

## **CITY OF VAUGHAN**

### **EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018**

Item 5, Report No. 12, of the Committee of the Whole (Working Session), which was adopted, as amended, by the Council of the City of Vaughan on March 20, 2018, as follows:

***By approving the following in accordance with Communication C7, from the City Solicitor, dated March 19, 2018:***

***That consideration of the report on the North Maple Regional Park Phase 2 Due Diligence be deferred to the Committee of the Whole (Working Session) on April 9, 2018.***

## **5 NORTH MAPLE REGIONAL PARK PHASE 2 DUE DILIGENCE**

**The Committee of the Whole (Working Session) recommends:**

- 1) That the recommendation contained in the following report of the Deputy City Manager, Planning and Growth Management and Chief Financial Officer and City Treasurer, dated March 7, 2018, be approved;**
- 2) That the confidential recommendation of the Committee of the Whole (Working Session – Closed Session) meeting of March 7, 2018, be approved;**
- 3) That the presentation by the Director of Parks Development and communication C5, presentation material titled “North Maple Regional Park”, dated March 7, 2018, be received;**
- 4) That the deputation of Ms. Marcella DiRocco, Vaughan C.A.R.E.S, be received; and**
- 5) That the following communications be received:**
  - C1 Regional Councillor Ferri, dated February 28, 2018; and**
  - C2 City Manager, dated March 6, 2018.**

### **Purpose**

To provide an update on the results of the Phase 2 due diligence for North Maple Regional Park (NMRP).

## **CITY OF VAUGHAN**

### **EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018**

Item 5, CW (WS) Report No. 12 – Page 2

#### **Recommendations**

1. That Council endorse the expanded vision for NMRP and surrounding open space lands to guide future park planning, development and partnership opportunities for creating a world-class recreational and cultural destination;
2. That staff engage the Evergreen Foundation to assist in developing a strategy for implementing community engagement and cultural programs to support the NMRP vision;
3. That staff initiate discussions with the City of Toronto to identify requirements and timing for proposed park and recreational uses on the Keele Valley Landfill Site;
4. That staff negotiate with interested sports organizations to develop partnership structures that align with the expanded vision for NMRP;
5. That staff meet with Federal and Provincial government representatives to present the NMRP vision and to understand potential grant funding opportunities; and
6. That Deloitte LLP be retained to complete business case activities and assist in undertaking a procurement process to secure a Master Developer-Builder to implement all or a portion of the expanded park vision for NMRP to accelerate the delivery of additional community facilities and programs for Vaughan residents and visitors.

#### **Report Highlights**

- Technical studies confirm the 900acre expanded park vision for NMRP is feasible, with recreation and park uses on landfills possible within 5 years
- Golf Canada's timing for finalizing a permanent home for the RBC Canadian Open has changed but Vaughan continues to be a preferred location
- Market assessments identify interest from a variety of sports organizations and potential partners for the North Maple Regional Park expanded vision
- NMRP is positioned to become a world-class venue for Vaughan residents and visitors and a special place where recreation, culture and nature meet

#### **Background**

In April 2017 Council considered an unsolicited proposal from Golf Canada which identified the potential for an expanded park vision for NMRP and surrounding open space lands as a preferred location for the permanent home of the RBC Canadian Open golf championship and a destination park to establish a legacy of social, cultural and economic benefits for Vaughan residents and visitors.

## CITY OF VAUGHAN

### **EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018**

#### Item 5, CW (WS) Report No. 12 – Page 3

The expanded park vision for NMRP involves the creation of a nationally significant public sports, recreation and cultural venue on approximately 364ha (900 acres) of publicly owned park and open space property including NMRP, adjacent wooded valley lands, the Vaughan Township Landfill Site (VTLS), and the Keele Valley Landfill Site (KVLS). A map of the park and open space areas is appended as Attachment 1.

To determine the true value and viability of the expanded park vision, staff were authorized to negotiate with Golf Canada and undertake a comprehensive due diligence assessment of the lands including an assessment of potential opportunities for private-sector partners and other sports organizations to assist implementation and delivery of services to the community.

#### **Previous Reports/Authority**

[NORTH MAPLE REGIONAL PARK UPDATE AND AWARD OF TENDER T17-039 – PHASE 1 PARK DEVELOPMENT](#)

#### **Analysis and Options**

Following the April 2017 Council meeting, staff initiated meetings with Golf Canada to advance negotiations and undertake a detailed review of their unsolicited proposal, and to conduct Phase 2 due diligence activities to confirm the feasibility, opportunities and constraints of the expanded park vision.

The following due diligence technical assessments of NMRP and surrounding open space lands were undertaken:

- Natural Heritage Opportunities and Constraints Study
- Feasibility and Remedial Options Study - Vaughan Township Landfill Site (VTLS)
- Feasibility and Remedial Options Study - Keele Valley Landfill Site (KVLS)\*

\*completed in partnership with the City of Toronto

#### ***Results of the Natural Heritage Studies indicate low to moderate ecological and environmental constraints for implementing the expanded park vision for NMRP and surrounding open space lands***

Groundwater Environmental Management Services Inc. (GEMS) was retained to prepare an ecological assessment of natural heritage features of NMRP, VTLS and adjacent wooded valley lands. An Executive Summary of the GEMS report is appended as Attachment 2.

Working in consultation with staff from the Toronto and Region Conservation Authority (TRCA) and Ministry of Natural Resources and Forestry (MNRF), the GEMS study field investigations included the following activities:

## CITY OF VAUGHAN

### **EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018**

#### Item 5, CW (WS) Report No. 12 – Page 4

- Natural feature staking of existing wetlands
- Boundary confirmation of existing Area of Natural and Scientific Interest (ANSI) and Environmentally Significant Area (ESA) designated areas
- Amphibian surveys
- Headwater drainage assessment
- Vegetation surveys including Ecological Land Classification (ELC) assessment
- Breeding bird surveys
- Turtle surveys

Key findings and recommendations of the GEMS study identify opportunities to modify and enhance existing ecological features that may have been previously disturbed or constrained by invasive species, and opportunities to reduce required park development setbacks through the completion of additional Environmental Impact Studies.

Identified constraints primarily relate to the function and future proposed use of the existing pond and wetland features within NMRP. Further assessment is required in consultation with MNRF to determine if the pond and wetland features are provincially significant, which would have specific requirements for the approval of park and facility development plans and public use of these areas.

Additional detailed environmental studies will be required to support proposed park implementation plans during the design and approvals stage of future projects.

***Results of the Landfill Feasibility Studies indicate that parks and recreation uses on the VTLS and KVLS are feasible with approximately 75ha (185acres) of new developable active parkland that can be created and public access to the landfills possible within 5 years***

Golder Associates Ltd. (Golder) was retained to carry out a technical assessment of the VTLS and KVLS to provide recommendations related to the feasibility of potential active and passive recreational uses on the landfills as proposed in the expanded park vision. An Executive Summary of the Golder reports are appended as Attachments 3 and 4.

Working in consultation with staff from the City of Toronto and Ministry of Environment and Climate Change (MOECC), the Golder scope of work included the following key activities:

- Review of historical documents, files and data systems
- Assessment of risks posed by opening landfill areas to the public
- Research into example sites where mitigation measures have been successfully applied to enable recreational development on closed landfills



## **CITY OF VAUGHAN**

### **EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018**

#### **Item 5, CW (WS) Report No. 12 – Page 5**

- Determination of proposed approaches and/or modifications required to the sites including engineered control systems to facilitate proposed park uses
- Estimate of activities, timeframes and order of magnitude costs

The VTLS is a City-owned former landfill that was in operation from 1965 -1984 and collected an estimated 8 million cubic meters of solid non-hazardous municipal waste. Existing infrastructure includes a landfill gas (LFG) collection system along the south west corner of the site and ground and surface water monitoring wells located throughout the landfill. City of Vaughan staff are responsible for the operation and maintenance of the existing LFG system and all reporting requirements as per the current Environmental Compliance Approval with the MOECC. This includes groundwater, surface water and landfill gas monitoring, as well as assisting City of Toronto staff in the sampling of groundwater levels and reporting back to the regulatory agencies.

To accommodate public access on the VTLS Golder recommends the design and installation of improved landfill gas management and monitoring systems, amendments to the existing landfill cover, protection of existing monitoring infrastructure and equipment, and additional surface gas surveys completed and passed prior to submission of an end use plan to MOECC for an amendment to the current Environmental Compliance Approval for the site.

The KVLS is a former landfill that was in operation from 1983 - 2002 and collected an estimated 28 million tonnes of solid non-hazardous municipal and industrial waste. KVLS has been closed since 2002 and is owned and maintained by the City of Toronto. Existing infrastructure includes a LFG collection system, a leachate collection system as well as ground water and surface water monitoring wells. The current reduced levels of LFG have necessitated a change to the current landfill gas collection system.

For the KVLS, proposed active and passive recreation or golf course end uses would be possible as the end uses coincide with the existing 2006 Closure Plan already submitted to the MOECC. Based on the current conditions, modifications to the existing landfill infrastructure would be required and the amount of work would be dependent on the end use design. Major constraints on the KVLS are along the southern slope and southern portion of the landfill where the main leachate and LFG collection systems are located.

In summary, it is considered that the combined preparation of the VTLS and KVLS for proposed recreational end use scenarios will generate approximately 75ha (185 acres) of new developable active parkland which could be implemented within the next 3 to 5 years.

## CITY OF VAUGHAN

### **EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018**

Item 5, CW (WS) Report No. 12 – Page 6

***Discussions with Golf Canada continue to be positive, however the timing for finalizing a permanent home for the RBC Canadian Open has changed***

In the summer of 2017 Golf Canada announced organizational changes including the appointment of new CEO Laurence Appelbaum. With Mr. Applebaum new to the organization and the future of the Glen Abbey Golf Club uncertain, Golf Canada's focus has recently shifted to a short-term priority of securing golf course venues to host the RBC Canadian Open for 2019 - 2021, resulting in a delay in advancing work on securing a permanent home.

Based on this, a detailed assessment of the Golf Canada proposal has not yet been completed. It is anticipated that discussions with Golf Canada on the permanent home will resume in 2018, and staff have been advised in the preparation of this report that Vaughan continues to be a preferred location since it provides many positive attributes that align with Golf Canada's vision for the future of the Open and their headquarters.

Notwithstanding these changes, the Golf Canada proposal initiated a process that has begun unlocking the value of NMRP and surrounding open space lands to assist in maximizing the City's vision of greater public use of the lands that will transform the former landfills and create a positive legacy for our citizens and leave a heritage for generations to come.

***The expanded park vision for NMRP aligns with City of Vaughan community needs and trends identified in the City's Active Together Master Plan***

Phase 1 development at NMRP is currently underway and on-schedule to open the park to the public in Summer 2018. The completion of Phase 1 facilities aligns with the expanded park vision, and having two high-quality turf soccer fields is a distinct advantage and catalyst for Phase 2 development and the potential partnership opportunities that are emerging.

The expanded park vision and use of the landfills and surrounding open space lands aligns with the City's Active Together Master Plan and will provide additional lands for an abundance of parks, recreation, community programs and events including, but not limited to:

- Major City events including Concerts in the Park, Winterfest, Canada Day
- Year-round indoor recreation space and training facilities for all levels, ages and abilities
- Cultural and performing arts opportunities
- Charity walks and major community and corporate gatherings
- Sports tourism and tournament venues

## CITY OF VAUGHAN

### **EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018**

#### Item 5, CW (WS) Report No. 12 – Page 7

- Winter recreation including ice skating, tobogganing, snow tubing and cross-country skiing
- Natural trails, hiking and biking paths, boardwalks and lookout areas

Leveraging high performance sports facilities and partnership funding will greatly assist the City in providing community facilities and programs that align with the ATMP and help deliver many in-demand programs to the community.

#### ***Market assessments and respondent consultations by Deloitte identify interest from a variety of sports organizations and potential partners for the North Maple Regional Park expanded vision***

Concurrent with the completion of the due diligence technical studies, Deloitte LLP (Deloitte) was retained to assist in assessing potential partners for Phase 2 development at NMRP. The primary purpose of this work is to consider the results of the previous Request for Information submissions and an assessment of potential opportunities for private-sector partners and other sports organizations to assist the implementation and delivery of services to the community. An Executive Summary of the Deloitte study is appended as Attachment 5.

Over the course of several months Deloitte conducted over 15 interviews with potential partners and sports groups based on the following key objectives:

- Developments must be aligned with the City's vision of providing park facilities for active and passive uses, for all levels of ability, age and interests, and be sensitive to the natural environment
- Capable of helping establish a year-round destination site for a variety of sports, recreational and cultural uses
- Reduce the financial burden to the City in terms of total project capital, operating and lifecycle costs, while minimizing the City's exposure to market risk associated with revenue generation

Based on the initial round of interviews a range of interests emerged including groups with interest in leasing NMRP land for Sports Centre of Excellence and/or co-locating head offices dedicated to Amateur Sport, interest in renting facilities for hosting events and interest in acquiring land for development opportunities. There were also a number of groups that confirmed they had no interest in potential opportunities at NMRP at this time.

Following the first round of market consultations Deloitte assessed each opportunity against the project objectives and identified the following short-list recommended for

## CITY OF VAUGHAN

### EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018

#### Item 5, CW (WS) Report No. 12 – Page 8

further assessment and more detailed discussion with City staff. Follow-up consultation meetings were arranged and a questionnaire was completed by each organization to identify specific facility requirements of the various organizations. Key highlights are as follows:

Organization	Areas of Interest
Ontario Tennis	<ul style="list-style-type: none"><li>• Provincial headquarters and training centre</li><li>• Office space</li><li>• Indoor and outdoor courts</li><li>• High performance training facilities</li><li>• Community use access to facilities and programs</li></ul>
Canada Soccer	<ul style="list-style-type: none"><li>• Regional training centre</li><li>• Office space</li><li>• Potential FIFA World Cup 2026 Base Camp</li><li>• Indoor and outdoor fields</li><li>• High performance training facilities</li><li>• Stadium field</li><li>• Community use facilities and programs</li></ul>
Rugby Ontario/Rugby Canada	<ul style="list-style-type: none"><li>• Regional centre of excellence and headquarters</li><li>• Office space</li><li>• Indoor and outdoor fields</li><li>• High performance training facilities</li><li>• Stadium field</li><li>• Community use facilities and programs</li></ul>
Cricket Canada	<ul style="list-style-type: none"><li>• National headquarters</li><li>• Office space</li><li>• Outdoor fields</li><li>• Stadium field for international competitive play</li><li>• High performance training facilities</li><li>• Community use facilities and programs</li></ul>

Recommended next steps for moving forward with exploring partnership opportunities with the various sports organizations based on the above assessment include advancing negotiations and due diligence activities with Ontario Tennis, Rugby Ontario/Rugby Canada and Canada Soccer to confirm their interest. It is also recommended that staff meet with the Federal Government and Ontario Ministry of Tourism, Culture and Sport to present the NMRP vision and concept of multiple sports organizations in a co-location and shared-use arrangement and seek potential funding opportunities

## CITY OF VAUGHAN

### **EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018**

Item 5, CW (WS) Report No. 12 – Page 9

***Follow-up consultations with previous RFI respondents confirm continued interest from these groups in partnering with the City to deliver the NMRP vision***

As directed by Council, each of the previous RFI respondents were contacted by Deloitte to overview the expanded vision for NMRP and to confirm their level of continued interest in partnering with the City on this exciting project. The summary of each of these discussions was positive, with all four respondents reaffirming their interest in participating in all or a portion of the NMRP project based on their original submissions, with a caveat that they would need to review their original submissions and any new information or factors to consider based on the emerging expanded park vision.

Based on the reaffirmed interest of the RFI Respondents and the common elements identified by the various sports organizations for potential partnership with the City, it is recommended that business case activities (i.e. delivery model assessment, risk assessment, financial analysis, etc.) and a procurement process be undertaken to secure a Master Developer-BUILDER to help implement all or a portion of the expanded park vision for NMRP to accelerate the delivery of community facilities and programs for Vaughan residents and visitors.

***The Evergreen Brick Works is an excellent example of how strategically positioning public sector and private sector partnerships can act a catalyst for delivering exciting destination recreation and cultural facilities and programs to the community***

In November 2017, the Chief Financial Officer & City Treasurer and the Director of Parks Development were invited to attend a site tour of the Evergreen Brick Works and meeting with Evergreen Foundation (Evergreen) staff to discuss their experiences in transforming an underutilized public asset into a thriving, nationally significant destination site that is financially sustainable through the establishment of community and business partnerships with both public and private sector organizations.

Evergreen staff were very proud to advise that the Evergreen Brick Works, a high profile, multi-phased capital project, achieved operational financial sustainability early in the process of being opened to the public. Evergreen attributed the key to their success as being the connections they made with the local and greater community early during implementation of the project and the use of an extensive community engagement, consultation and partnership program to generate awareness and stimulate interest in the project.

Evergreen's mission is to enable flourishing cities with a vision to connect people,

## **CITY OF VAUGHAN**

### **EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018**

#### **Item 5, CW (WS) Report No. 12 – Page 10**

natural and built worlds. In January and February 2018 staff and Evergreen continued discussion on how to develop opportunities to engage the Vaughan community and generate excitement and interest in NMRP. Evergreen has the expertise and interest in assisting the City in the areas of visioning, partnership development, site program development and interpretation, social enterprise and citizen engagement.

As a result of these discussions staff recommend engaging Evergreen to leverage their experiences, skills and network of resources to assist Vaughan in developing and implementing a creative community-based process to support and activate the expanded vision for NMRP.

#### **Financial Impact**

Cost estimates for implementation of the expanded park vision for NMRP are highly variable and will depend on the quantity and types of facilities and programs to be developed. Cost estimates will form a necessary part of the next phases of concept design and park planning.

Order of magnitude costing for the preparation of the VTLS for passive and active recreational uses is estimated to be in the range of \$1.2M to \$3.6M. Order of magnitude costing for the KVLS is estimated to be in the range of \$1M to \$2M for active and passive park uses, and as high as \$5M to \$6M for preparations required to support a championship golf course. These costs will be further reviewed and detailed as part of the concept design and park planning phases.

Project management resources will continue to be required to assist staff in advancing this significant priority City initiative. Costs to provide internal and external (consulting) support would be funded from existing capital projects and accommodated within approved budgets or included in future budget submissions.

Partnership opportunities and revenue from anticipated small-scale and large-scale events and programs will assist in achieving the City's goal of reducing overall capital and operating costs for NMRP which will continue to be a key objective for this project.

#### **Broader Regional Impacts/Considerations**

Completion of the NMRP project will require continued discussion and coordinating with a variety of external agencies and stakeholders including York Region, TRCA, City of Toronto, MOECC and MNRF.

## **CITY OF VAUGHAN**

### **EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018**

#### **Item 5, CW (WS) Report No. 12 – Page 11**

York Region is currently undertaking an Individual Environmental Assessment for Teston Road between Keele Street and Bathurst Street, including the unopened section between Keele Street and Dufferin Street. This study is in the early stages making it an ideal time to closely coordinate the City's vision for NMRP with York Region's plans for transportation network improvements.

#### **Conclusion**

Results of Phase 2 Due Diligence investigations and technical studies confirm the feasibility of implementing the 900acre expanded vision for NMRP. A variety of facility development and programming opportunities are available to the City that will establish NMRP as a signature destination site for Vaughan residents and visitors.

In addition, a variety of interest in the NMRP project continues to be expressed by potential partners including national and provincial sports organizations, local community groups and previous RFI respondents. Based on the results of these comprehensive studies it is recommended that the expanded park vision be endorsed and that business case activities and procurement processes be undertaken to secure partners to assist the City in implementing park facility development, programming and activation to help unlock the true value of these lands.

The City's vision of greater public use of NMRP, landfills and adjacent open space lands will create a positive legacy for our citizens and leave a heritage for generations to come.

**For more information**, please contact: Jamie Bronsema, Director of Parks Development, ext. 8858

#### **Attachments**

1. Map of North Maple Regional Park and Surrounding Open Space Lands
2. Natural Heritage Opportunities and Constraints Study – Executive Summary, Groundwater Environmental Management Services Inc., January 23, 2018
3. Feasibility and Remedial Options Study Vaughan Township Landfill Site End Use – Executive Summary, Golder Associates, January 2018
4. Feasibility and Remedial Options Study Keele Valley Landfill Site End Use – Executive Summary, Golder Associates, January 2018
5. North Maple Regional Park Sports and Culture Centre of Excellence Market Sounding – Executive Summary, Deloitte LLP, February 2018

## **CITY OF VAUGHAN**

### **EXTRACT FROM COUNCIL MEETING MINUTES OF MARCH 20, 2018**

Item 5, CW (WS) Report No. 12 – Page 12

#### **Prepared by**

Jamie Bronsema, Director of Parks Development, ext. 8858

(A copy of the attachments referred to in the foregoing have been forwarded to each Member of Council and a copy thereof is also on file in the office of the City Clerk.)





c. <u>7</u>
Communication
COUNCIL: <u>March 20/18</u>
<u>CW(ws)</u> Rpt. No. <u>12</u> Item <u>5</u>

**DATE:** MARCH 19, 2018

**TO:** MAYOR AND MEMBERS OF COUNCIL

**FROM:** CLAUDIA STORTO, CITY SOLICITOR

**COPY:** DANIEL KOSTOPOULOS, CITY MANAGER  
JASON SCHMIDT-SHOUKRI, DEPUTY CITY MANAGER, PLANNING AND GROWTH MANAGEMENT  
LAURA MIRABELLA, CHIEF FINANCIAL OFFICER AND CITY TREASURER  
JAMIE BRONSEMA, DIRECTOR, PARKS DEVELOPMENT

**RE:** COMMITTEE OF THE WHOLE (WORKING SESSION)  
REPORT NO. 12, ITEM NO. 5  
NORTH MAPLE REGIONAL PARK PHASE 2 DUE DILIGENCE

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**RECOMMENDATION:**

That consideration of the report on the North Maple Regional Park Phase 2 Due Diligence be deferred to the Committee of the Whole (Working Session) on April 9, 2018.

Further to Committee of the Whole (Working Session) on March 7, 2018, staff are seeking additional information and advice. As a result, it is recommended that this item be deferred to the Committee of the Whole (Working Session) on April 9, 2018.

Respectfully submitted,

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Claudia Storto  
City Solicitor



C 1  
COMMUNICATION  
CW (WS) - MARCH 7/2018  
ITEM - 5

February 28, 2018

Clerk, City of Vaughan



**Mario F. Ferri M.E.S.**  
DEPUTY MAYOR  
LOCAL & REGIONAL COUNCILLOR

Re: Committee of the Whole (Working Session) March 7, 2018  
Item 5 – North Maple Regional Park Phase 2 Due Diligence

I am writing this brief note to express my support for the staff recommendation regarding the North Maple Regional Park. In my absence, please accept this note as an expression of support for the project and the urgency to move it into reality as soon as possible.

As many of you know, this project had its beginning in the late 1990's and culminated in the Maple Valley Plan Report that was approved by Council in 2003 outlining the potential uses of this Regional Park. I stood behind the report at that time and continue to support the report today. The Maple Valley Plan contained a vision that was embraced by the general community because of its diversity and opportunities to enjoy the leisure and recreational activities contained therein.

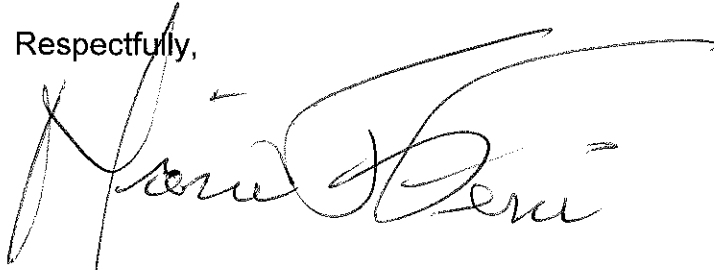
Although I am excited by the staff report, I want to be certain that we bring this project to a conclusion within the near future. Many in the community have expressed disappointment in the time that it has taken to get it to where we are today. Although I tend to agree, I am heartened by the fact that this project now creates the opportunity to expand it to 900 acres engaging multiple partners that enriched the project dramatically.

Not only does this project allow full use of the existing park area, but the current vision maximizes and creates the potential to transform the two former landfills into useable space for current and future generations. The concept of partnership to bring this project to life needs to be supported to ensure that the construction of this park is realized in the near future.

Our residents will be afforded the opportunity to enjoy concerts, year-round recreational space, cultural and performing arts productions, natural trails, hiking, bike paths and boardwalks, and more, as well as the partnership opportunities with Golf Canada and local entrepreneurs; creating destinations points for tourism, visitors and ensuring active and passive uses for all levels and abilities, age and interests.

In conclusion, I would like to emphasize that this park is destined to be a special place where recreation, culture and nature meet.

Respectfully,

A handwritten signature in black ink, appearing to read 'Mario Ferri'. The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Mario F. Ferri, M.E.S.

Deputy Mayor, Local & Regional Councillor



C 2
COMMUNICATION
CW(WS) Mar 7 / 18
ITEM - 5

**DATE:** MARCH 6, 2018  
**TO:** HONOURABLE MAURIZIO BEVILACQUA, MAYOR & MEMBERS OF COUNCIL  
**FROM:** DANIEL KOSTOPOULOS, CITY MANAGER  
**RE:** ITEM 5, REPORT 12 – COMMITTEE OF THE WHOLE (WORKING SESSION)  
NORTH MAPLE REGIONAL PARK PHASE 2 DUE DILIGENCE  
WARD 1

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Staff has received new confidential information in respect of the above noted item.

Due to the commercially confidential nature of this information, it is requested that Committee resolve into Closed Session, following the staff presentation, for discussion.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read 'DK', written over a faint grid background.

Daniel Kostopoulos  
City Manager

Copy: Jason Schmidt-Shoukri, Deputy City Manager, Planning and Growth Management  
Laura Mirabella, Chief Financial Officer and City Treasurer  
Tim Simmonds, Chief Intergovernmental Relations and  
Claudia Storto, City Solicitor  
Jamie Bronsema, Director of Parks Development

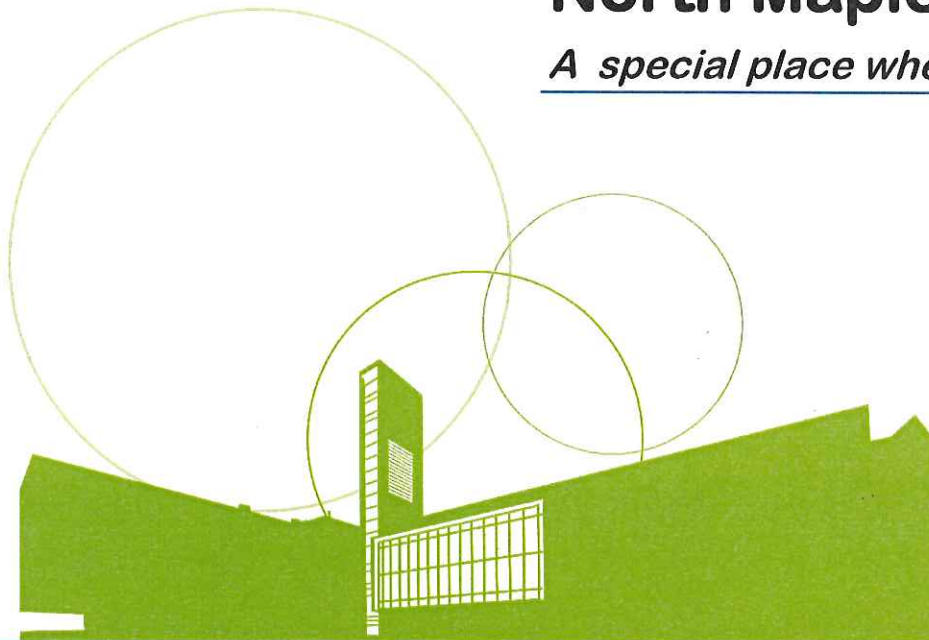


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ITEM -	5

# North Maple Regional Park

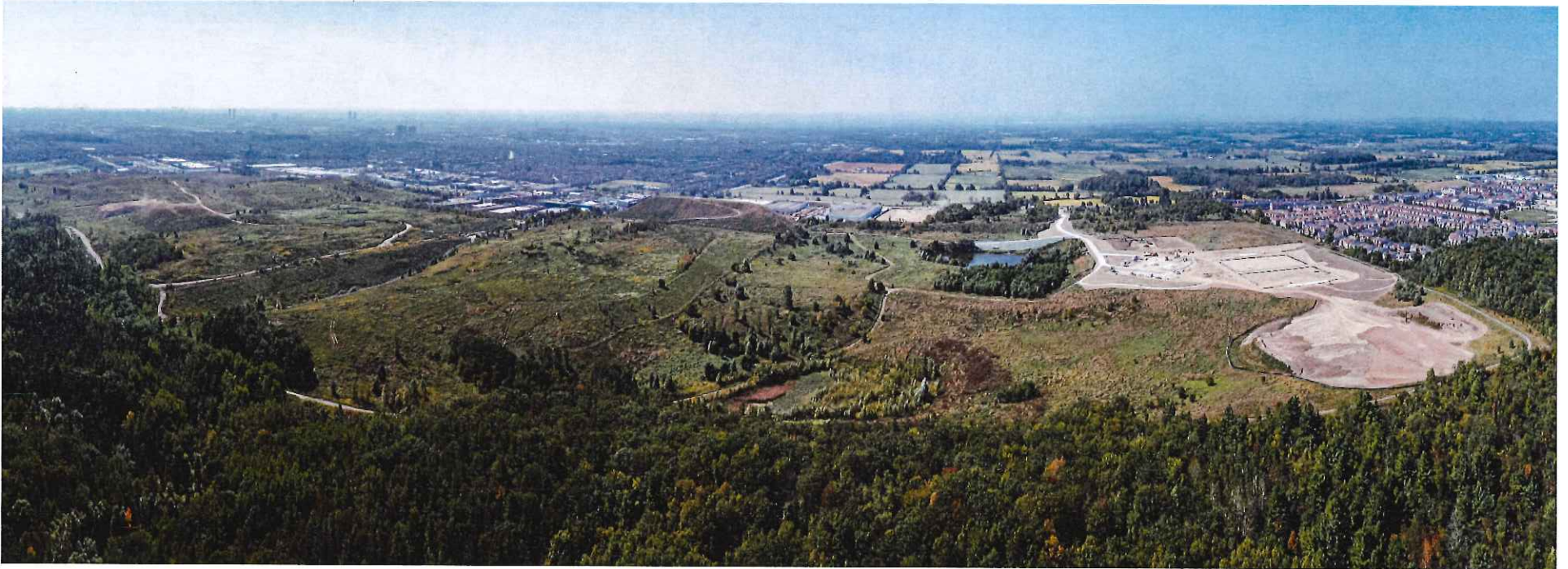
*A special place where Recreation, Culture and Nature meet*

March 7, 2018



Final 2018-03-06

# NORTH MAPLE REGIONAL PARK



2

*Most Ambitious Park Development Project in Vaughan's History*



# Introduction

North Maple Regional Park (NMRP) is a **81ha (200acre)** municipal property envisioned to become a **signature park** for the City of Vaughan and a **world-class** recreational and cultural **destination** within the Greater Toronto Area.

In **2000** the City's **Maple Valley Plan** identified the desire to develop a major Regional Park as a **legacy project** to give back to residents after many years of intrusion from landfill operations.

The original park concept plan was created in **2003** which set the stage for approximately ten years of **property acquisition** and land assembly.

In **2013** a public consultation process was launched to confirm the **Park Vision and implementation strategy** which included identifying a portion of the NMRP property for potential development through public-private-partnerships (PPP).

## Environmental Context

The NMRP and surrounding open space lands are situated on an important geologic formation called the **Oak Ridges Moraine** and the headwaters of the **Don River Watershed**.

The ORM is one of southern Ontario's most distinct landform features, extending as a hilly terrain over **160km** between the Niagara Escarpment and Trent River. The moraine was created as glaciers receded, depositing layers of sand and gravel separated by clay and till soils.

The ORM is a very important **environmental feature** as rainwater collects and is stored in the vast underground layers called aquifers, eventually resurfacing as healthy, clean water that feeds the majority of river systems in the Greater Toronto Area (GTA).





## Former Landfill Sites

The **Vaughan Township Landfill Site** is a former sand pit that was used for solid non-hazardous waste disposal between 1965 and 1984. The landfill site is currently owned and operated by the City of Vaughan.

The **Keele Valley Landfill Site** was Canada's largest landfill and the 3<sup>rd</sup> largest landfill in North America. The site was operated by the City of Toronto receiving municipal waste from the City as well as surrounding York Region and Durham Region.

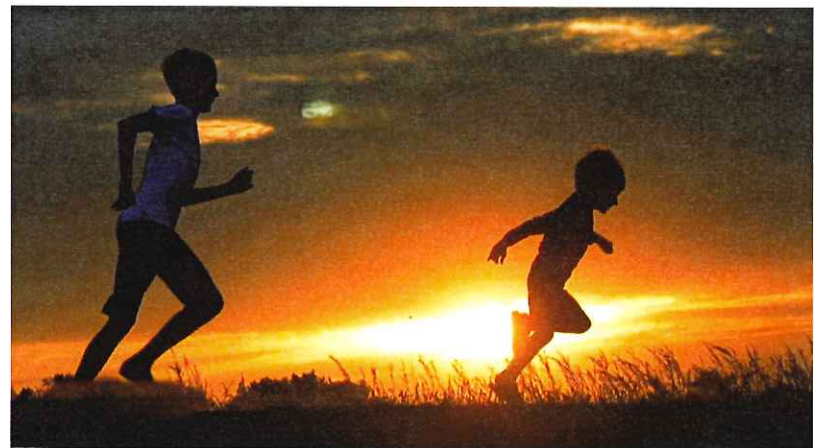
Thanks to the efforts of local residents who formed an advocacy group called **Vaughan Cares**, the Keele Valley landfill officially closed operations on **December 31, 2002**.

Located in the City of Vaughan, the site is planned to be redeveloped into **public open space** at an appropriate time in the future (OPA 604).



## NMRP Vision

The community's vision for NMRP is to develop an **iconic** and **award-winning** park that responds to and complements the surrounding character of the site, develop a park with unique and **recognizable character** which **fosters creativity**, imagination and exploration, and develop a **balanced** park which offers both active and passive uses for enjoyment of **all ages and abilities**. The Vision recognizes the City's **growing population** and **multi-cultural demographic**.





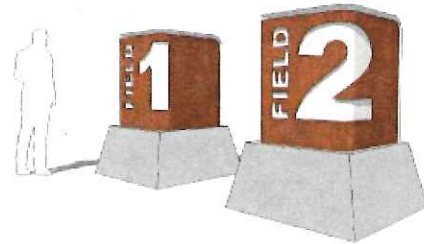


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*Phase 1 Ground-Breaking Ceremony May 24, 2017*

## Phase 1 Construction

- Entrance driveway and parking
- Two artificial turf fields
- Washrooms and changerooms
- Trails and lookout areas
- Site furnishings
- Landscape planting



Field wayfinding plinths







9

*On-schedule for park opening Summer 2018*

## **Expanded Park Vision and Phase 2 Due Diligence**

## NMRP Vision

# 200 Acres

- Sports fields
- Ball diamonds
- Cricket pitch
- Tennis courts
- Playgrounds
- Waterplay areas
- Skate park
- Picnic areas
- Nature trails
- Woodland gardens

11





# Expanded Park Vision

## 900 Acres

- Sports fields
- Ball diamonds
- Cricket pitch
- Tennis courts
- Playgrounds
- Waterplay areas
- Skate park
- Picnic areas
- Nature trails
- Woodland gardens
- Golf course
- Training facilities
- Central Sports Village
- Shops and services
- Indoor recreation
- Expanded trail network
- Major events
- Community programs
- And more





## Expanded Park Vision

- North Maple Regional Park
- Wooded Valley Lands
- Vaughan Township Landfill Site
- Keele Valley Landfill Site

NMRP and adjacent lands comprise over **364ha (900 acres)** of **public open space**.



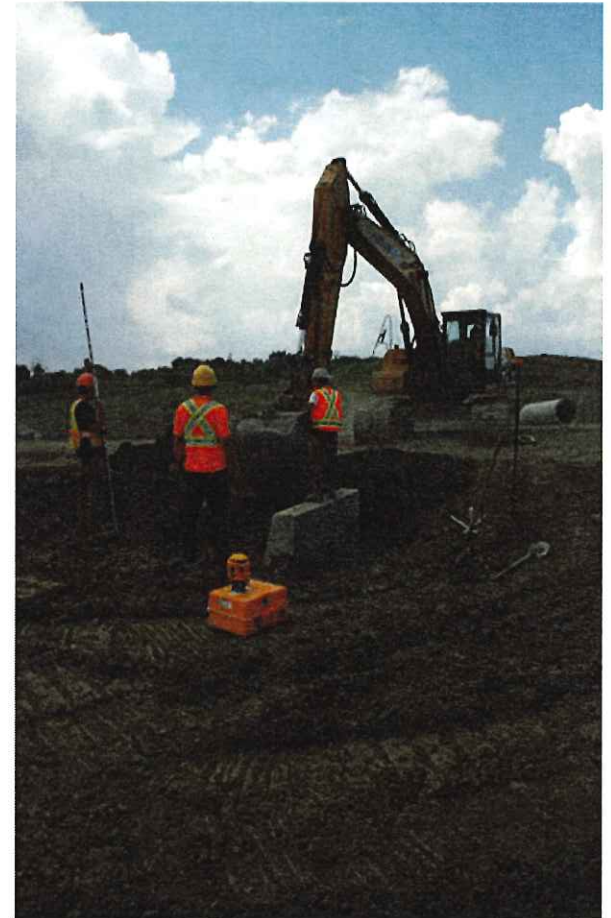
## Phase 2 Due Diligence

### Technical studies:

- Natural Heritage opportunities and constraints
- Feasibility and Remedial options study VTLS
- Feasibility and Remedial options study KVLS

### Market Assessment:

- Partnership opportunities
- RFI respondents and Sports Organizations





# Natural Heritage Studies

- Natural feature staking existing wetlands
- Boundary confirmation ESA and ANSI designated areas
- Amphibian surveys
- Breeding bird surveys
- Turtle surveys
- Headwater drainage assessment
- Vegetation surveys and ELC



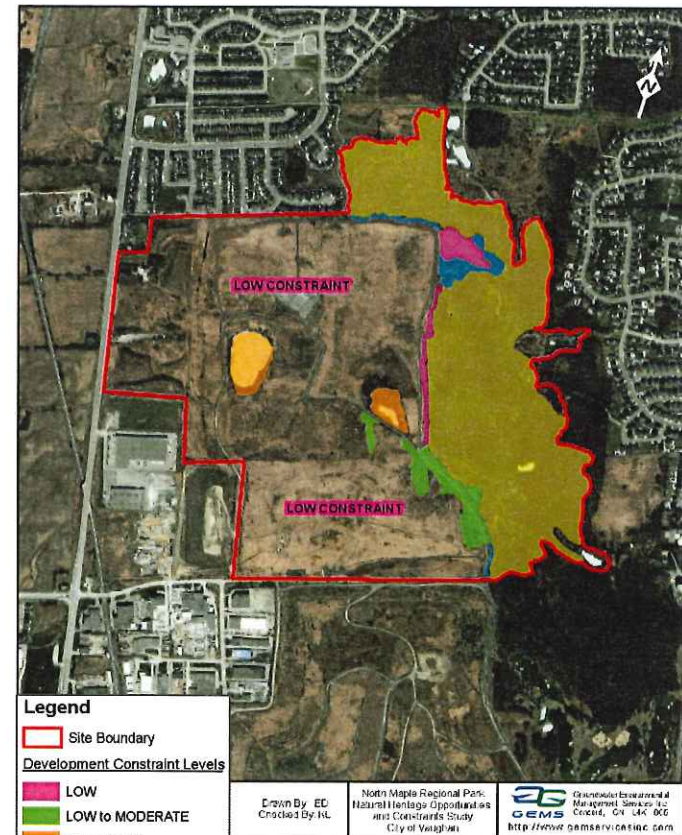
# Natural Heritage Studies

## Opportunities

- Majority of site considered developable
- Modifying and enhancing existing ecological systems
- Reduced park development setbacks

## Constraints

- Existing Pond and Wetland features
- ESA and ANSI (Area of Natural and Scientific Interest)





# Landfill Studies

- Review historical documents and data systems
- Risk assessment to public use
- Research of successful example sites
- Determination of proposed approaches and engineering modifications required
- Estimate of activities, timeframe and costs



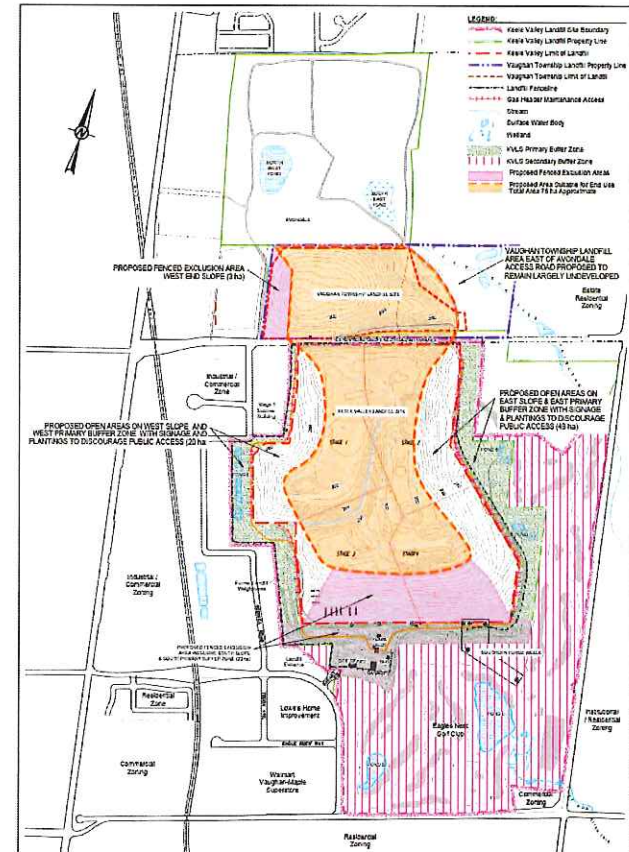
# Landfill Studies

## Opportunities

- KVLS and VTLS considered developable for active and passive recreation
- Public access possible within 5 years

## Constraints

- Restrictions based on stability of landfill
- Exclusion areas required for ongoing landfill operations and maintenance



## Summary of Technical Studies

- Low to moderate ecological constraints
- Generation of approx. 75ha (185 acres) of new developable active parkland on the Landfills
- Public access possible within 5 years





## Golf Canada

- Catalyst for unlocking the value of NMRP
- In the process of staff reorganization
- Immediate priority to secure other golf courses for Canadian Open 2019-2022
- Vaughan continues to be preferred option
- Resume discussions in 2018





# Market Assessments

## Sports Organizations

- Ontario Tennis
- Canada Soccer
- Rugby Ontario/ Rugby Canada
- Cricket Canada

## Opportunities

- Shared office space
- Indoor and outdoor facilities
- Stadium field
- Community programs



# Market Assessments

## RFI Respondents

- All previous RFI respondents contacted
- Reaffirmed interest in participating in all or a portion of North Maple Regional Park based on their original proposals
- Securing a Master Developer-BUILDER recommended moving forward





## Community Use and Alignment with ATMP

- Major City events
- Year-round indoor recreation space
- Cultural and performing arts opportunities
- Charity walks and major community and corporate gatherings
- Sports tourism and tournament venues
- Winter recreation
- Nature trails, hiking and biking, boardwalks and lookout areas



# Evergreen Foundation

- Early activation and engagement
- Programs for the community
- Connecting people with nature
- Understand the value of heritage
- Family experience





## Expanded Park Vision

- Central Village
- Activity Zone
- Sports Zones
- Adventure Zone
- Environmental Zone
- Restoration Zone

(drone video)



## Recommendations and Next Steps

1. Endorse Expanded Park Vision
2. Engage with Evergreen Foundation
3. Initiate discussions with City of Toronto
4. Negotiate with interested sports organizations
5. Meet with Federal and Provincial government
6. Retain Deloitte to complete business case activities

## Questions and Discussion

Item:



## Committee of the Whole (Working Session) Report

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**DATE:** Wednesday, March 07, 2018

**WARD(S):** 1

**TITLE:** North Maple Regional Park Phase 2 Due Diligence

**FROM:**

Jason Schmidt-Shoukri, Deputy City Manager, Planning and Growth Management  
Laura Mirabella, Chief Financial Officer and City Treasurer

**ACTION:** DECISION

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**Purpose**

To provide an update on the results of the Phase 2 due diligence for North Maple Regional Park (NMRP).

**Recommendations**

1. That Council endorse the expanded vision for NMRP and surrounding open space lands to guide future park planning, development and partnership opportunities for creating a world-class recreational and cultural destination;
2. That staff engage the Evergreen Foundation to assist in developing a strategy for implementing community engagement and cultural programs to support the NMRP vision;
3. That staff initiate discussions with the City of Toronto to identify requirements and timing for proposed park and recreational uses on the Keele Valley Landfill Site;
4. That staff negotiate with interested sports organizations to develop partnership structures that align with the expanded vision for NMRP;
5. That staff meet with Federal and Provincial government representatives to present the NMRP vision and to understand potential grant funding opportunities; and



6. That Deloitte LLP be retained to complete business case activities and assist in undertaking a procurement process to secure a Master Developer-Builder to implement all or a portion of the expanded park vision for NMRP to accelerate the delivery of additional community facilities and programs for Vaughan residents and visitors.

### **Report Highlights**

- Technical studies confirm the 900acre expanded park vision for NMRP is feasible, with recreation and park uses on landfills possible within 5 years
- Golf Canada's timing for finalizing a permanent home for the RBC Canadian Open has changed but Vaughan continues to be a preferred location
- Market assessments identify interest from a variety of sports organizations and potential partners for the North Maple Regional Park expanded vision
- NMRP is positioned to become a world-class venue for Vaughan residents and visitors and a special place where recreation, culture and nature meet

### **Background**

In April 2017 Council considered an unsolicited proposal from Golf Canada which identified the potential for an expanded park vision for NMRP and surrounding open space lands as a preferred location for the permanent home of the RBC Canadian Open golf championship and a destination park to establish a legacy of social, cultural and economic benefits for Vaughan residents and visitors.

The expanded park vision for NMRP involves the creation of a nationally significant public sports, recreation and cultural venue on approximately 364ha (900 acres) of publicly owned park and open space property including NMRP, adjacent wooded valley lands, the Vaughan Township Landfill Site (VTLS), and the Keele Valley Landfill Site (KVLS). A map of the park and open space areas is appended as Attachment 1.

To determine the true value and viability of the expanded park vision, staff were authorized to negotiate with Golf Canada and undertake a comprehensive due diligence assessment of the lands including an assessment of potential opportunities for private-sector partners and other sports organizations to assist implementation and delivery of services to the community.

### **Previous Reports/Authority**

[NORTH MAPLE REGIONAL PARK UPDATE AND AWARD OF TENDER T17-039 – PHASE 1 PARK DEVELOPMENT](#)

## **Analysis and Options**

Following the April 2017 Council meeting, staff initiated meetings with Golf Canada to advance negotiations and undertake a detailed review of their unsolicited proposal, and to conduct Phase 2 due diligence activities to confirm the feasibility, opportunities and constraints of the expanded park vision.

The following due diligence technical assessments of NMRP and surrounding open space lands were undertaken:

- Natural Heritage Opportunities and Constraints Study
  - Feasibility and Remedial Options Study - Vaughan Township Landfill Site (VTLS)
  - Feasibility and Remedial Options Study - Keele Valley Landfill Site (KVLS)\*
- \*completed in partnership with the City of Toronto

### ***Results of the Natural Heritage Studies indicate low to moderate ecological and environmental constraints for implementing the expanded park vision for NMRP and surrounding open space lands***

Groundwater Environmental Management Services Inc. (GEMS) was retained to prepare an ecological assessment of natural heritage features of NMRP, VTLS and adjacent wooded valley lands. An Executive Summary of the GEMS report is appended as Attachment 2.

Working in consultation with staff from the Toronto and Region Conservation Authority (TRCA) and Ministry of Natural Resources and Forestry (MNRF), the GEMS study field investigations included the following activities:

- Natural feature staking of existing wetlands
- Boundary confirmation of existing Area of Natural and Scientific Interest (ANSI) and Environmentally Significant Area (ESA) designated areas
- Amphibian surveys
- Headwater drainage assessment
- Vegetation surveys including Ecological Land Classification (ELC) assessment
- Breeding bird surveys
- Turtle surveys

Key findings and recommendations of the GEMS study identify opportunities to modify and enhance existing ecological features that may have been previously disturbed or constrained by invasive species, and opportunities to reduce required park development setbacks through the completion of additional Environmental Impact Studies.

Identified constraints primarily relate to the function and future proposed use of the existing pond and wetland features within NMRP. Further assessment is required in consultation with MNRF to determine if the pond and wetland features are provincially

significant, which would have specific requirements for the approval of park and facility development plans and public use of these areas.

Additional detailed environmental studies will be required to support proposed park implementation plans during the design and approvals stage of future projects.

***Results of the Landfill Feasibility Studies indicate that parks and recreation uses on the VTLS and KVLS are feasible with approximately 75ha (185acres) of new developable active parkland that can be created and public access to the landfills possible within 5 years***

Golder Associates Ltd. (Golder) was retained to carry out a technical assessment of the VTLS and KVLS to provide recommendations related to the feasibility of potential active and passive recreational uses on the landfills as proposed in the expanded park vision. An Executive Summary of the Golder reports are appended as Attachments 3 and 4.

Working in consultation with staff from the City of Toronto and Ministry of Environment and Climate Change (MOECC), the Golder scope of work included the following key activities:

- Review of historical documents, files and data systems
- Assessment of risks posed by opening landfill areas to the public
- Research into example sites where mitigation measures have been successfully applied to enable recreational development on closed landfills
- Determination of proposed approaches and/or modifications required to the sites including engineered control systems to facilitate proposed park uses
- Estimate of activities, timeframes and order of magnitude costs

The VTLS is a City-owned former landfill that was in operation from 1965 -1984 and collected an estimated 8 million cubic meters of solid non-hazardous municipal waste. Existing infrastructure includes a landfill gas (LFG) collection system along the south west corner of the site and ground and surface water monitoring wells located throughout the landfill. City of Vaughan staff are responsible for the operation and maintenance of the existing LFG system and all reporting requirements as per the current Environmental Compliance Approval with the MOECC. This includes groundwater, surface water and landfill gas monitoring, as well as assisting City of Toronto staff in the sampling of groundwater levels and reporting back to the regulatory agencies.

To accommodate public access on the VTLS Golder recommends the design and installation of improved landfill gas management and monitoring systems, amendments to the existing landfill cover, protection of existing monitoring infrastructure and equipment, and additional surface gas surveys completed and passed prior to submission of an end use plan to MOECC for an amendment to the current Environmental Compliance Approval for the site.

The KVLS is a former landfill that was in operation from 1983 - 2002 and collected an estimated 28 million tonnes of solid non-hazardous municipal and industrial waste. KVLS has been closed since 2002 and is owned and maintained by the City of Toronto. Existing infrastructure includes a LFG collection system, a leachate collection system as well as ground water and surface water monitoring wells. The current reduced levels of LFG have necessitated a change to the current landfill gas collection system.

For the KVLS, proposed active and passive recreation or golf course end uses would be possible as the end uses coincide with the existing 2006 Closure Plan already submitted to the MOECC. Based on the current conditions, modifications to the existing landfill infrastructure would be required and the amount of work would be dependent on the end use design. Major constraints on the KVLS are along the southern slope and southern portion of the landfill where the main leachate and LFG collection systems are located.

In summary, it is considered that the combined preparation of the VTLS and KVLS for proposed recreational end use scenarios will generate approximately 75ha (185 acres) of new developable active parkland which could be implemented within the next 3 to 5 years.

***Discussions with Golf Canada continue to be positive, however the timing for finalizing a permanent home for the RBC Canadian Open has changed***

In the summer of 2017 Golf Canada announced organizational changes including the appointment of new CEO Laurence Appelbaum. With Mr. Applebaum new to the organization and the future of the Glen Abbey Golf Club uncertain, Golf Canada's focus has recently shifted to a short-term priority of securing golf course venues to host the RBC Canadian Open for 2019 - 2021, resulting in a delay in advancing work on securing a permanent home.

Based on this, a detailed assessment of the Golf Canada proposal has not yet been completed. It is anticipated that discussions with Golf Canada on the permanent home will resume in 2018, and staff have been advised in the preparation of this report that Vaughan continues to be a preferred location since it provides many positive attributes that align with Golf Canada's vision for the future of the Open and their headquarters.

Notwithstanding these changes, the Golf Canada proposal initiated a process that has begun unlocking the value of NMRP and surrounding open space lands to assist in maximizing the City's vision of greater public use of the lands that will transform the former landfills and create a positive legacy for our citizens and leave a heritage for generations to come.

***The expanded park vision for NMRP aligns with City of Vaughan community needs and trends identified in the City's Active Together Master Plan***



Phase 1 development at NMRP is currently underway and on-schedule to open the park to the public in Summer 2018. The completion of Phase 1 facilities aligns with the expanded park vision, and having two high-quality turf soccer fields is a distinct advantage and catalyst for Phase 2 development and the potential partnership opportunities that are emerging.

The expanded park vision and use of the landfills and surrounding open space lands aligns with the City's Active Together Master Plan and will provide additional lands for an abundance of parks, recreation, community programs and events including, but not limited to:

- Major City events including Concerts in the Park, Winterfest, Canada Day
- Year-round indoor recreation space and training facilities for all levels, ages and abilities
- Cultural and performing arts opportunities
- Charity walks and major community and corporate gatherings
- Sports tourism and tournament venues
- Winter recreation including ice skating, tobogganing, snow tubing and cross-country skiing
- Natural trails, hiking and biking paths, boardwalks and lookout areas

Leveraging high performance sports facilities and partnership funding will greatly assist the City in providing community facilities and programs that align with the ATMP and help deliver many in-demand programs to the community.

***Market assessments and respondent consultations by Deloitte identify interest from a variety of sports organizations and potential partners for the North Maple Regional Park expanded vision***

Concurrent with the completion of the due diligence technical studies, Deloitte LLP (Deloitte) was retained to assist in assessing potential partners for Phase 2 development at NMRP. The primary purpose of this work is to consider the results of the previous Request for Information submissions and an assessment of potential opportunities for private-sector partners and other sports organizations to assist the implementation and delivery of services to the community. An Executive Summary of the Deloitte study is appended as Attachment 5.

Over the course of several months Deloitte conducted over 15 interviews with potential partners and sports groups based on the following key objectives:

- Developments must be aligned with the City's vision of providing park facilities for active and passive uses, for all levels of ability, age and interests, and be sensitive to the natural environment

- Capable of helping establish a year-round destination site for a variety of sports, recreational and cultural uses
- Reduce the financial burden to the City in terms of total project capital, operating and lifecycle costs, while minimizing the City's exposure to market risk associated with revenue generation

Based on the initial round of interviews a range of interests emerged including groups with interest in leasing NMRP land for Sports Centre of Excellence and/or co-locating head offices dedicated to Amateur Sport, interest in renting facilities for hosting events and interest in acquiring land for development opportunities. There were also a number of groups that confirmed they had no interest in potential opportunities at NMRP at this time.

Following the first round of market consultations Deloitte assessed each opportunity against the project objectives and identified the following short-list recommended for further assessment and more detailed discussion with City staff. Follow-up consultation meetings were arranged and a questionnaire was completed by each organization to identify specific facility requirements of the various organizations. Key highlights are as follows:

Organization	Areas of Interest
Ontario Tennis	<ul style="list-style-type: none"> <li>• Provincial headquarters and training centre</li> <li>• Office space</li> <li>• Indoor and outdoor courts</li> <li>• High performance training facilities</li> <li>• Community use access to facilities and programs</li> </ul>
Canada Soccer	<ul style="list-style-type: none"> <li>• Regional training centre</li> <li>• Office space</li> <li>• Potential FIFA World Cup 2026 Base Camp</li> <li>• Indoor and outdoor fields</li> <li>• High performance training facilities</li> <li>• Stadium field</li> <li>• Community use facilities and programs</li> </ul>
Rugby Ontario/Rugby Canada	<ul style="list-style-type: none"> <li>• Regional centre of excellence and headquarters</li> <li>• Office space</li> <li>• Indoor and outdoor fields</li> <li>• High performance training facilities</li> <li>• Stadium field</li> <li>• Community use facilities and programs</li> </ul>

Cricket Canada	<ul style="list-style-type: none"> <li>• National headquarters</li> <li>• Office space</li> <li>• Outdoor fields</li> <li>• Stadium field for international competitive play</li> <li>• High performance training facilities</li> <li>• Community use facilities and programs</li> </ul>
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Recommended next steps for moving forward with exploring partnership opportunities with the various sports organizations based on the above assessment include advancing negotiations and due diligence activities with Ontario Tennis, Rugby Ontario/Rugby Canada and Canada Soccer to confirm their interest. It is also recommended that staff meet with the Federal Government and Ontario Ministry of Tourism, Culture and Sport to present the NMRP vision and concept of multiple sports organizations in a co-location and shared-use arrangement and seek potential funding opportunities

***Follow-up consultations with previous RFI respondents confirm continued interest from these groups in partnering with the City to deliver the NMRP vision***

As directed by Council, each of the previous RFI respondents were contacted by Deloitte to overview the expanded vision for NMRP and to confirm their level of continued interest in partnering with the City on this exciting project. The summary of each of these discussions was positive, with all four respondents reaffirming their interest in participating in all or a portion of the NMRP project based on their original submissions, with a caveat that they would need to review their original submissions and any new information or factors to consider based on the emerging expanded park vision.

Based on the reaffirmed interest of the RFI Respondents and the common elements identified by the various sports organizations for potential partnership with the City, it is recommended that business case activities (i.e. delivery model assessment, risk assessment, financial analysis, etc.) and a procurement process be undertaken to secure a Master Developer-Builder to help implement all or a portion of the expanded park vision for NMRP to accelerate the delivery of community facilities and programs for Vaughan residents and visitors.

***The Evergreen Brick Works is an excellent example of how strategically positioning public sector and private sector partnerships can act a catalyst for delivering exciting destination recreation and cultural facilities and programs to the community***

In November 2017, the Chief Financial Officer & City Treasurer and the Director of Parks Development were invited to attend a site tour of the Evergreen Brick Works and

meeting with Evergreen Foundation (Evergreen) staff to discuss their experiences in transforming an underutilized public asset into a thriving, nationally significant destination site that is financially sustainable through the establishment of community and business partnerships with both public and private sector organizations.

Evergreen staff were very proud to advise that the Evergreen Brick Works, a high profile, multi-phased capital project, achieved operational financial sustainability early in the process of being opened to the public. Evergreen attributed the key to their success as being the connections they made with the local and greater community early during implementation of the project and the use of an extensive community engagement, consultation and partnership program to generate awareness and stimulate interest in the project.

Evergreen's mission is to enable flourishing cities with a vision to connect people, natural and built worlds. In January and February 2018 staff and Evergreen continued discussion on how to develop opportunities to engage the Vaughan community and generate excitement and interest in NMRP. Evergreen has the expertise and interest in assisting the City in the areas of visioning, partnership development, site program development and interpretation, social enterprise and citizen engagement.

As a result of these discussions staff recommend engaging Evergreen to leverage their experiences, skills and network of resources to assist Vaughan in developing and implementing a creative community-based process to support and activate the expanded vision for NMRP.

## **Financial Impact**

Cost estimates for implementation of the expanded park vision for NMRP are highly variable and will depend on the quantity and types of facilities and programs to be developed. Cost estimates will form a necessary part of the next phases of concept design and park planning.

Order of magnitude costing for the preparation of the VTLS for passive and active recreational uses is estimated to be in the range of \$1.2M to \$3.6M. Order of magnitude costing for the KVLS is estimated to be in the range of \$1M to \$2M for active and passive park uses, and as high as \$5M to \$6M for preparations required to support a championship golf course. These costs will be further reviewed and detailed as part of the concept design and park planning phases.

Project management resources will continue to be required to assist staff in advancing this significant priority City initiative. Costs to provide internal and external (consulting) support would be funded from existing capital projects and accommodated within approved budgets or included in future budget submissions.



Partnership opportunities and revenue from anticipated small-scale and large-scale events and programs will assist in achieving the City's goal of reducing overall capital and operating costs for NMRP which will continue to be a key objective for this project.

### **Broader Regional Impacts/Considerations**

Completion of the NMRP project will require continued discussion and coordinating with a variety of external agencies and stakeholders including York Region, TRCA, City of Toronto, MOECC and MNR.

York Region is currently undertaking an Individual Environmental Assessment for Teston Road between Keele Street and Bathurst Street, including the unopened section between Keele Street and Dufferin Street. This study is in the early stages making it an ideal time to closely coordinate the City's vision for NMRP with York Region's plans for transportation network improvements.

### **Conclusion**

Results of Phase 2 Due Diligence investigations and technical studies confirm the feasibility of implementing the 900-acre expanded vision for NMRP. A variety of facility development and programming opportunities are available to the City that will establish NMRP as a signature destination site for Vaughan residents and visitors.

In addition, a variety of interest in the NMRP project continues to be expressed by potential partners including national and provincial sports organizations, local community groups and previous RFI respondents. Based on the results of these comprehensive studies it is recommended that the expanded park vision be endorsed and that business case activities and procurement processes be undertaken to secure partners to assist the City in implementing park facility development, programming and activation to help unlock the true value of these lands.

The City's vision of greater public use of NMRP, landfills and adjacent open space lands will create a positive legacy for our citizens and leave a heritage for generations to come.

**For more information**, please contact: Jamie Bronsema, Director of Parks Development, ext. 8858

### **Attachments**

1. Map of North Maple Regional Park and Surrounding Open Space Lands
2. Natural Heritage Opportunities and Constraints Study – Executive Summary, Groundwater Environmental Management Services Inc., January 23, 2018
3. Feasibility and Remedial Options Study Vaughan Township Landfill Site End Use – Executive Summary, Golder Associates, January 2018

4. Feasibility and Remedial Options Study Keele Valley Landfill Site End Use – Executive Summary, Golder Associates, January 2018
5. North Maple Regional Park Sports and Culture Centre of Excellence Market Sounding – Executive Summary, Deloitte LLP, February 2018

**Prepared by**

Jamie Bronsema, Director of Parks Development, ext. 8858









# **Natural Heritage Opportunities and Constraints Study North Maple Regional Park, Vaughan, ON**

## **EXECUTIVE SUMMARY**

### **Prepared for:**

City of Vaughan  
Parks Development Department  
2141 Major Mackenzie Drive  
Vaughan, ON L6A 1T1

### **Prepared by:**

Groundwater Environmental Management Services Inc.  
8800 Dufferin Street, Suite 303  
Concord, ON. L4K 0C5

**January 23, 2018**

**Ref #: 17-17758**





## Natural Heritage Opportunities and Constraints

### EXECUTIVE SUMMARY

#### Objectives and Scope of Work

Groundwater Environmental Management Services Inc. (GEMS) was retained by the City of Vaughan (COV) through the Parks Development Department to prepare an ecological assessment of the natural heritage features for the proposed recreational development occurring within North Maple Regional Park and surrounding Open Space Lands (the “Site”). The Study aimed to identify the existing natural heritage-related constraints and opportunities for future park development plans.

Along the eastern side of the Site is a wooded “Core Feature” area with hydrological features. This area also contains the following natural heritage designations: Area of Natural and Scientific Interest (ANSI – “Maple Uplands and Kettle Wetlands”), Environmentally Significant Area (ESA – “McGill Area”), and wetlands. The Site falls within the regulatory jurisdiction and planning policies of the City of Vaughan, Regional Municipality of York, Toronto and Region Conservation Authority (TRCA), Oak Ridges Moraine Conservation Plan, the Ministry of the Environment and Climate Change, and the Ministry of Natural Resources and Forestry (MNRF).

Prior to development plans an Environmental Impact Study (EIS) will be required which will also cover the need for a Natural Heritage Evaluation and ORMCP conformity statement. Depending on the development plans a Notice of Activity/Overall Benefits Permit may be required for species at risk throughout the site.

The following field investigations were completed to determine the constraints and opportunities:

- Feature staking – including wetlands and the ANSI
- Amphibian Surveys
- Headwater Drainage Assessment
- Vegetation Surveys/Ecological Land Classification
- Breeding Bird Surveys
- Turtle Surveys

The area of the Site falls within the regulatory jurisdiction and planning policies of the City of Vaughan, Regional Municipality of York, (York Region), Toronto and Region Conservation Authority (TRCA), Oak Ridges Moraine Conservation Plan, the Ministry of the Environment and Climate Change (MOECC), and the Ministry of Natural Resources and Forestry (MNRF). Relevant policies and legislation to natural heritage for the area that requires consideration includes:

- Federal Fisheries Act
- Species at Risk Legislation
- Invasive Species Act
- Provincial Policy Statement
- Toronto And Region Conservation Authority
- Oak Ridges Moraine Conservation Plan



## Natural Heritage Opportunities and Constraints

- York Region
- City of Vaughan

### Landscape Context

The total Site investigated comprises an area of approximately 500 acres. The Site is located in the City of Vaughan, in the province of Ontario, Canada and encompasses lands of the former Avondale Lands (historical borrow pit and composting facility), the VTFL and the adjacent Oak Ridges Moraine Core Valley Feature (lands immediately adjacent to a tributary of the East Don River), and other surrounding adjoining lands. The lands include rolling terrain associated with both the Oak Ridges Moraine and the grading/fill activities associated with both closed landfill sites. Based on current aerial photography more than 80% shows signs of disturbance.

The Site is located within two physiographic regions. The southeastern portion of the site is located within the Oak Ridges Moraine, while the northwest portion is located within the South Slope physiographic region (Google Earth, 2017; Chapman and Putnam, 2007). Surficial geology of the Site comprises of ice-contact stratified deposits containing sand, gravel, minor silt, clay and till, as well as clay to silt-textured till derived from glaciolacustrine deposits or shale (OGS Earth, 2011). Topography on the Site is highly variable, ranging from 270 m above sea level (masl) to 307 masl, with elevations generally sloping from west to east and northwest to southeast (Google Earth, 2017; Natural Resources Canada, n.d.).

Groundwater generally flows in north and southeasterly directions with discharge noted as being into the existing pond on Site and adjacent East Don River. Groundwater depths throughout the site were reported as ranging between 0.81 and 23.47 metres below ground surface.

Several water features exist throughout the Site. Those assessed preliminarily by GEMS include the unevaluated wetlands located on the northwest section of the Site in the North Maple Regional Park, and a tributary associated with the East Don River, located along the eastern side of the Site within the wooded Core Feature. Based on verbal communication with MNRF these wetlands will need be evaluated to determine their actual significance however with lack of an evaluation they must be treated as provincially significant. GEMS is of the opinion that a formal evaluation of all wetland pockets associated with the North Maple Park lands should be completed in conjunction with an Environmental Impact Study to potentially reduce the restrictions on these wetlands.

### Species of Conservation Concern

Through correspondence with MNRF, background information review and various database searches the following Species at Risk (SAR) are known to occur within the vicinity of the Site:

- Butternut (endangered)
- Bobolink (threatened)
- Wood Thrush (special concern)
- Eastern Wood-pewee (special concern)



## Natural Heritage Opportunities and Constraints

- Redside Dace (endangered)
- Snapping Turtle (special concern)
- Painted Skimmer (provincially rare)
- Brush-tipped Emerald (S3/S4)
- Eastern Amberwing (S3/S4)
- Shining-branch Hawthorn (S3/S4)
- Scarlet Beebalm (S3/S4)
- Midland Clubtail (S3/S4)
- Red-shouldered Hawk (S3/S4)
- Eastern Meadowlark (threatened)
- Barn Swallow (threatened)
- Jefferson Salamander (endangered)
- Milksnake (special concern)
- Western Chorus Frog (threatened)
- Eastern Ribbonsnake (special concern)
- Northern Map Turtle (special concern)

### Biophysical Inventory

In order to provide a biophysical inventory for the Site, a series of field investigations was conducted throughout May to August 2017. These investigations were conducted using the following methods and protocols:

- Assessment of headwater drainage feature/watercourse in general accordance with the Ontario stream Assessment Protocol, OSAP (Stanfield, 2013);
- Woodland, wetland, and valley staking in general accordance with Ontario Wetland Evaluation System (OWES) and the TRCA staking guidelines;
- Herpetofauna surveys and trapping in general accordance with the Marsh Monitoring Protocol;
- Breeding bird surveys in accordance with the Ontario Breeding Bird Atlas; and
- Vegetation Inventory and Ecological Land Classification in general accordance with Lee et al (1998).

The boundaries of the valley lands (ANSI feature) located along and east adjacent to the Site were staked by TRCA in accompaniment with GEMS and City staff on June 27, 2017. The boundary of the ANSI was identified as the outer dripline of vegetation, in accordance with the *TRCA Field Staking Protocol* (December 2016). The boundaries of the existing cattail marsh and open water pond features on Site were staked by MNR, in accompaniment by GEMS, on June 14, 2017. The boundaries were delineated in accordance with OWES protocols (MNR, 2016).

Vegetation Communities throughout the Site are shown on report Figure 2 and include:

- Cultural meadow (CUM1-1)
- Cattail Mineral Shallow Marsh (MAS2-1)



## Natural Heritage Opportunities and Constraints

- Willow dominated thicket (SWT2-2),
- Woodland dominated by Manitoba maple (WODM5-3)
- Open Aquatic Pond (OAO)
- Dry - Fresh Sugar Maple Deciduous Forest (FOD5-1)
- Buckthorn Deciduous Shrub Thicket (THDM2-6)
- Dry - Fresh Sugar Maple – Hemlock Mixed Forest (FOM3-2)
- Dry-Fresh White Pine – Maple – Oak Mixed Forest Ecosite (FOM2)
- Willow Mineral Thicket Swamp (SWT2-2)

Wildlife noted during the investigations (survey locations illustrated on report Figure 3) included:

- 28 non-SAR avian species; 3 SAR:
  - Bobolink
  - Eastern Meadowlark
  - Barn Swallow
- Spring Peeper
- Gray Treefrog
- Green Frog
- Wood Frog
- Midland Painted Turtle
- Dekay's Brownsnake
- Gartersnake
- Grey Squirrel
- Chipmunk
- Monarch

## Conclusions

Based on the results of GEMS' 2017 field inventories, it is recommended that compliance with applicable policies related to the following topics be specifically addressed (but not limited to):

- Retention of the ecological function and integrity of significant existing natural heritage features (i.e. valley lands/ANSI, delineated on-Site wetland communities). Such implemented protection measures may be in the forms appropriate development setbacks and/or feature restoration/compensation.
- Mitigation of habitat (i.e. compensation), and proper authorization for proposed works within confirmed SAR habitat.

The following development setbacks are required from the identified natural heritage features however there is potential for them to be reduced through the completion of an EIS when the development plans have been established:

- Valley Corridor/ANSI – 30 m
- Wetlands – 30 m





## Natural Heritage Opportunities and Constraints

### Opportunities and Constraints

Opportunities and constraints are illustrated on Figure 4 and are outlined below.

#### Areas of Low Constraint - lower sensitivity and provide the highest potential for opportunity

- The majority of the investigated area.
- A disturbed clearing along the northeast edge of the property. GEMS is of the opinion that due to the large number of invasive species, open canopy and thicket community there is opportunity to include this area as part of the recreational development plans for the park vision.
- Along the eastern edge of the ANSI there is a large number of black locust, buckthorn and fruit trees that are invasive to the area which could provide opportunity for removal and edge protection of the ANSI community.

#### Areas of Low to Moderate Constraint - areas which require further information to determine the degree of opportunity available

- Vegetated pockets along the roadway that were included based on continuity and separation distance from the ANSI. Through further field investigations it was noted that these communities have anthropogenic disturbances and are not composed of the same vegetation communities.

#### Areas of Moderate Constraint - areas which pose limited opportunities which would likely require a greater level of compensation if modified

- The location immediately surrounding the low constrained community to the northeast also has some disturbance within the tableland area and currently acts as a natural buffer from the more heavily disturbed area to the south and east adjacent ANSI. This area is considered an opportunity for enhancement and restoration through plantings and removal of the few invasive species noted during the field investigations.
- A small edge along the north of the cultural meadow which borders the ANSI that is a heavy edge of sumac.

#### Areas of High Constraint - areas that are not to be used as opportunities and should provide a level of protection (further investigation would determine the amount of setback required)

- Over 90% of the ANSI. This area provides only minimal opportunity for recreational trail use which must be completed in consultation with TRCA.

#### Areas of Low/High - areas which require a more detailed level of investigation to determine if protection is required or if modification and development is an opportunity

- At this time GEMS cannot provide either an opportunity nor constraint for the staked wetlands/ponds on Site, however, GEMS is of the opinion that the open water wetland does not provide significant habitat beyond the painted turtle community and recreational use should be supported.



## EXECUTIVE SUMMARY

# FEASIBILITY AND REMEDIAL OPTIONS STUDY VAUGHAN TOWNSHIP LANDFILL SITE END USE

**Prepared for :**  
City of Vaughan

**Prepared by :**  
Golder Associates

1785292



## Feasibility and Remedial Options Study – Vaughan Township Landfill Site End Use

### Executive Summary

*The Executive Summary highlights the key points from this report. For complete information and findings, as well as the Limitations provided in Section 9.0 of the report, it is necessary for the reader to examine the complete report.*

Golder Associates Ltd. (Golder), assisted by GHD Limited, was retained by the City of Vaughan (Vaughan) to carry out a technical assessment of the closed Vaughan Township Landfill Site (VTLS) as related to the feasibility of potential recreational end uses on the VTLS that are being considered by Vaughan. The purpose of the study was to:

- Assess the risks posed by the landfill to the public based on public access as part of end use of the landfill in its current post-closure state.
- Determine the most applicable approaches and/or modifications to the site and its engineered control systems that could be feasibly undertaken to make all or portions of the VTLS property safe for a variety of public end uses, and preferably also reduce the time period until such an acceptable condition could be expected to be achieved at the VTLS.
- Describe the anticipated activities, timeframes and estimates of probable costs to prepare the VTLS for the proposed public end uses, to serve as a basis for decision-making by Vaughan on end uses to be pursued further.

The VTLS is owned and operated by the City of Vaughan and regulated by the Province of Ontario under a Certificate of Approval (CofA). The City has not yet submitted a Closure Plan for the site, which is a requirement usually completed two years prior to closure, or soon after. This document also typically includes long term monitoring and maintenance plan conforming with the planned end use.

The VTLS, together with the Vaughan-owned Avondale Lands to the north and the City of Toronto (Toronto)-owned closed Keele Valley Landfill Site (KVLS) to the south, and some smaller adjoining parcels of land, comprise a total area of some 360 hectares (900 acres) of land known as the North Maple Regional Park (NMRP). To assist Vaughan in integrating the VTLS into their overall planning for the NMRP, this study considered two alternative recreational end use scenarios on the closed VTLS: (i) Passive (system of walking and biking trail systems, natural restoration and open areas) and Active (i.e., sports fields) Recreation; and (ii) Golf Canada Proposal, which at this time does not have a proposed course layout plan. Small buildings for washrooms and maintenance that would be engineered for compatibility with their placement on a landfill may be considered within the landfill footprint. Buildings outside of this footprint will also require engineering measures to account for the presence of landfill gas (LFG) in the subsurface.

It is noted that the Golder team has also been retained by Vaughan and Toronto to undertake a similar feasibility study for implementation of end uses on the adjacent closed KVLS. This report should be read in conjunction with the companion report on the KVLS.

There are many closed landfills in Canada and the United States that have been successfully redeveloped for a range of recreational end uses, incorporating the required engineered control measures and design approaches to achieve an acceptable level of risk to allow public access.

## Feasibility and Remedial Options Study – Vaughan Township Landfill Site End Use

### ***Landfill Site Background***

The VTLS is located within a former sand pit and was used for solid non-hazardous waste disposal between 1965 and 1984. The overall VTLS property covers about 40 hectares on the north side of the unopened Teston Road allowance; the former disposal area is interpreted to occupy some 28 hectares of the overall property. The waste was placed directly in the former sand pit without a bottom liner or leachate collection system. Based on the available historical information, supplemented by a site topographic survey and a subsurface investigation of the final cover of the landfill, it is interpreted that the waste is typically 20 to 23 metres thick, decreasing to about 15 metres thick towards the east and west ends. An engineered compacted clayey soil final cover was placed over the landfill in 1996/97, and is underlain by a variable thickness of clayey soil; the total thickness of soil material above the waste ranges from at least 1.5 to 2 metres, to greater than 6 metres in some localized areas.

Leachate from the VTLS enters the groundwater and the leachate-impacted groundwater plume flows southward beneath the KVLS. To control this plume, Toronto operates the Teston Road Purge Well System (TPWS) along the south central limit of the VTLS; they also operate the Southern Purge Well System (SPWS) at the south end of the KVLS to control this groundwater impact; in future, the SPWS is predicted to be required to control impacts on groundwater from the KVLS. The pumped groundwater is discharged to the sanitary sewer system. It is predicted that these two engineered groundwater control systems will have to continue to operate until at least 2040 (TPWS) and 200 years from present (SPWS). There is also a system of landfill gas (LFG) wells along a limited length of the southwest perimeter of the VTLS to control off-site migration of LFG in the subsurface; the collected gas is flared at a plant located immediately west of the TPWS. Groundwater and gas monitoring wells have been installed and are monitored to assess the post-closure performance of the VTLS. The required continued operation of these engineered systems and monitoring programs was considered in the evaluation of VTLS public end uses.

### ***Regulatory Requirements for End Use Implementation***

At a consultation meeting with the Ministry of the Environment and Climate Change (Ministry, or MOECC) to discuss and confirm the approvals requirements for implementing an end use plan for the VTLS, the Ministry indicated that the implementation of the proposed end use will require submission of an application for the amendment of the CofA including a Closure and End Use Plan report, supported by technical documents that: i) describe the proposed end use; ii) present the proposed modifications to VTLS infrastructure; iii) demonstrate that the site can perform acceptably in terms of environmental effects; and iv) show that allowing public access to the VTLS poses an acceptable level of risk.

### ***Risks Posed to the Public Based on Public End Use of the VTLS in its Current State***

In addition to potential physical risks to the public posed by the relatively steep landfill sideslopes and access to the existing above ground infrastructure, the largest potential risk was identified as potential exposure to LFG emissions through the landfill cover. This risk was identified using a preliminary assessment of potential risks was completed considering the results of the one available July 2017 survey of surface emissions of gas across the VTLS. This survey indicated that at a number of points almost entirely in the western part of the VTLS, elevated LFG concentrations are being released. The potential human health risks are related to chemical constituents that are typically present in LFG emissions.



## Feasibility and Remedial Options Study – Vaughan Township Landfill Site End Use

### ***Proposed Mitigation Measures***

There are numerous examples of where mitigation measures have been successfully applied to both expedite and enable recreational (and other) end use development at a closed municipal solid waste landfill. A review of approaches taken at other sites in North America was undertaken and those that were considered most applicable to the VTLS were identified.

A range of possible approaches that could be used to make the closed VTLS acceptable for public access for the proposed end use scenarios was considered and those approaches relevant to the VTLS were identified. Following implementation of mitigation measures, the proposed end uses are considered to generally be technically feasible and it is anticipated that Ministry approval is likely to be received. In terms of the sports field component to the passive / active end use scenario, there are constraints on the feasibility due to the absence of large enough areas of relatively flat ground, and the expected ongoing total and differential settlement of the underlying decomposing waste for many years disrupting the field grades/drainage and requiring considerable ongoing maintenance and revegetation. It is anticipated that approximately two years would be required to complete the technical studies and application to the Ministry and obtain approvals for a Closure and End Use Plan that incorporates the preferred end use plan through an amendment to the VTLS CofA.

For this feasibility assessment, mitigation measures that are applicable to both the proposed passive & active recreation and golf course end use concepts are:

- Delineation of exclusion areas – fencing of the west sideslope landfill area; and fencing of the Teston Purge Well System (TPWS) for the passive and active recreation end use only;
- Extension of the existing compacted clayey soil final cover over the 1.5 to 2 ha area in the northeast part of the landfill, and some flattening of the existing north, northeast and southwest sideslopes;
- Installation of additional landfill gas collection system (vertical gas extraction wells) across a portion of the 28 ha VTLS waste disposal footprint to control LFG emissions through the existing final cover, as well as a new flare and blower in the southwest corner of the VTLS and decommissioning of the existing LFG control compound. The need for this new gas control system is based on a Qualitative Risk Assessment approach using limited information on LFG emissions through the final cover and assumptions on typical constituent compounds contained within the LFG. Whereas additional emissions surveys and more site-specific analyses may determine that measures to allow public access are less than proposed herein, for purposes of decision-making by Vaughan at this time and responding to Golf Canada, it is considered that Vaughan should be prepared to make provision in their evaluation for either (i) restricting public access to the western portion of the VTLS and thereby reducing the available land area, or (ii) carrying out work to maximize the available land area that includes the possibility of having to install an extended LFG collection system (including vertical wells, blower and flare). It is also noted that allowing continued LFG emissions through the cover is expected to distress or kill the vegetation cover, creating maintenance issues for passive areas and sports fields, and possibly an unacceptable situation for golf courses that require immaculate and specialized grass cover.
- Protection/securing of the existing southwest perimeter LFG collection system, and connection to the new flare.

Additional mitigation measures that are more applicable to the golf course proposal alone are:

## Feasibility and Remedial Options Study – Vaughan Township Landfill Site End Use

- Pre-loading of the landfill surface – used to permanently improve the mechanical behavior of the underlying waste by compressing and densifying the waste materials. This in-turn increases the bearing capacity and reduces the amount of settlement under the end use loading. Pre-loading is appropriate in key areas of proposed grade raises to be achieved by placing soil fill, such as raised tee-off areas and greens, access roads, parking areas and small structures (e.g., washrooms and maintenance buildings);
- Modifications to the landfill final cover – if it is necessary to remove the final cover, for example when trenching for irrigation piping and utilities, the final cover is to be reinstated. The final cover may also need to be augmented with a lining system beneath pond features and drainage swales to prevent excess infiltration from these golf course features into the underlying waste;
- Modifications to the landfill surface grades – the current top surface grades may need to be modified to provide more character and challenge for the golf facility. To continue to have an effective final cover, and in conjunction with planning and design of the various end use features, it is recommended that grades be raised by filling above the existing ground surface rather than by excavating and lowering the grade. Furthermore, grades should not be flatter than 2% to accommodate differential settlement of the waste while maintaining positive drainage; and,
- Alteration of the Teston Road Purge Well System – this may include relocating portions of the system including to the south onto the KVLS to accommodate infilling of the valley between the KVLS and VTLS, including the section of the unopened Teston Road allowance between the two landfill sites, and create a contiguous useable area incorporating both sites. This mitigation measure would require a testing program to demonstrate that the relocated purge well system would be similarly effective in controlling the leachate plume from the VTLS, and require approval of Toronto and the Ministry. Because the operation of this purge well system is a requirement of the KVLS approvals, it is considered that this work would be carried out as part of remedial activities related to the KVLS.

Pre-loading of the landfill surface, modifications to the final cover where required by the end use design and modifications to the landfill surface grades would not be carried out as part of end use preparation, but rather as part of the end use development based on the final design. The other significant modification during preparation would be the potential relocation of the TPWS, which would be carried out as part of remedial activities at the KVLS.

It is considered that preparation of the VTLS (and KVLS) for the proposed end use scenarios could be completed within the next 3 to 5 years.

In general, the proposed end use development on the VTLS would occur west of the Avondale Access Road. If no additional LFG infrastructure is provided to control gas emissions through the landfill cover, it is estimated that only the east half (approximately 12 to 15 ha) of the VTLS may be available for public access, pending confirmation through additional surface emission surveys and assessment of associated risk to the public that the emission levels are low enough in this eastern part of the site. The total preliminary estimate of probable capital costs associated with the preparation of the VTLS for the passive and active recreational end use is of the order of \$970,000 to \$1,200,000.

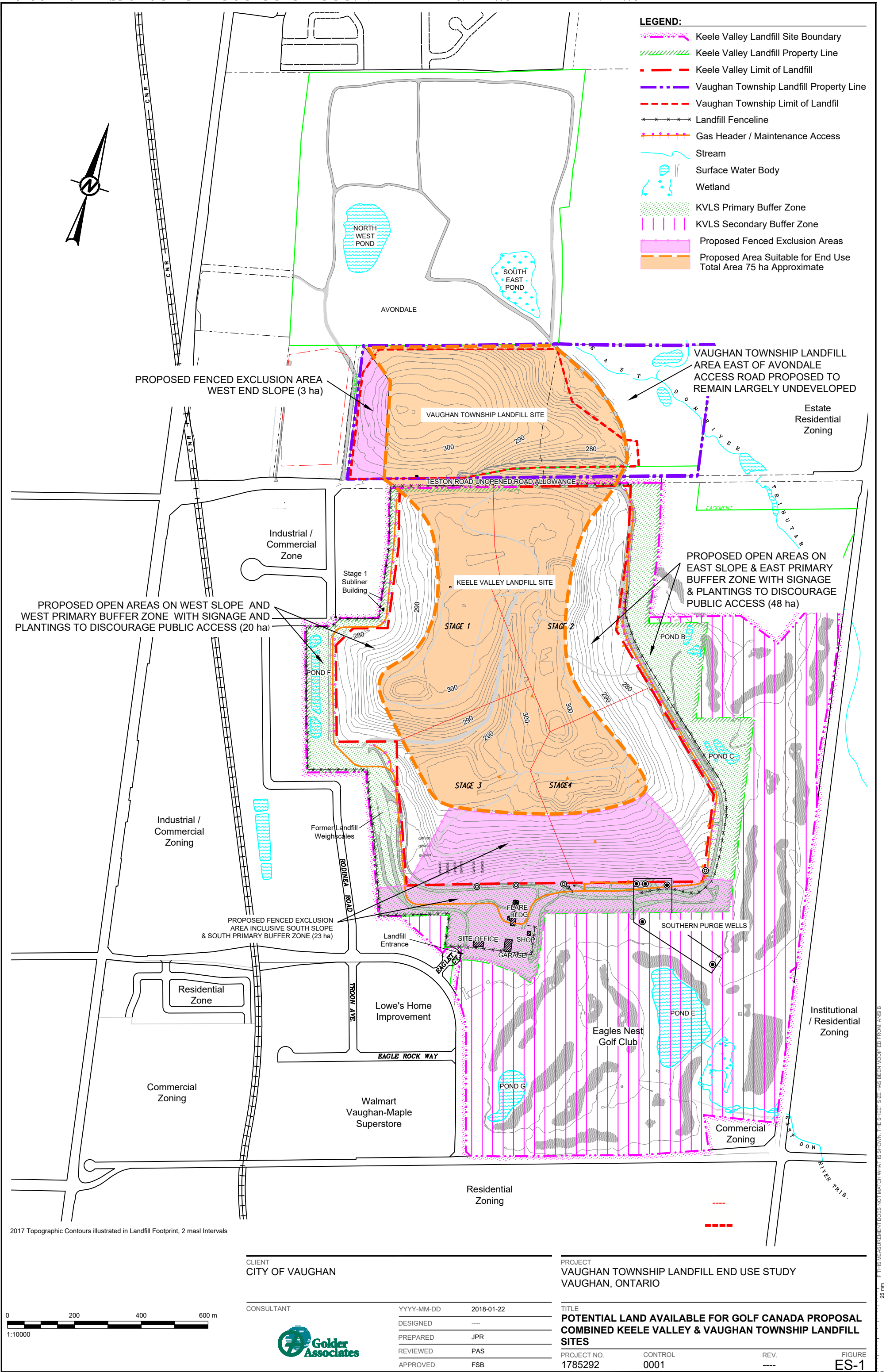
If additional LFG controls are provided for either the passive and active recreational or Golf Canada end uses, it is anticipated that much of the VTLS (24 to 25 ha) could be made available for public access. The total preliminary estimate of probable capital costs associated with the preparation of the VTLS under this scenario is of the order of \$3,000,000 to \$3,650,000.

## Feasibility and Remedial Options Study – Vaughan Township Landfill Site End Use

### ***Recommended Useable Area for End Use of the VTLS***

Following implementation/construction of the proposed mitigation measures, and with provision of additional landfill gas infrastructure, it is anticipated that the useable area for end use at the VTLS could comprise all of the VTLS except for the west end slope, covering an area of approximately 25 ha (60 acres). If this area is made contiguous with the recommended useable end use area of approximately 48 ha (117 acres) at the KVLS by infilling the valley between the two sites the overall useable area for both end use concepts would be approximately 75 ha (185 acres). The combined area is illustrated on **Figure ES-1**.

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## EXECUTIVE SUMMARY

# FEASIBILITY AND REMEDIAL OPTIONS STUDY KEELE VALLEY LANDFILL SITE END USE

**Prepared for :**  
City of Vaughan  
And  
City of Toronto

**Prepared by :**  
Golder Associates

1785340



## Feasibility and Remedial Options Study – Keele Valley Landfill Site End Use

### EXECUTIVE SUMMARY

*This Executive Summary highlights the key points from this report. For complete information and findings, as well as the Limitations provided in Section 9.0 of the report, it is necessary for the reader to examine the complete report.*

#### **Study Objectives and Scope**

Golder Associates Ltd. (Golder), assisted by GHD Limited, was retained by the City of Vaughan (Vaughan) and the City of Toronto (Toronto) to carry out a technical assessment of the closed Keele Valley Landfill Site (KVLS) as related to the feasibility of potential recreational end uses that are being considered by the City of Vaughan as part of their long term planning process.

The closed KVLS is located within the City of Vaughan, between Keele and Dufferin Streets and immediately south of the Teston Road right-of-way. To the north of the KVLS are the closed Vaughan Township Landfill Site (VTLS) and the Avondale Lands, both owned by Vaughan. Together, the KVLS, VTLS, Avondale Lands and some smaller adjoining land parcels, comprise a total area of some 360 hectares (900 acres) of land known as the integrated North Maple Regional Park vision plan.

The KVLS is owned and operated by the City of Toronto and regulated by the Province of Ontario under a Certificate of Approval. The City of Toronto is therefore a key stakeholder in the end use(s) proposed by Vaughan for the KVLS and will continue to be responsible for the post-closure operations and performance.

To assist Vaughan in integrating the KVLS into their overall planning for the NMRP, this study considered two alternative recreational end use scenarios on the closed KVLS: (i) Passive (system of walking and biking trail systems, natural restoration and open areas) and Active (i.e., sports fields) Recreation; and (ii) Golf Canada Proposal, which at this time does not have a proposed course layout plan. Small buildings for washrooms and maintenance that would be engineered for compatibility with their placement on a landfill may be considered within the landfill footprint. Buildings outside of this footprint will also require engineering measures to account for the presence of landfill gas (LFG) in the subsurface.

The work scope for this study involved the following tasks:

- assess the risks posed to the public based on public end use of the KVLS in its current post-closure state, including risks associated both with the physical condition of the KVLS and continued operational requirements of its engineered systems;
- determine the most applicable approaches and/or modifications to the KVLS and its control systems that could be feasibly undertaken to make all or portions of the site safe for a variety of public end uses, and preferably also reduce the time period until such an acceptable condition could be expected to be achieved; and
- describe the anticipated activities, timeframes and estimates of probable costs to prepare the KVLS for the proposed public end uses, to serve as a basis for decision-making by Vaughan on end uses to be pursued further.

This report addresses the KVLS specifically; however, the proposed recreational end uses being considered by Vaughan also encompass the Avondale Lands, the VTLS and some adjoining land parcels within the North Maple Regional Park Lands. It is noted that the Golder/GHD team has also been retained

## Feasibility and Remedial Options Study – Keele Valley Landfill Site End Use

by Vaughan to undertake a similar feasibility study for implementation of end uses on the VTLS. This report should be read in conjunction with the companion report on the VTLS.

### ***Landfill Site Background***

A total of 28 million tonnes of solid non-hazardous municipal and industrial wastes were disposed at the KVLS from 1983 to 2002 over a 99.1 hectare waste fill area. Placement of final cover soils commenced in 1995 and was completed by 2005.

The various limits pertaining to the KVLS are shown in **Figure ES-1**. The overall site boundary encompasses 376 ha including the 99.1 ha waste fill area and the surrounding buffer zones. The buffer zones have been split into a 40 ha Primary Buffer Zone owned by the City of Toronto, and an 89 ha Secondary Buffer Zone that encompasses lands owned by York Major Holdings, upon which the Eagles Nest Golf Course is situated.

The engineered environmental control systems in place at the KVLS include:

- a clayey soil liner and leachate collection system over the base of the landfill;
- a landfill gas (LFG) collection and flaring system;
- a soil final cover;
- stormwater ponds and ditches; and,
- two groundwater purge well systems (referred to as the Teston Road and Southern Purge Well Systems) for control of groundwater impacts from the VTLS and the KVLS.

In accordance with the Certificate of Approval (CofA) and the approved 2006 Closure Plan for the KVLS, Toronto is required to carry out the post-closure operation / maintenance of the various engineered control systems, environmental monitoring and annual reporting. To date, the environmental monitoring data has indicated that the engineered control systems are effective in achieving regulatory environmental compliance for the KVLS. The time frame (from present) over which the engineered systems are required has been predicted to be over 200 years for the basal leachate collection system and the Southern Purge Well System, over 25 years for the Teston Road Purge Well System and tens of years for the landfill gas system.

### ***Regulatory Requirements for End Use Implementation***

At a consultation meeting with the Ministry of the Environment and Climate Change (Ministry, or MOECC) to discuss and confirm the approvals requirements for implementing an end use plan for the KVLS, the Ministry clarified that the implementation of the proposed end use will require submission of an application for the amendment of the approved 2006 Closure Plan report, supported by technical documents that: i) describe the proposed end use; ii) present the proposed modifications to KVLS infrastructure; iii) demonstrate that the site can continue to be expected to perform acceptably in terms of environmental effects; and iv) show that allowing public access to the KVLS poses an acceptable level of risk.

## Feasibility and Remedial Options Study – Keele Valley Landfill Site End Use

### ***Risks Posed to the Public Based on Public End Use of the KVLS in its Current State***

For the KVLS in its current condition (i.e., without additional mitigation measures and modifications), Ministry approval for the proposed end uses is considered unlikely. Of primary concern are the physical risks associated with the configuration of the landfill itself and its infrastructure, including:

- steep/high perimeter sideslopes, notably in the south part of the KVLS waste fill area;
- hazards associated with public access to the numerous above ground landfill control systems including gas extraction wells, maintenance chambers for landfill gas infrastructure, landfill gas plant, electrical panels, groundwater purge wells, leachate pumping chamber, leachate collection pipe clean-outs, stormwater ponds, groundwater monitoring wells and landfill gas probes;
- potential exposure to leachate seeps on the perimeter slopes; and,
- inadequate final cover thickness to accommodate buried utilities, plantings and regrading activities that will most likely be required for the proposed end uses, particularly for the golf course proposal.

### ***Proposed Mitigation Measures***

There are numerous examples of where mitigation measures have been successfully applied to both expedite and enable recreational (and other) end use development at a closed municipal solid waste landfill. A review of approaches taken at other sites in North America was undertaken and those that were considered most applicable to the KVLS were identified.

Mitigation measures that are applicable to the proposed passive and active recreation end uses as well as the Golf Canada Proposal are:

- *Delineation of exclusion areas* – this includes fencing of the south Primary Buffer Zone, the south perimeter slope of the landfill, the Teston Road Purge Well System and the stormwater management ponds in the west and east Primary Buffer Zone. Design of end use features to discourage public access to the west and east Primary Buffer Zone and slopes, and securing/protecting the landfill infrastructure in these areas is also included;
- *Installation of a leachate collection system on the perimeter slopes* – this would be required if leachate outbreaks become more prevalent along the perimeter slopes, and could conceptually consist of a continuous granular drainage blanket on the slope that conveys the collected leachate to the existing leachate management system, followed by reinstatement of the original final cover soils and revegetation; and
- *Alteration of the LFG collection system* - this involves securing and protecting the LFG extraction wells on the north, west and east slopes, the LFG system maintenance chambers along the toe of the east and west slope, and the LFG extraction wells on the top surface of the landfill.

Mitigation measures that are more applicable to the Golf Canada proposal alone are:

- *Pre-loading of the landfill surface* – this mitigation measure is used to permanently improve the mechanical behavior of the underlying waste by compressing and densifying the waste materials. This in-turn increases the bearing capacity and reduces the amount of settlement under the end use loading. Pre-loading is appropriate in key areas of proposed grade raises, such as raised tee-off areas



## Feasibility and Remedial Options Study – Keele Valley Landfill Site End Use

and greens, access roads, parking areas and small structures (e.g., washrooms and maintenance buildings);

- *Modifications to the landfill final cover* – the thickness of the final cover (currently approximately 1 m thick) may need to be locally increased to prevent waste exposure/handling when trenching for irrigation piping and utilities and to provide additional root zone for plantings that is further separated from the underlying waste. The final cover may also need to be augmented with a lining system beneath pond features and drainage swales to prevent excess infiltration from these golf course features into the underlying waste;
- *Modifications to the landfill surface grades* – the current top surface grades of 2% to 10% may need to be modified to provide more character and challenge for the golf facility. It is recommended that the grades be adjusted by filling above the existing cover surface contours rather than cutting into the cover. Furthermore, grades should not be flatter than 2% to accommodate differential settlement of the waste while maintaining positive drainage;
- *Alteration of the Teston Road Purge Well System* – this may include relocating portions of the system, including to the south onto the KVLS, to accommodate infilling of the valley between the KVLS and VTLS, including the section of the unopened Teston Road allowance between the two landfill sites, and create a contiguous useable area incorporating both sites. This mitigation measure would require a testing program to demonstrate that the relocated purge well system would be similarly effective in controlling the leachate plume from the VTLS.

Among the above mitigation measures, actions that can be undertaken and completed in the near term (i.e., within the next three to five years) to expedite the proposed end use concepts are listed below:

- delineation and fencing of exclusion areas on the south slope and south Primary Buffer Zone, and around the stormwater ponds in the west and east Primary Buffer Zone;
- securing/protecting landfill control and monitoring system components within the east and west portions of the Primary Buffer Zone and along the east and west sideslopes;
- installation of a sideslope leachate collection system (as triggered by evidence of persistent and broad leachate seep areas);
- abandonment of the north end KVL leachate system cleanouts;
- securing/protecting the landfill gas collection system components on the top surface of the landfill;
- securing of the Teston Road Purge Well System wells and valve/metering chambers and fencing of all or parts of the area (for the passive and active recreation end use concepts); and
- re-location of the Test Road Purge Well System (for the golf end use concept).

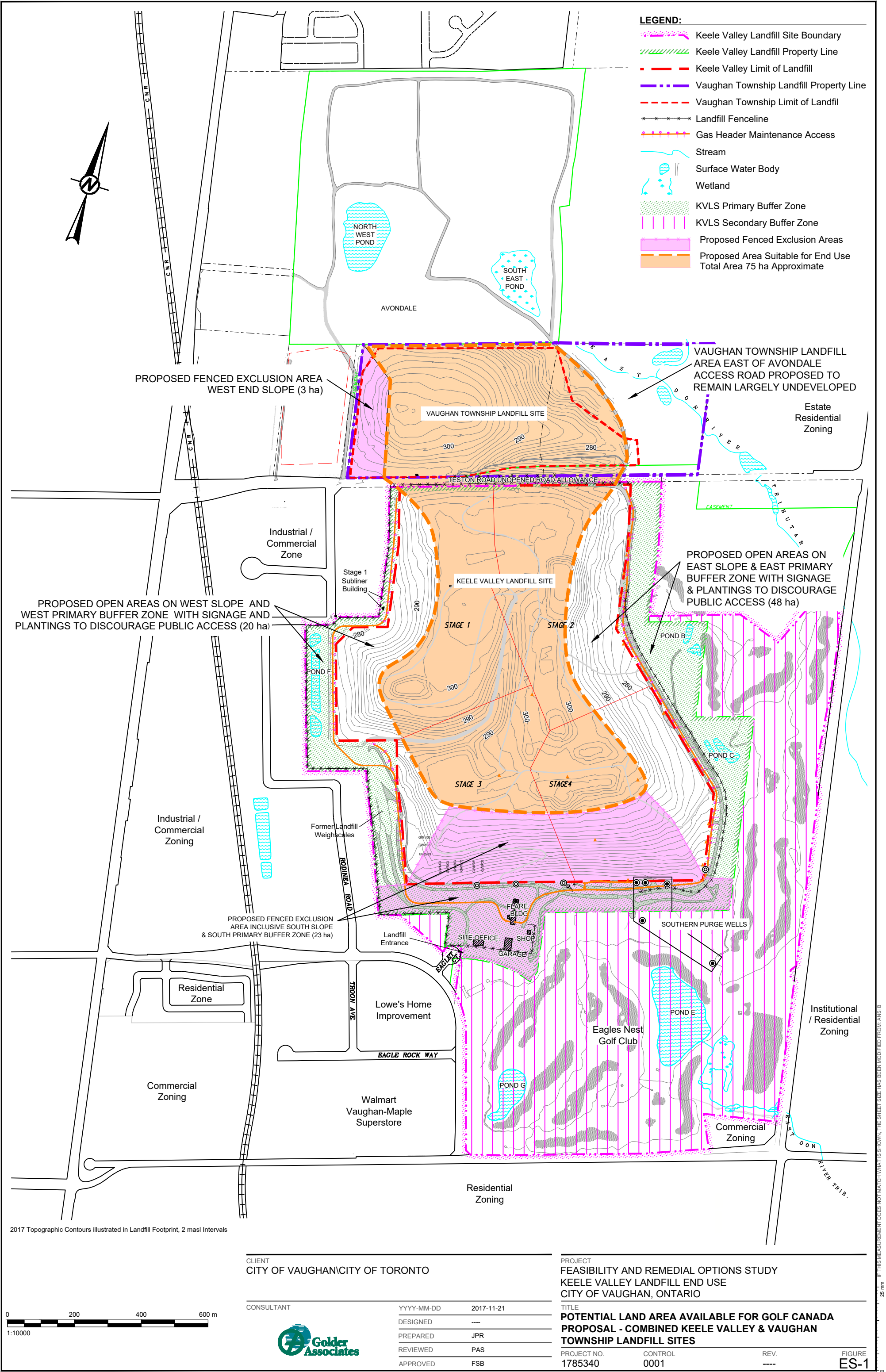
The total preliminary estimate of probable costs associated with the near term mitigation measures listed above is of the order of \$1M to \$2M for the passive and active recreation end uses and \$5M to \$6M for the Golf Canada proposal.

## Feasibility and Remedial Options Study – Keele Valley Landfill Site End Use

### ***Recommended Useable Area for End Use of the KVLS***

Following incorporation of the proposed mitigation measures, it is considered that the useable area for end use at the KVLS would include the top surface of the landfill and the north end slope, covering an area of approximately 48 ha (117 acres).

If this area is made contiguous with the recommended useable end use area of approximately 25 ha (60 acres) at the VTLS by infilling the valley between the two sites, the overall useable area would be approximately 75 ha (185 acres). This combined area is illustrated on **Figure ES-1**.





## City of Vaughan

*North Maple Regional Park*

*Sports and Culture Centre of Excellence*

Market Sounding – Executive Summary

February 2018



# Overview of Project

## Project Objectives

The following objectives were confirmed by the City of Vaughan (the “City”) with Deloitte’s collaboration to assist in the assessment of potential partners for Phase 2 of the development of the North Maple Regional Park site (“NMRP”):

### A. Development Objectives

1. Developments must be aligned with the City’s vision related to the development of the NMRP:
  - a) Park facilities for active and passive uses for all levels of ability, age and interests, and is sensitive to the natural environment
  - b) Year-round destination for a variety of sports, recreational and cultural uses
2. Deliver a positive environmental contribution by transforming the former landfills
3. Enhance existing natural heritage sites
4. Advance construction of NMRP Phase 1B
5. Begin construction of NMRP Phase 2 development sooner and at lower cost to taxpayers

### B. Financial / Risk Objectives

1. Reduce the financial burden (in terms of total project lifecycle cost) to the City associated with the completion of NMRP
2. Minimize the City’s exposure to market risk associated with revenue generated site uses
3. Limit the City’s contribution to non-NMRP developments to the provision land, i.e. there will be no cash contributions from the City into the non-NMRP developments

### C. Operational Objectives

1. City’s operational and maintenance responsibilities are limited to public use spaces only

# Overview of Project

## Project Objectives

### D. Ownership Objectives

1. Retain ownership of the land, i.e. any development must be done on the basis of a long term land lease instead of a fee simple/land sale transaction

### E. Stakeholder Objectives

1. Consider the needs of local communities surrounding the NMRP (e.g. ratepayers)
2. Align with strategic and operational goals of key stakeholders

### F. Project Timing Objectives

1. Construction on Phase 2 to begin no later than 2020

# Overview of Market Consultations

## Purpose and Role of Deloitte

The purpose of conducting market consultations was to assist the City in investigating various potential opportunities associated with the Phase 2 development of North Maple Regional Park ("NMRP Site").

Through consultations with relevant market participants, Deloitte:

- Determined the market's interest to participate in the development of the NMRP Site;
- Assessed the alignment between the City's strategic, operational, financial and community objectives for the development of the NMRP Site and those of the market participants
- Ascertained the market's view on the viability of various project delivery models (i.e. traditional vs P3) and other potential site uses; and
- Distinguished inputs and assumptions about the project in regards to the type and size of developments, community usage, and high performance sport.

# Overview of Market Consultations

## Market Sounding Participants and Interest Levels

In Phase 1 of the consultations, Deloitte conducted market soundings with 15 participants:

- 7 National Sports Organizations (“NSOs”);
- 3 Provincial Sports Organizations (“PSOs”);
- 4 proponents from the initial NMRP RFI; and
- 1 multi-use facility operator

Through the perspectives of market participants, the consultations helped to identify development opportunities, potential partners and project risks pertaining to the NMRP site.

Ultimately, each participants interest in the NMRP site could be categorized as follows:

- **Interest in Leasing Land for Sport Centre of Excellence and/or co-locating in head office dedicated to Amateur Sport; or**
- **Interest in renting facilities for event hosting; or**
- **Interest in acquiring land for development opportunity; or**
- **No Interest**

# Overview of Market Consultations

## Consultation Assessment and Follow-up Meetings

Based on the findings from the Phase 1 consultations, Deloitte assessed each potential partner and their associated development opportunity against the project objectives, and identified organizations for further in-person discussions with the City during Winter 2017:

- Ontario Tennis Association (“OTA”)
- Canada Soccer
- Rugby Canada
- Rugby Ontario
- Cricket Canada

Deloitte recommended further assessment with the organizations based on key benefits to the City and community that include year-round facilities open to the community and people of all ages and abilities, facilities offered with reduced financial burden to the City, land ownership retained by the City with an option of leasing, and interest from organizations in co-location of headquarters.



# Overview of Market Consultations

## Recommendations & Next Steps - Partner Due Diligence

### **Immediate (Q1 2018):**

- Our immediate recommendation to the City is proceed with formal due diligence activities with each of Canada Soccer, Ontario Tennis Association, Cricket Canada, Rugby Canada and Rugby Ontario
- The objective of this formal due diligence phase is to:
  - Project Objectives
  - Envisioned concept
  - Due Diligence period objectives
  - Decision timelines
  - Responsibility of due diligence work
  - Public communications
  - Exclusivity