X	X	
red-eyed vireo *	X	X	
Tennessee warbler	X	X	
Nashville warbler		X	
yellow warbler *	X	X	
chestnut-sided warbler * BSC		X	
magnolia warbler	X	X	
Cape May warbler		X	
black-throated blue warbler		X	
yellow-rumped warbler		X	
black-throated green warbler		X	
palm warbler		X	
pine warbler		X	
bay-breasted warbler		X	
blackpoll warbler		X	

SPECIES	SOURCE OF INFORMATION			
	Common Name	Cumming Cockburn Limited <sup>1</sup>	LGL Limited <sup>2</sup>	Dufferin Marsh Committee <sup>3</sup>
black-and-white warbler			X	X
American redstart *	X		X	X
ovenbird			X	
northern waterthrush * BSC	X		X	X
mourning warbler			X	
common yellowthroat *	X		X	
Wilson=s warbler	X		X	
Canada warbler			X	
scarlet tanager			X	
northern cardinal *			X	
rose-breasted grosbeak *	X		X	
indigo bunting *			X	
chipping sparrow *			X	X
field sparrow			X	
Savannah sparrow * BSC	X		X	
song sparrow *	X		X	
swamp sparrow* BSC	X		X	
white-throated sparrow			X	
white-crowned sparrow			X	
dark-eyed junco			X	
bobolink * BSC	X		X	
red-winged blackbird *	X		X	
eastern meadowlark * BSC	X		X	
common grackle *	X		X	
brown-headed cowbird *	X		X	
Baltimore oriole *	X		X	

SPECIES	SOURCE OF INFORMATION		
	Common Name	Cumming Cockburn Limited <sup>1</sup>	LGL Limited <sup>2</sup>
purple finch**			X
house finch *	X	X	
pine siskin**			X
American goldfinch * BSC	X	X	
evening grosbeak**			X
house sparrow *		X	
<b>FISHES</b>			
Notes: No fish species were observed or captured within Dufferin Marsh.			
blacknose dace	X	X	
creek chub	X	X	
white sucker	X		
common shiner		X	
longnose dace		X	
bluntnose minnow			
pumpkinseed		X	
<b>MAMMALS</b>			
Notes: Virtually all of Ontario=s bat species could migrate over/across the site, potentially foraging and/or sheltering on-site. .			
star-nosed mole	X		
unidentified bat species	X	X	
eastern cottontail		X	X

<b>SPECIES</b>		<b>SOURCE OF INFORMATION</b>	
<b>Common Name</b>	<b>Cumming Cockburn Limited<sup>1</sup></b>	<b>LGL Limited<sup>2</sup></b>	<b>Dufferin Marsh Committee<sup>3</sup></b>
eastern chipmunk	X	X	
woodchuck	X	X	
gray squirrel	X	X	
red squirrel			X
beaver	X		
unidentified peromyscus species	X		
meadow vole		X	
muskrat	X	X	
Norway rat		X	
house mouse		X	
coyote			X
red fox	X		
raccoon	X	X	
mink			X
striped skunk	X	X	
white-tailed deer			X
<b>REPTILES</b>			
Notes: Suitable habitat exists on-site and on adjacent lands for all species.			
common snapping turtle			X
Midland painted turtle	X	X	
eastern garter snake	X	X	
redbelly snake	X	X	
northern brown snake		X	