

Town of Georgina

Cemetery Master Plan



LEES
+
ASSOCIATES

Final Report
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Acknowledgments

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TOWN OF GEORGINA

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Executive Summary

LEES+Associates conducted an analysis to provide the Town of Georgina (The Town) with recommendations for enhancing the design and operation of Keswick Cemetery, with a focus on potential improvements spanning the next two decades and beyond. The resulting Master Plan provides the framework for Town officials to make informed decisions on the future development of the cemetery.

Selected as the lead consultant, LEES+Associates has been supported by geotechnical engineers Peto Macallum in the development of the plan. The project began in Winter 2023 followed by a site visit and presentation to staff in Spring 2023. The consultant team met with the cemetery operations staff to gain additional information and insight on the history, operations, challenges, and successes of operations. Community engagement included a cemetery workshop with staff, and an online public survey. Feedback from engagement is outlined in the report and helped to inform the concept plan.

Keswick Cemetery is nearing an important milestone, with critical shortage of interment inventory. Ongoing concerns with surface and groundwater, exacerbated by site conditions and a high-water table, have also necessitated changes to current and future burial areas at Keswick Cemetery.

The Keswick Cemetery Master Plan will serve as a comprehensive plan for the phased development of the cemetery expansion lands meeting the long-term needs of the residents of the Town of Georgina. Primary objectives for the project include:

1. Geotechnical and Hydrological Investigation to understand the current challenges and guide an improvement strategy.
2. Identify the short term and long-term interment needs for the community.
3. Create a physical concept plan identifying the future use, interment and memorialization expansion, and grading and drainage strategy. Design to include a concept plan, phasing plan, and Rough Order of Magnitude (ROM) cost estimates to guide future capital investments by the Town.

The following assessment and recommendations address the challenges faced by Keswick Cemetery and aim to ensure the cemetery's continued service to the community and its financial stability in the years ahead.

Key Findings

Projected Demographic Trends, Rates of Interment and Market Share

In the upcoming 25-year period:

- The Town can expect an average of approximately **35** interments per year. It is estimated that out of those interments, approximately:
 - **9** will be traditional in-ground burial (casket) interments, and
 - **26** will be interments of cremated remains.
- The Town can expect to sell approximately **47** interments per year. It is estimated that out of those interments, approximately:
 - **12** will be traditional in-ground burial (casket) interments, and
 - **35** will be interments of cremated remains.

Cemetery Demand-Needs Analysis

Key findings from the demand needs analysis include:

- Keswick Cemetery's capture rate is below the national average but still falls within the expected range for cemeteries in densely populated Canadian cities. Factors that may impact a cemetery's capture rate are detailed in Section 2.9 of this report.
- The Town of Georgina currently has the highest cremation rate in the York Region and is higher than the Provincial cremation rate in Ontario.
- In approximately **1 to 2 years**, all remaining cremation lots will have been sold.
- Columbaria niches are expected to be sold out in **1 to 2 years**.
- Casket lots are expected to be sold out in **2 to 3 years**.
- The scattering garden is **at capacity** and expansion is urgently needed.

Additional Inventory Required to Meet Future Need

The additional interment inventory required to meet projected need for the next 25 years is:

- 220 traditional in-ground casket lots;
- 400 in-ground cremation lots;

- 150 columbaria niches, and
- Space for 90 cremated remains scatterings.

Expansion of Interment Inventory at Keswick Cemetery

- The Town needs to address lease schedules of the Keswick Model Aircraft Club and the encroaching agricultural lands on site. The land used for these activities is suitable for future expansion with sufficient notice.
- There is enough space within the Cemetery to develop additional inventory to meet demand for the range of existing interment types for the next 100 years and beyond.

Site Analysis

- The site and roadways exhibit signs of persistent issues with surface and groundwater. There are opportunities to improve drainage throughout site to enhance the visitor experience, .
- Improvements to pedestrian and vehicular throughout the site will provide access to new areas for interment and memorialization.
- There is an opportunity to enhance the landscape character and provide additional shade to visitors with more trees and plantings throughout the site.

Financial Review

- Keswick Cemetery offers most services below regional averages; increasing fees in the near future is advisable for alignment with neighboring communities and improving operational cost recovery.
- Keswick Cemetery offers fewer interment options than comparable Canadian cemeteries. The Town could expand services to include green burials, family columbaria, estates lots, family vessels, ossuaries, and cremation gardens, as well as additional support services like rentals and other arrangements for graveside services.

SUMMARY OF RECOMMENDATIONS

Product and Services Review

- In the immediate future the Town should increase the cremation interment inventory and broaden the variety of cremation interment choices.
- Begin the expansion of in-ground burial areas.
- In the long term, introduce a broader array of memorialization choices (e.g., engraved boulders, plaques on memorial structures, monuments, etc.) and select low-cost, easily implementable interment support services.

Cemetery Pricing

- Align prices for products and services with neighboring benchmark cemeteries.
- Increase rates at least 3% to counter inflation and establish an automated schedule for annual fee adjustments.
- A 15% non-resident premium is suggested, with defined criteria for residency.
- A one-time rate increase in 2024 is recommended to align prices with regional averages, affecting adult casket lots, burials, cremation services, columbaria niches, and other fees.
- Undertake a financial plan to assess the difference between operating expenses and revenue to guide a pricing schedule that aligns with the cemetery's actual costs.

Development Plan Recommendations

It is recommended that the construction of additional inventory be focused at the following locations:

- Infilling with traditional in-ground burial lots and in-ground cremation lots in developed sections of the Cemetery.
- Additional burial space north of the entrance driveway and directly adjacent to the pond north of the entrance pillars.
- Additional burial space atop the existing mound situated in the central area of the site.
- There is open lawn space surrounding the existing columbarium with opportunity to add another unit to fulfill immediate demand. A full build-out of this area would include a cremation garden plaza with a diverse cremation interment and memorialization options.

- The large area surrounding the pond to the north of site provides opportunities for memorialization and cremation zones (scattering, cremation, memorials, family vessels, etc.), and connected with an accessible pathway.

Phasing Plan

It is recommended that new burial areas and cemetery-wide improvements are delivered in phases over the next 25-year period. An implementation plan in Section 6 of this report details the key recommended site changes in priority order.

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Chapter 1: Introduction

Project Summary

The Town of Georgina (the Town) commissioned LEES+Associates to develop a Cemetery Master Plan to guide the future development, operations, care, and maintenance of its Keswick Cemetery site.

This report will enable the Town to better understand its community members and land needs to ensure the sustainability of cemetery services over the next 25 years.

This plan includes:

- An in-depth **demand-needs analysis** of the demographic, disposition, and interment trends in the Town's cemetery market area to determine future service demand. This is compared to the land available to estimate the cemetery's current capacity and future land needs;
- A **products and services review** of Keswick Cemetery's current offerings and their pricing;
- A physical **site analysis** identifying the opportunities and constraints related to future growth at the cemetery;
- A **concept design** to guide the future development of Keswick Cemetery;
- A **lot layout plan** to be used by the Town for inventory management, and
- A **phasing plan** and **rough order of magnitude cost estimates** for all work outlined in the concept design.

Consultation and engagement with cemetery staff, stakeholders, and community members were undertaken as part of this plan to inform the concept design and development strategy for Keswick Cemetery which is outlined in this master plan.

This plan summarizes the findings of the analyses, consultations, and engagement process, and provides informed recommendations for a phased development plan of new cemetery amenities and expansion. The plan will ensure an appropriate product mix to meet community member preferences and optimize the Town's capital funding for future cemetery development.

Cemetery Sites Overview

The Town of Georgina owns two cemeteries: Keswick Cemetery (565 Varney Rd., Keswick) and Cooke's Cemetery (272 Pepperlaw Rd., Pepperlaw). These cemeteries offer various interment services and right-of-interment sales options for burial lots, niches, and crypts.

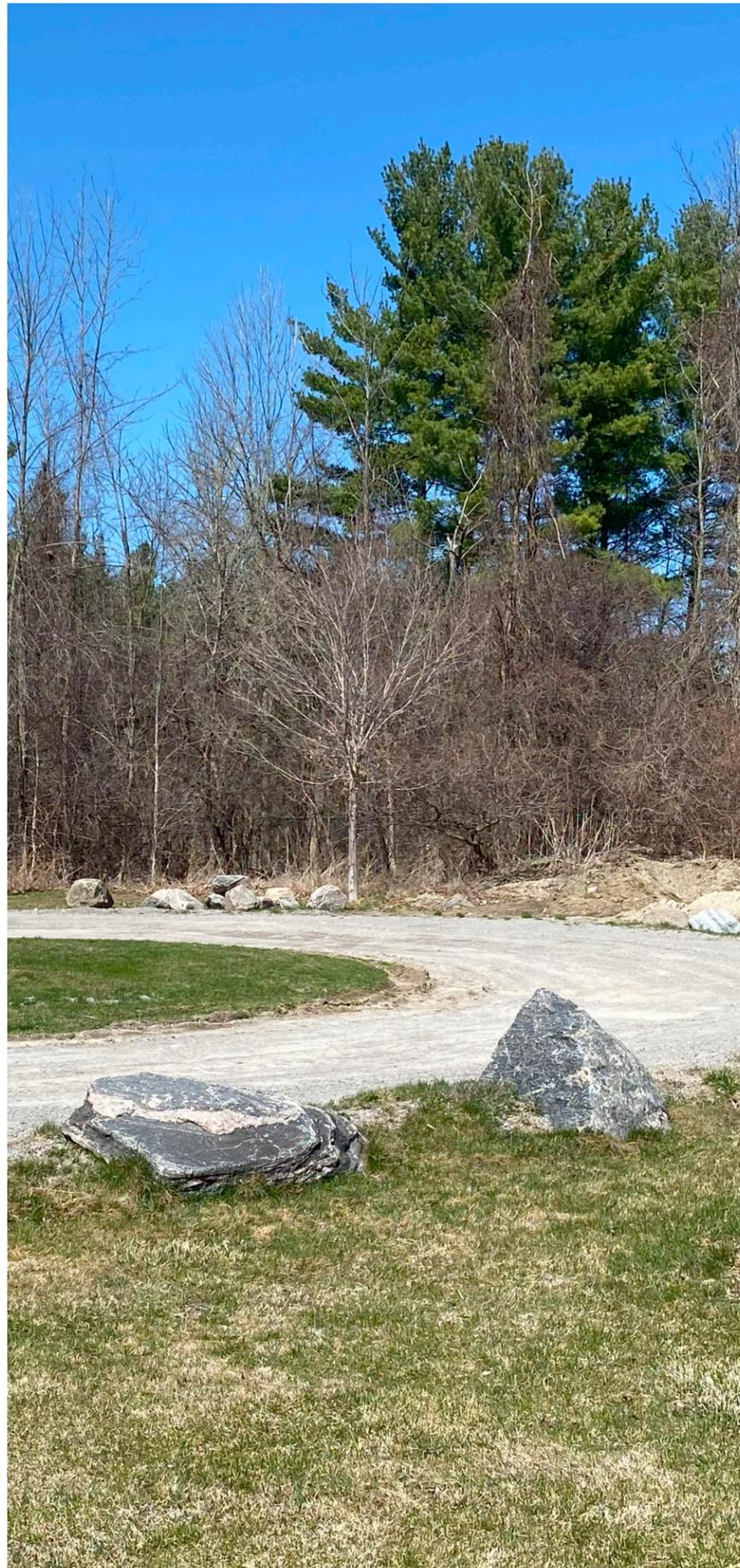
Keswick Cemetery was established in 2006 and is located at 565 Varney Rd., Keswick. It serves as the primary active cemetery for the community in a rural agricultural setting and the majority of its interment services and inventory are available for sale.

Cooke's Cemetery, established in 1889, is considered to be a 'semi-active' cemetery. Semi-active cemeteries continue to offer interment services within purchased lots, niches, and crypts, but are typically at a stage where they have ceased expanding and developing new space for interment. As a result, Cooke's Cemetery has a restricted inventory, and the availability, especially of cremation lots, may become scarce in the near future. Other semi-active cemeteries in the Town of Georgina include Baldwin Cemetery and Christ Churchyard Cemetery.

Additionally, the Town of Georgina has nine inactive cemetery sites, which are historic burial grounds that no longer accept new interments.

The following map shows the position of all cemeteries in the Town.

This cemetery master plan specifically examines the historic cemetery activity, future service demand, and the projected, long-term land needs for Keswick Cemetery. It does not include an analysis of the other cemeteries cared for by the Town. Keswick Cemetery is a 20.3-acre (8.1-hectare) site. This includes 1.6 acres (0.6 hectares) of developed lands and 18.7 acres (7.5 hectares) of undeveloped area. This undeveloped area includes spaces that are not feasible to convert into additional cemetery inventory, such as ponds and water courses.



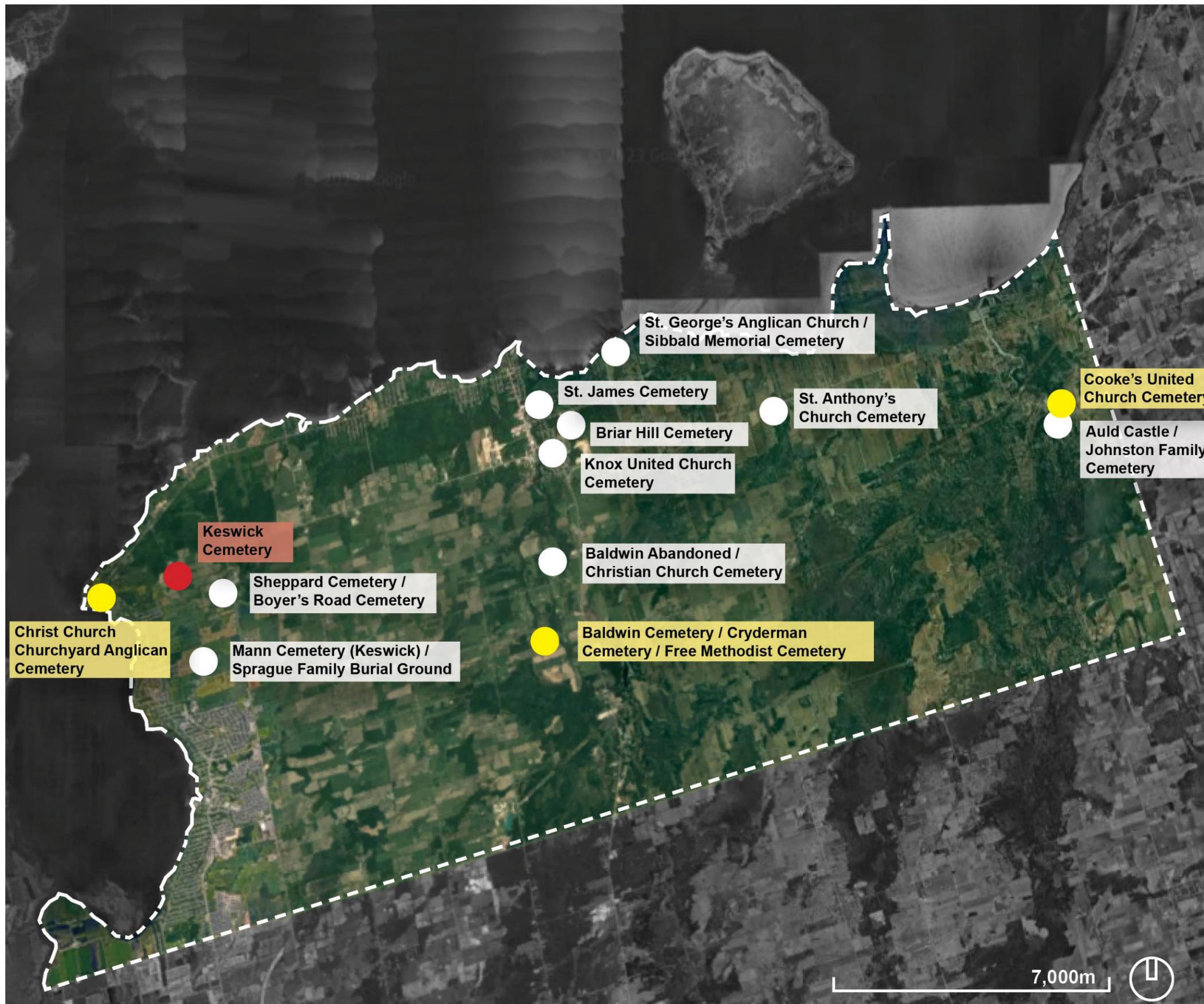


Figure 1: Town of Georgina's Active (Red Markers), Semi-Active (Yellow Markers) and Inactive Cemeteries (White Markers), Source: Google Earth + York Region Cemetery Needs Analysis and Policy Framework (2016).

Chapter 2: Demand-Needs Analysis

This chapter identifies the market area served by Keswick Cemetery and includes an overview of its demographic characteristics - including the population growth and death rates, religious and ethnic profile, and the dispositions and interment trends in the market area. These are the key drivers of community demand and future need for additional burial inventory and cemetery land in the Town.

The chapter concludes by identifying the projected demand, current supply, opportunities for infill, remaining capacity, and estimated “full date” at Keswick Cemetery, the Town’s primary municipal cemetery.

The outcome of this analysis is to determine the additional inventory needed to serve the community over the next 25 years and review the options available to the Town after it runs out of cemetery land to support its ongoing services to the community.

Key Findings

The following section is a summary of the key findings from the Town’s cemetery Demand-Needs Analysis.

Current Market Area - Profile + Historic Demand

Keswick Cemetery primarily serves the residents of the Town of Georgina and is identified as the Market Area for this analysis;

- The Town currently has 48,000 residents. From 2018 to 2022, it had approximately:
 - Increased its population by 3%;
 - Averaged 7.4 deaths per 1,000 residents per year;
 - 1,793 deaths, averaging 359 deaths per year, including:
 - » 386 casket burials, averaging 77 casket burials per year, and
 - » 1,407 cremations, averaging 282 cremations per year.
- The Town of Georgina currently has the highest cremation rate in the York Region – 82% and is higher than the Provincial cremation rate in Ontario – 70%.

Future Market Area - Profile + Projected Demand

- The Town’s population will grow 56% over the next 25 years, reaching 75,200 residents by 2047;
- Due to the passing of the Baby Boomer generation, it is anticipated the death rate will increase to 8.2 deaths per 1,000 residents by 2046;
- Over the next twenty-five years, from 2023 to 2047, there will be approximately:
 - 11,750 resident deaths, averaging 470 resident deaths per year, including:
 - » 1,150 resident casket burials, averaging 46 resident casket burials per year, and
 - » 10,600 resident cremations, averaging 424 resident cremations per year.



Municipal Cemetery Activity – Interment Services + Inventory Sales

Interment Services

- From 2018 to 2022, on average, the Town interred **19%** of residents that died and chose casket burial and **6%** of residents that died and chose cremation in the Market Area, at Keswick Cemetery;

The following table summarizes the interment services provided by the Town between 2018 to 2022 and compares them to the projected services over the next 25 years (from 2023 to 2047).

Interment Service provided by the Town	2018-2022	Projected over the next 25 years (2023-2047)
Casket Lot Burial Services:	72	220
<i>Average per year:</i>	<i>14</i>	<i>9</i>
Cremation Burial Services:	52	400
<i>Average per year:</i>	<i>11</i>	<i>16</i>
Niche Inurnment Services:	19	150
<i>Average per year:</i>	<i>4</i>	<i>6</i>
Cremated Remains Scatterings:	12	90
<i>Average per year:</i>	<i>2</i>	<i>4</i>

Table 1: Interment services provided by the Town.

Inventory Sales

The following table summarizes the right-of-interment sales by the Town to the community between 2018 to 2022 and compares them to the projected sales over the next 25 years (from 2023 to 2047).

Right-of-interment Sales by the Town	2018-2022	Projected over the next 25 years (2023-2047)
Casket Lots:	53	290
<i>Average sales per year:</i>	<i>11</i>	<i>12</i>
Cremation Lots:	67	500
<i>Average sales per year:</i>	<i>13</i>	<i>20</i>
Niches:	30	225
<i>Average sales per year:</i>	<i>6</i>	<i>9</i>
Scattering Garden Spaces:	18	140
<i>Average sales per year:</i>	<i>4</i>	<i>6</i>

Table 2: Right-of-interment Sales by the Town.

Estimated Supply - Inventory & Capacity

- Keswick Cemetery’s casket lots are expected to be sold out in **2 - 3 years** if past sales patterns and service options were to continue;
- Keswick Cemetery’s cremation lots are expected to be sold out in **1 - 2 years**, and
- Keswick Cemetery’s columbaria niches are expected to be sold out in **1 - 2 years**.
 - Supply chain issues are significantly impacting the available supply of new columbaria. To add new niches for sale at the cemetery, the Town will need to order new columbaria early and well in advance of the projected community need.
- Keswick Cemetery’s social service lots are expected to be sold out **within 1 year**.

As of July 2023, Cooke’s Cemetery has 616 full-size graves and 328 cremation lots available. An additional 220 cremation lots could be released after making significant site grade adjustments. While this additional inventory could alleviate the situation, the number of available lots is ultimately limited and suggests they will grow increasingly scarce in the near future. Cooke’s Cemetery was not included in the scope of the Keswick demand-needs analysis. In order to accurately understand the capacity and influence of Cooke’s Cemetery within the Town’s cemetery sector, a separate analysis would need to be conducted.

Market Area Profile

This section of the cemetery master plan describes the market area served by Keswick Cemetery, identified by the geographic boundary, and ethnic and religious profile of the residents. These variables influence the future demand and need for the Town’s cemetery land and interment services.

The geographic boundary includes all communities within the Town of Georgina. This analysis assumes the geographic boundaries of the Town are the boundaries of Keswick Cemetery’s market area.

LEES+Associates obtained detailed demographic and vital statistic data from the Federal, Provincial, and Municipal government records. This data includes the population, deaths, and disposition statistics for residents within the market area.

Religious and Ethnic Profile

Individual preferences determine a person’s disposition and interment choices. These preferences are shaped by personal values, family traditions, and socio-economic considerations. Religious affiliations and ethnic groups also have cultural practices, which can be a significant influence on an individual’s end-of-life choices.

Religious Profile

Religions often require specific forms of disposition and interment. Some require in-ground casket burial while others require cremation.

Several groups discourage or even forbid cremation, and because of this, it is expected there will always be a portion of the population that will need in-ground casket burial.

Analysis of the Market Area’s religious profile finds that:

- 47% of residents identify as Christian, and the largest Christian group that residents identify with is Catholic (20% of the population);
- 5% of residents identify with non-Christian religious groups, and the largest non-Christian group that residents identify with is the Muslim community (2% of the population), and
- 48% of residents do not have any religious affiliation and are likely more influenced by economic variables, ethnic and personal preferences.

This means the Town can expect that the cemetery and funeral needs of the majority of its clients are likely influenced by the tenets and practices of Christianity, especially those of the Catholic Church.

Since Vatican II in 1962,¹ cremation has been allowed by the Catholic Church provided the cremated remains are kept together and are not scattered. Catholics are more likely to choose interment in a cemetery because of church-mandated funeral and burial customs.²

Town of Georgina - Religious Profile

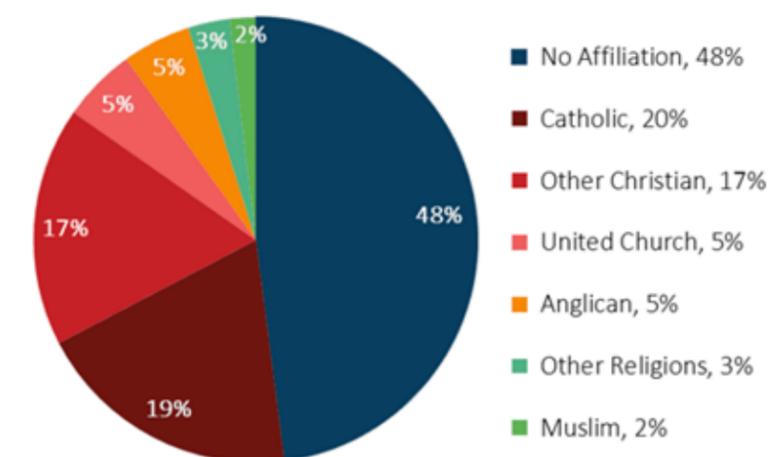


Figure 2: Town of Georgina Resident Religious Distribution, Source: Statistics Canada, National Census 2021.

¹Town of Georgina Resident Religious Distribution, Source: Statistics Canada, National Census 2021.

²Vatican issues new rules on Catholic cremation- Remains cannot be scattered, divided, or kept at home <http://www.cbc.ca/news/world/vatican-catholic-cremation-1.3820336>

Other branches of Christianity oppose and even forbid cremation, including minority Protestant and Orthodox groups, such as Eastern, Greek, and Serbian Christians.

The Muslim community also has a presence in the market area with specific burial requirements while also forbidding cremation.

Ethnic Profile

Analysis of the Market Area’s current ethnic profile finds that:

- 70% of residents report having a British Isles origin;
- 9% of residents are of Italian or Portuguese heritage, and
- 3% of residents are of Chinese origin.

Italian and Portuguese families prefer columbaria niches and mausolea crypt interment options while Asian cultures often have a strong preference for cremation interment options.³

³Culture and Death: Asian Americans and Pacific Islanders
<https://www.alivehospice.org/news-events/culture-and-death-asian-americans-and-pacific-islanders/>

Historic Cemetery Market Summary

The following graph summarizes the findings of the historic cemetery Demand-Needs Analysis and shows the trends defining the Market Area served by the Town, from 2018 to 2022. In this graph, the population growth data aligns with the left vertical axis. Death, cremation, and casket burial data align with the right vertical axis.

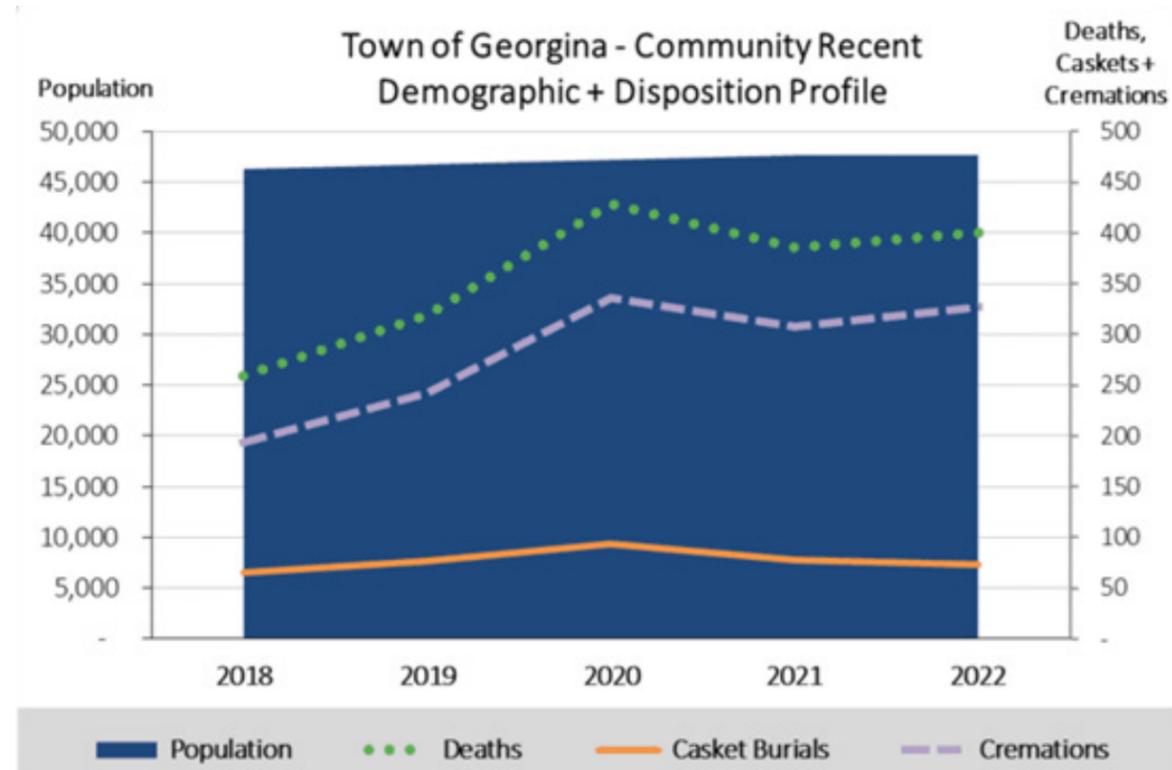


Figure 3: Town of Georgina, Historic Cemetery Market Summary of Demographic + Disposition Variables, Source: LEES+Associates.

Cemetery Demand - Demographic Trends

The following table summarizes the market area’s historic and projected population numbers and its rate of annual average growth.

Market Area Served	Population 2018	Population 2022	Average Growth 2018-2022	Population 2047	Average Growth 2023-2047 ⁴
Town of Georgina	46,289	47,643	0.74%	75,221	1.84%

Table 3: Town of Georgina Historic and Projected Population and Growth Rates, Source: Statistics Canada, Census 2016 & 2021, and York Region Planning Department’s Demographic Data.

The following table summarizes the market area’s historic and projected number of deaths and the death rate relative to the area’s population numbers.

Market Area Served	Average Annual Deaths 2018-2022	Average Deaths per 1,000, 2018-2022	Average Annual Deaths 2023-2047	Average Annual Deaths per 1,000, 2023-2047
Town of Georgina	359	7.4	470	7.8

Table 4: Market Area Historic and Projected Resident Deaths and Death Rates, Source: Province of Ontario, Open Data Catalogue⁵.

The “Baby Boom” generation includes those born between 1946 and 1964. As this large cohort reaches its life expectancy, the death rate will increase and the need for cemetery services will also grow. The life expectancy of this cohort is about 80 years.

Statistics Canada predicts the aging population in the Market Area will increase the need for cemetery land, inventory, and services. This is projected to accelerate in 2026 when the oldest of the Baby Boomers reach the age of 80. The number of deaths is expected to increase until 2045 when the youngest members of the Baby Boomer cohort turn 80.

⁴Provincial population projections are not available for the Town of Georgina, so this analysis has assumed that population growth will continue in the municipality at its historic rate.

⁵<https://www.ontario.ca/page/sharing-government-data>

Cemetery Demand: Disposition Trends

Projected Cremations and Casket Burials in the Market Area

Disposition describes how human remains are handled after death. The most common forms of disposition in North America are in-ground **casket burial** and **cremation**.

Analysis of the projected disposition trends in the market area finds that over the next 25 years, from 2023 to 2047, there will be:

- 11,750 resident deaths, averaging 470 resident deaths per year, including:
- 1,150 resident casket burials, averaging 46 resident casket burials per year, and
- 10,600 resident cremations, averaging 424 resident cremations per year.

National Cremation Rate

Cremation is increasingly becoming the preferred form of disposition for most Canadians. What individuals and families then choose to do with cremated remains varies greatly.

They are usually contained in an urn, for future interment in an in-ground lot, placement within an above-ground columbaria niche, or scattered.

The National average cremation rate increased from 63.1% in 2011 to **74.8% in 2021** and is expected to continue to rise across the country.

The following map illustrates the preference for cremation in the Canadian Provinces and Territories, as of 2021.

Provincial Cremation Rate

The cremation rate in Ontario increased from 58.7% in 2011 to **68.4% in 2021**. The Cremation Association of North America (CANA) predicts Ontario's cremation rate will rise to **77.8% by 2026**.

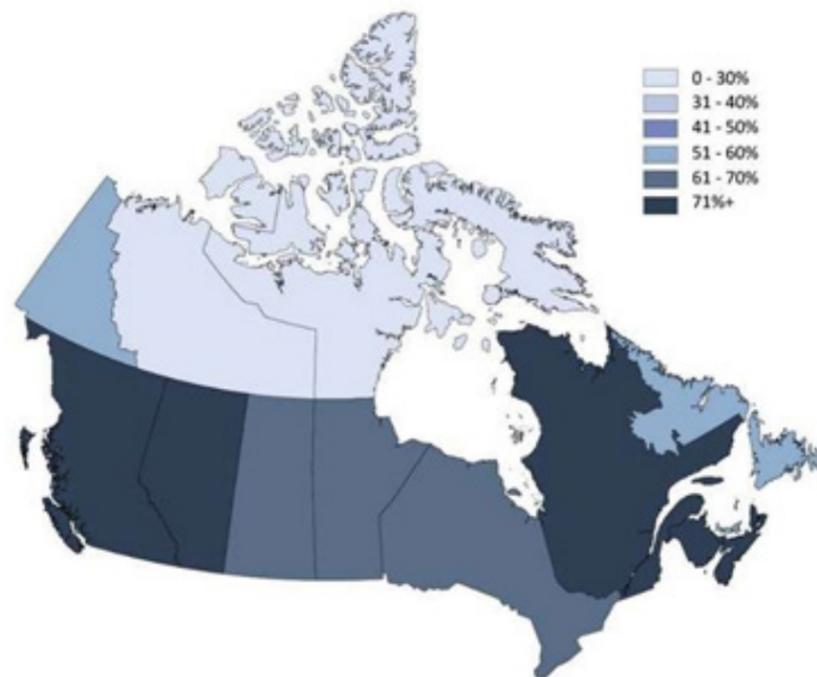


Figure 4: 2021 Canadian Cremation Rates as a Percentage of Deaths, Source: Cremation Association of North America).

Local Cremation Rate

The following map illustrates the preference for cremation in the Town of Georgina and York Region:

If the Town's market area cremation rate continues to grow at approximately the same rate predicted for the Province by CANA – 2.6% per year, the Town's market Area cremation rate will increase to 90% in approximately 4 years (2027), and then level off.

Assuming the Town has experienced the same growth in its cremation rate as the rest of the Province of Ontario since 2016, it can be estimated that from 2018 to 2022, the Town had:

- 1,793 deaths, averaging 359 deaths per year, including:
 - 386 casket burials, averaging 77 casket burials per year, and
 - 1,407 cremations, averaging 282 cremations per year.

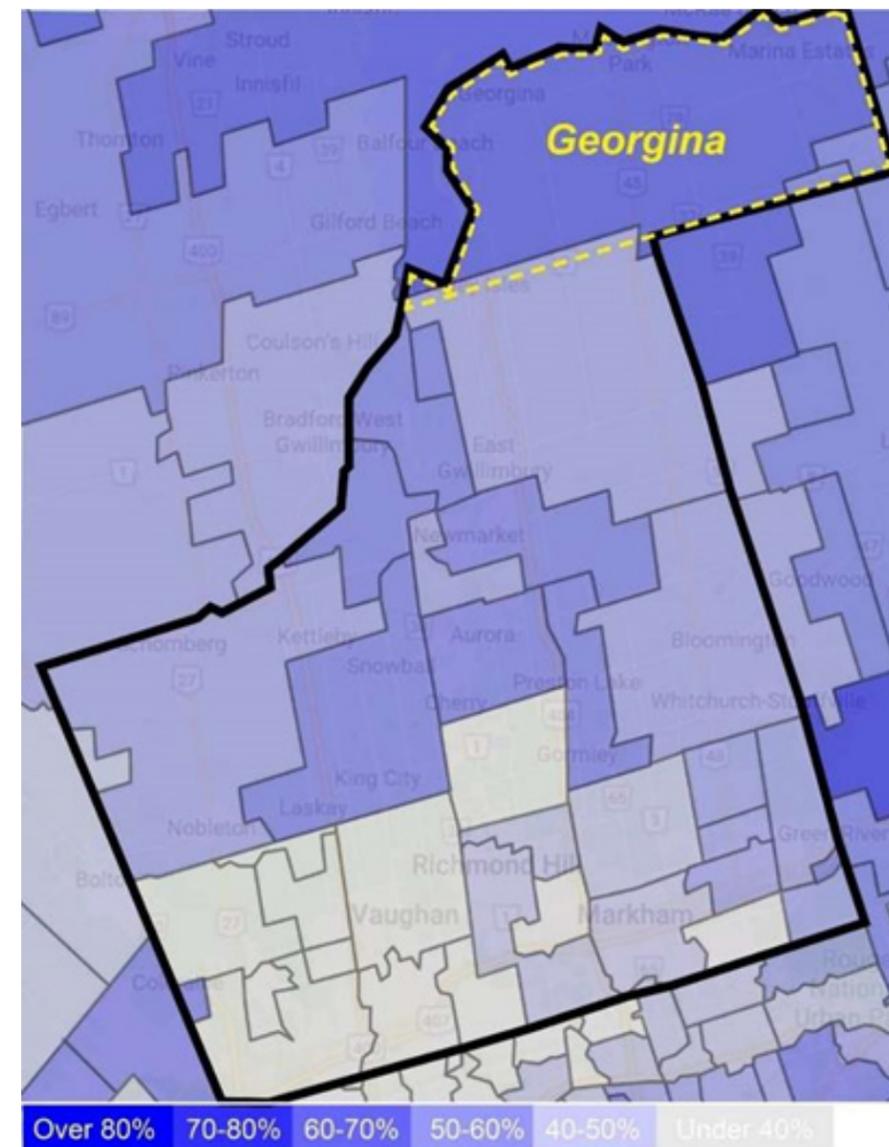


Figure 5: Cremation Rates in the York Region, Source: York Region Cemetery Needs Analysis and Policy Framework (2016).

Projected Cemetery Market Summary

The following graph summarizes the findings of the projected cemetery Demand-Needs Analysis and shows the trends that will define the market area served by the Town over the next 25 years from 2023 to 2047. In this graph, the population growth data aligns with the left vertical axis. Death, cremation, and casket burial data align with the right vertical axis.

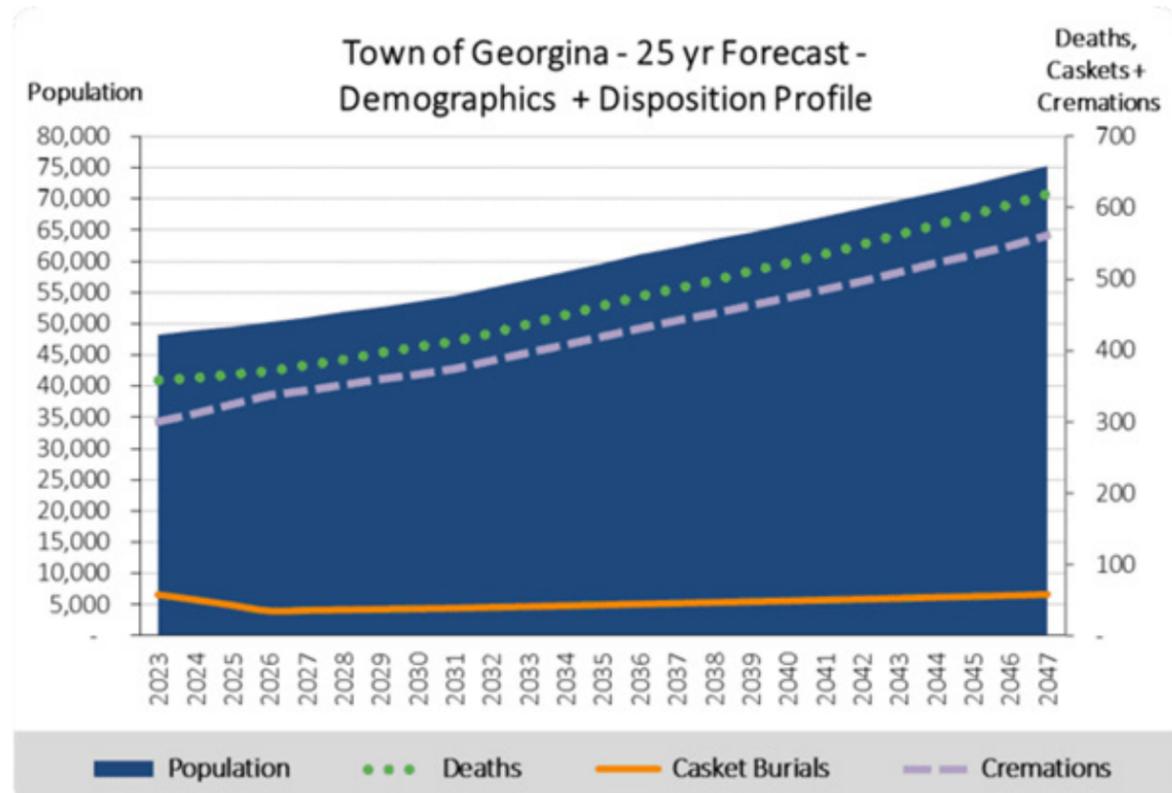


Figure 6: Town of Georgina, Projected Cemetery Market Summary of Demographic + Disposition Variables, Source: LEES+Associates.

This graph provides an overview of the **projected demand** in the Town’s market area. Due to the projected population increase and the increasing death rate, this market area demand for cemetery services and cemetery land is expected to steadily increase.

The following section examines the **distribution** of the projected market demand that will likely be met by Keswick Cemetery and identifies how many requests for cemetery services and inventory sales the Town can expect over the next 25 years.

Historic Interment + Sales

This section reviews the historic demand for the Town’s cemetery interment services and inventory sales.

The following graph summarizes the Town’s historic cemetery interments and sales from 2018 to 2022.

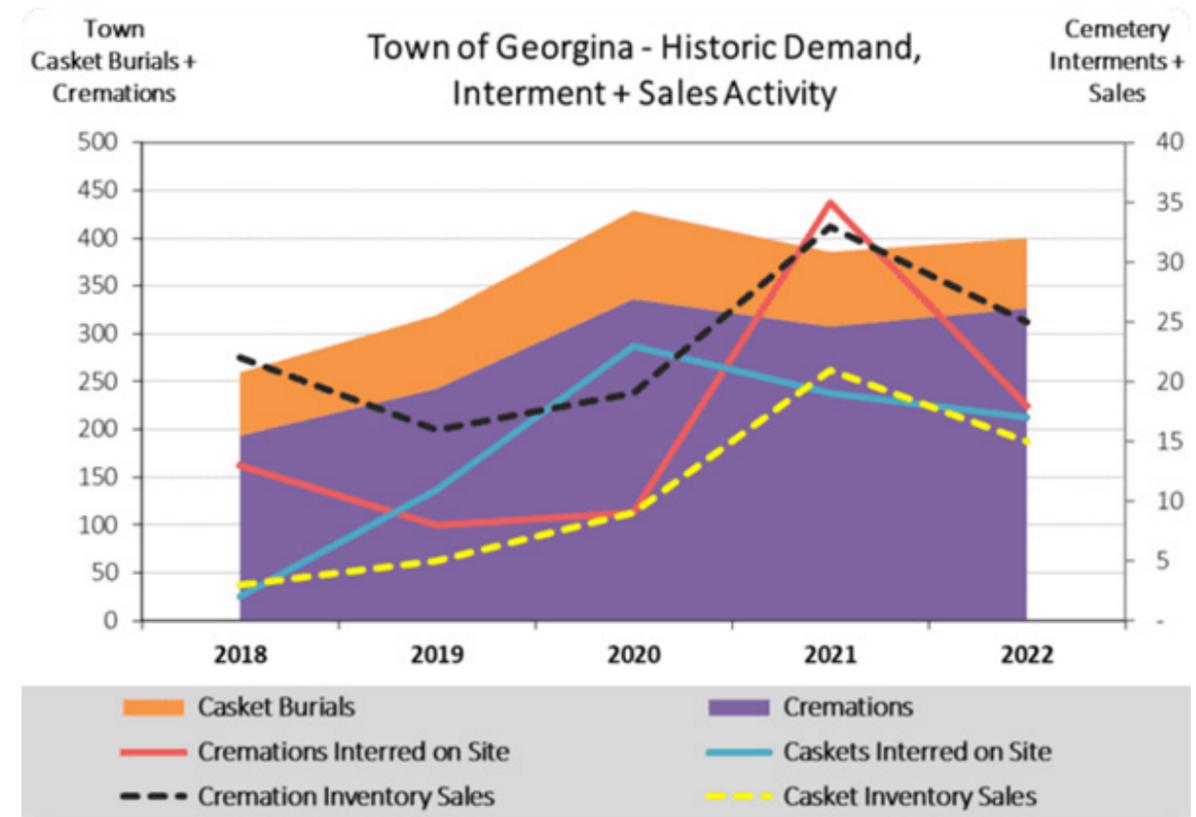


Figure 7: Town of Georgina’s Historic Sales and Interments for Keswick Cemetery, Source: Town of Georgina Cemetery Records.

The following section outlines the analysis and findings for each of the interment and sales variables, which are included in this summary of the Town’s historic cemetery activity.

Community Preference Measures

Market Capture

The percentage of a market area’s total cemetery service demand met by a particular cemetery is commonly referred to as its “market capture rate.” It reflects the portion of residents who choose to be served by a cemetery each year of operations.

This is measured as the number of annual interments at a cemetery as a proportion of the total number of deaths within the same year. This is usually subdivided into the market capture of cremations and casket burials in the market area.

Interments + Dispositions	Total from 2018-2022	Average per Year
Casket Lot Interments	72 casket interments	14 casket interments
Casket Lot Burial Dispositions	386 casket lot burials	77 casket lot burials
Casket Burial Market Capture Rate	19%	19%
Cremation Lot Interments	52 cremation lot burials	11 cremation lot burials
Cremation Niche Interments	19 niche interments	4 niche interments
Cremation Scatterings	12 scatterings	2 scatterings
Cremation Interments	83 cremation interments	17 cremation interments
Cremation Dispositions	1,407 cremations	281 cremations
Cremation Market Capture Rate	6%	6%

Table 5: Town of Georgina Dispositions, Keswick Cemetery Interments and Market Capture from 2018 to 2022, Source: LEES+Associates and the Town of Georgina’s Cemetery Records.

Market research by LEES+Associates over the past two decades finds that most Canadian municipal cemeteries serve a market area that consists of one community and its surrounding rural area. These cemeteries typically provide service for **80%-90%** of those choosing casket burial, and **10%-20%** of those who choose cremation in their community.

These service rates decline in large urban centres such as those communities within the Greater Toronto Area (GTA). Communities within the GTA have multiple service providers within their market area. A cemetery within this market typically provides services for **15%-35%** of those choosing casket burial and **1%-10%** of those who choose cremation in their community.

A cemetery’s market capture rate (the proportion of residents that choose to be buried at a particular cemetery site) is influenced by several factors, including the:

- Attractiveness of the cemetery site;
- Diversity of the product and service options;
- Frequency of the cemetery operator’s community engagement;
- The cemetery’s proximity to residential areas and residents;
- The cemetery’s level of universal accessibility;
- The cemetery’s ability to meet religious/ethnic traditions, and
- Pricing.

Keswick Cemetery’s lower market capture rate (19% of casket burials and 6% of cremations from Town of Georgina residents) is within the range of what we would expect from a cemetery in a large, densely populated, Canadian municipality. Large urban centres usually have more cemeteries competing to serve community members.

There is also more movement of residents and their family members between municipalities for cemetery services in the region. The 2016 York Region Cemetery Needs Analysis and Policy Framework report found that, on average, one-third of those served by cemeteries in York Region came from outside the municipality where the cemetery was located.

Keswick Cemetery’s lower market capture rates may also be due to offering fewer services and memorialization options than other cemeteries or because it invests less in marketing, promotion, and public engagement than other cemeteries.

The Town of Georgina also has an exceptionally high cremation rate for the York Region. A market area with a high cremation rate also tends to inter fewer of its residents in a cemetery.

Most cremated remains in North America are not interred in cemeteries. Instead, many families choose to scatter a family member’s cremated remains in unregulated areas such as public parks, private property, lakes, rivers, and other outdoor places of personal meaning. In contrast, most families choosing casket burial will inter in their local cemetery.

Interment to Sales Ratio

The number of annual sales is also an important measure of demand, as it can be used to estimate a cemetery’s capacity and the number of years remaining before further land development is needed.

The following table compares the number of casket burial inventory sold to the number of casket interments- determining their relative relationship from 2018 to 2022.

Sales	Total from 2018-2022	Average per Year
Casket In-ground Burials	72 casket interments	15 casket interments
Casket Lot Sales	53 casket lots sold	11 casket lots sold
Casket Lots - Burials to Sales Ratio	1.4	1.4
Cremation Lots Sales	67 lots sold	14 lots sold
Cremation In-ground Burials	52 cremation lot burials	4 niche interments
Cremation Lots - Sales to Burials Ratio	1.3	1.3
Columbaria Niches Sold	30 niche sales	6 niche sales
Cremation Niches Interments	19 niche inurnments	4 niche inurnments
Niches - Sales to Interments Ratio	1.6	1.6

Table 6: Town of Georgina Cemetery Casket Lot and Cremation Inventory Sales to Interments Relationship Ratio from 2018 to 2022, Source: LEES+Associates and the Town of Georgina Cemetery Records.

Analysis of Keswick Cemetery’s interment and sales data finds that from 2018 to 2022 the Town:

- Interred 3 caskets for every 2 casket lots that it sold.
- Sold 4 cremation lots for every 3 cremated remains that it interred in a cremation lot, and
- Sold 8 niches for every 5 niche inurnments that it made.

When a cemetery's annual interments exceed its annual inventory sales (as the case with the Town's in-ground casket lots), it is an indicator that:

- Community members have historically pre-purchased graves at the cemetery, which are now being used, and
- The cemetery's burial lots are frequently accommodating multiple interments. The Town does permit double-depth burial, and more than one casket placed in a burial lot.

Currently the Town's families may inter up to:

- One casket and one cremated remains urn or two caskets in an adult casket lot (provided the first interment is made at extra depth), and
- Two cremated remains urns within a cremation lot or a columbaria niche.

These interment and sales patterns suggest that there is a substantial demand for the pre-purchasing of cremated remains interment options, and there is an immediate, short-term need to develop new inventory to continue accommodating the current rate of advanced sales.

These patterns will also require the Town to accelerate the development of its casket lots in the long term. As the pre-purchased casket lot reserve gets used, its capacity to accommodate the higher rate of interment for its community members will diminish over time.

This decrease in interment capacity in reserved lots will steadily increase the cemetery's at-need casket lot sales to eventually match its rate of interment in the future.

Projected Interments + Sales

This section estimates the projected demand for the Town's interment services and inventory sales. These projections assume that the Town's historic service trends, market capture rates, and interment to sales relationship (identified in the previous sections), will continue forward over the next 25 years.

Projections of interment numbers over the next 25 years find that the Town can expect to deliver:

- 220 casket lot burial services, averaging 9 casket lot burials per year;
- 400 cremation lot burial services, averaging 16 cremation lot burials per year;
- 150 niche inurnment services, averaging 6 inurnments per year, and
- 90 scattering services, averaging 4 scattering services per year.

Projections of sales numbers over the next 25 years find that the Town can expect it will sell the right-of-interment for:

- 290 casket lots, averaging 12 casket lot sales per year;
- 500 cremation lots, averaging 20 cremation lot sales per year;
- 225 niches, averaging 9 niche sales per year, and
- 140 spaces in a scattering garden, averaging 6 spaces in a scattering garden per year.

The following graph summarizes the Town's projected cemetery interments and sales over the next 25 years, from 2023 to 2047.

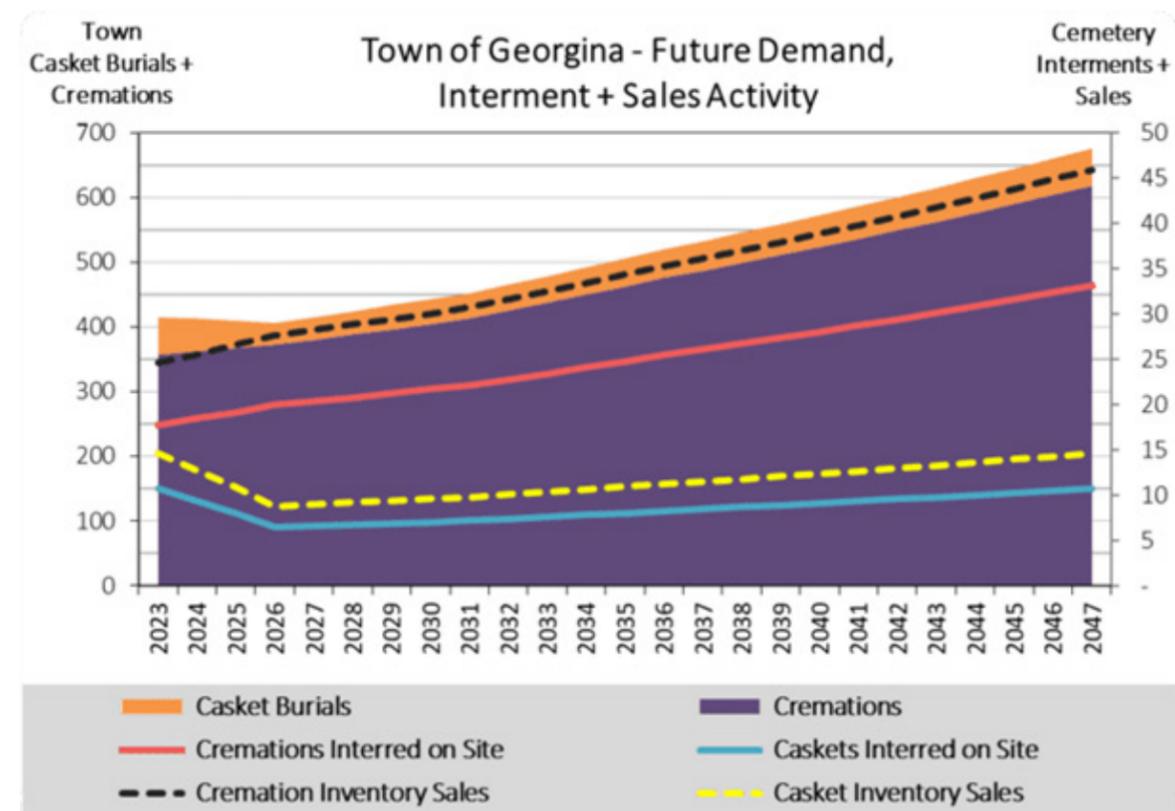


Figure 8: 25-Year Projection of Keswick Cemetery's Interments and Sales, Source: LEES+Associates.

Needs - Inventory + Capacity (Supply)

This section of the report analyzes the current developed inventory of casket lots, cremation lots, and columbaria niches, along with the capacity of any undeveloped land and potential infill areas at Keswick Cemetery. The purpose is to compare this current capacity with the projected demand over the next 25 years.

Interment Capacity

Interment capacity is important in the long-term outlook of a cemetery's operations. This is the total space available for interments in a cemetery's inventory.

"Interments" include the opening and closing service provided to the purchaser of a right-of-interment. At Keswick Cemetery, interments entail the burial of the deceased's casket or urn in a grave or the placement of an urn within a columbarium niche.

Interments must take place in a lot or niche that is purchased at-need or pre-need. A cemetery's interment capacity includes its inventory which is currently available for sale, as well as inventory that has been sold before an individual's death and interment but is not yet occupied.

Capacity refers to the number of times these opening and closing services can be done in a lot or niche after it has been sold, and the number of caskets and/or urns that can be placed within it. This is formally defined by cemetery bylaw, as well as physically constrained by the dimensions and size of the interment space.

If the annual interment volume is higher than the annual number of sales, the excess number of interments is accommodated by a cemetery permitting multiple interments in a single lot or niche.

Alternately, caskets and urns can be interred within a lot or niche that was purchased pre-need. If multiple interments are limited and there is minimal pre-purchased inventory, then at-need sales per year will increase in the future to accommodate the high interment demand.

Sales Capacity

The cemetery Demand-Needs Analysis compares the anticipated sales demand to the number of casket lots, cremation lots, and niches available for sale, with an estimated number of years of sales remaining.

"Sales" refers to all purchases of a right-of-interment for an in-ground casket or cremation burial lot ("grave"), columbaria niches at Keswick Cemetery. A sale may take place significantly in advance of the need for interment services at municipal cemeteries.

"Casket lot" inventory refers to all in-ground burial lots at Keswick Cemetery that can accommodate the in-ground burial of a casket. The size of a single casket lot is 4' x 13'.

"Cremation lot" inventory refers to all in-ground burial lots at Keswick Cemetery that accommodate only urns. The size of a single cremation lot is 2' x 2'.

The amount of inventory available for sale is usually a cemetery's most limited resource and is the primary constraint for cemetery operations. A cemetery usually only sells a grave or niche once, even though these single lots or niches can accommodate multiple interments.

Cemetery Inventory - Available for Sale

The following graph summarizes the Town's inventory that is available for sale by the type of interment:

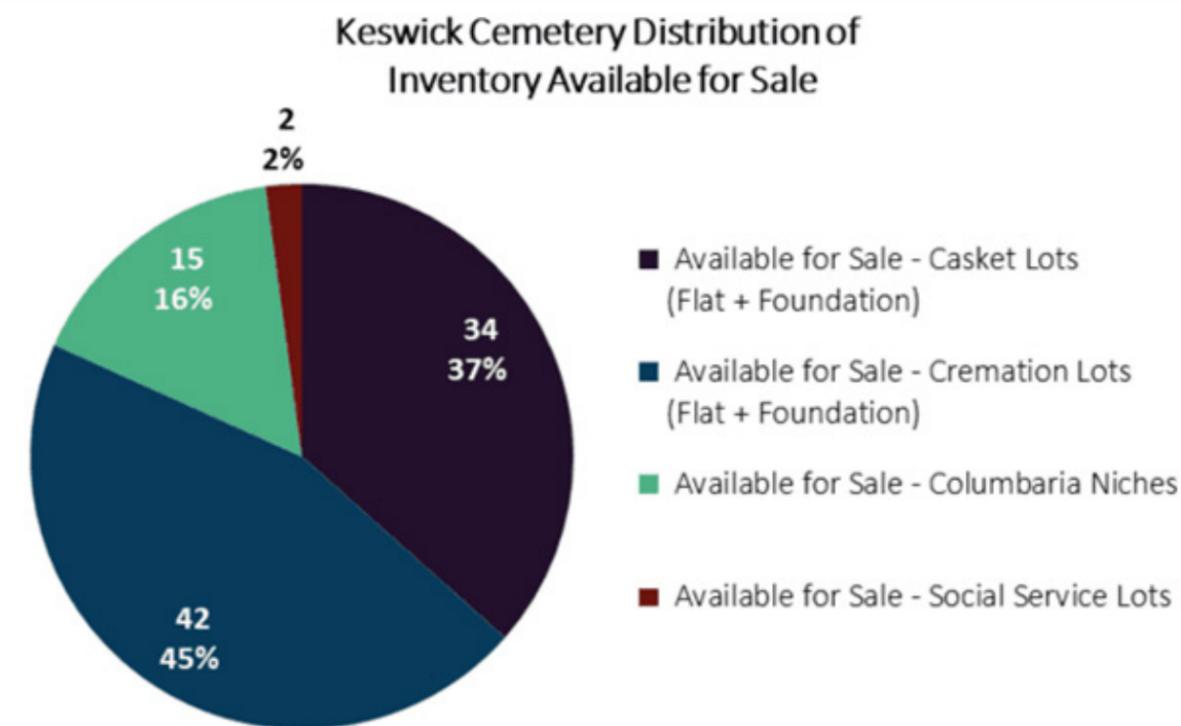


Figure 9: Keswick Cemetery - Distribution of Inventory Available for Sale. Source: Town of Georgina Cemetery Records.

The following table summarizes the Keswick Cemetery's inventory that is available for sale, the projected average number of sales per year over the next 25 years, and the estimated number of years of sales remaining. This assumes that the Town's historic sales to interment ratio will remain the same over the next 25 years.

Inventory Type	Average for Sale	Average per Year		
Casket Lot	34 lots	12 lot sales per year	2-3 years	2024-2025
Cremation Lot	42 lots	20 lot sales per year	1-2 years	2023-2024
Social Service Lot	2 lots	6 lot sales per year	< 1 year	2023
Niche	15 niches	9 niche sales per year	1-2 years	2023-2024
Total	121 lots + niches for sale			

Table 7: Cemetery Lots & Niches Capacity, Source: Municipal Cemetery Records.

New Capacity - Site Analysis

Expansion + Infill Opportunities – Development and Densification

In addition to the existing inventory available for sale, the Town has the potential to develop new inventory to meet demand by utilizing undeveloped land and exploring infill opportunities within the active area of Keswick Cemetery.



Total Area*: 80,900m² (20.0 acres, 8.1ha)

**Total area calculated as area within the property line on the 2018 topo survey*

Developed Area:

7,100m² (1.7 acres, 0.7ha)

Interment areas: 2,500m² (0.6acres, 0.2ha)

Includes casket burial, columbarium, and scattering area.

Access/Vehicle Infrastructure: 4,600m², (1.1acres, 0.5ha)

Includes the entrance roads, parking lot, turnaround circle, and access road to the airfield area.

Undeveloped Area:

63,800m² (15.8 acres, 6.4ha)

Available for development: 48,000m² (12.1acres, 4.9ha).
Includes the airfield area, hedgerows, hill, naturalized areas, and areas in between not currently utilized.

Available for development with notice: 15,000m² (3.7acres, 1.5ha). Includes the two agricultural fields along the south and east sides of the property.

**Encroachment is recognized by the landowner, LSRCA, and a letter acknowledging Town rights to lands has been issued. Lands are considered available for development with notice.*

Undeveloped Area Sub Category: Undevelopable Land:

10,000m² (2.5 acres, 1.0ha)

Includes ponds, capture zones, water courses and conveyances.

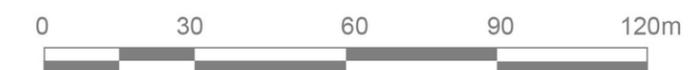


Figure 10: Keswick Cemetery Map, Developed and Undeveloped Areas, Source: LEES+Associates + Town of Georgina.

Keswick Cemetery has 15.7 acres (6.35 hectares) of undeveloped land suitable for development into new inventory and does not have any potential land rights concerns.

A conservative design standard of 500 casket lots per acre of land is commonly used by Canadian cemeteries to estimate their site's capacity. Using this standard, the Town could expect to develop an inventory of approximately 7,500 to 8,000 graves over the life of its new cemetery.

At the cemetery's current rate of lot sales, this additional inventory would provide the Town with over 150+ years of sales capacity.

Recommendations - Cemetery Demand + Needs Analysis

Cemeteries are unique in that their land use designation is legislated to remain unchanged in perpetuity. For this reason, it is prudent for communities to plan to have enough cemetery land capacity to meet community needs for at least 100 years. A cemetery system's inventory and land capacity (measured in "Years of Sales Remaining") are important indicators for measuring its long-term sustainability.

A strategy is required to provide the inventory to address the short-term and long-term needs of Keswick Cemetery. To ensure that Keswick Cemetery will be able to continue to provide its full range of services over the next 25 years, it is recommended that the Town implement the following strategies:

Short Term Strategy (1-2 Years)

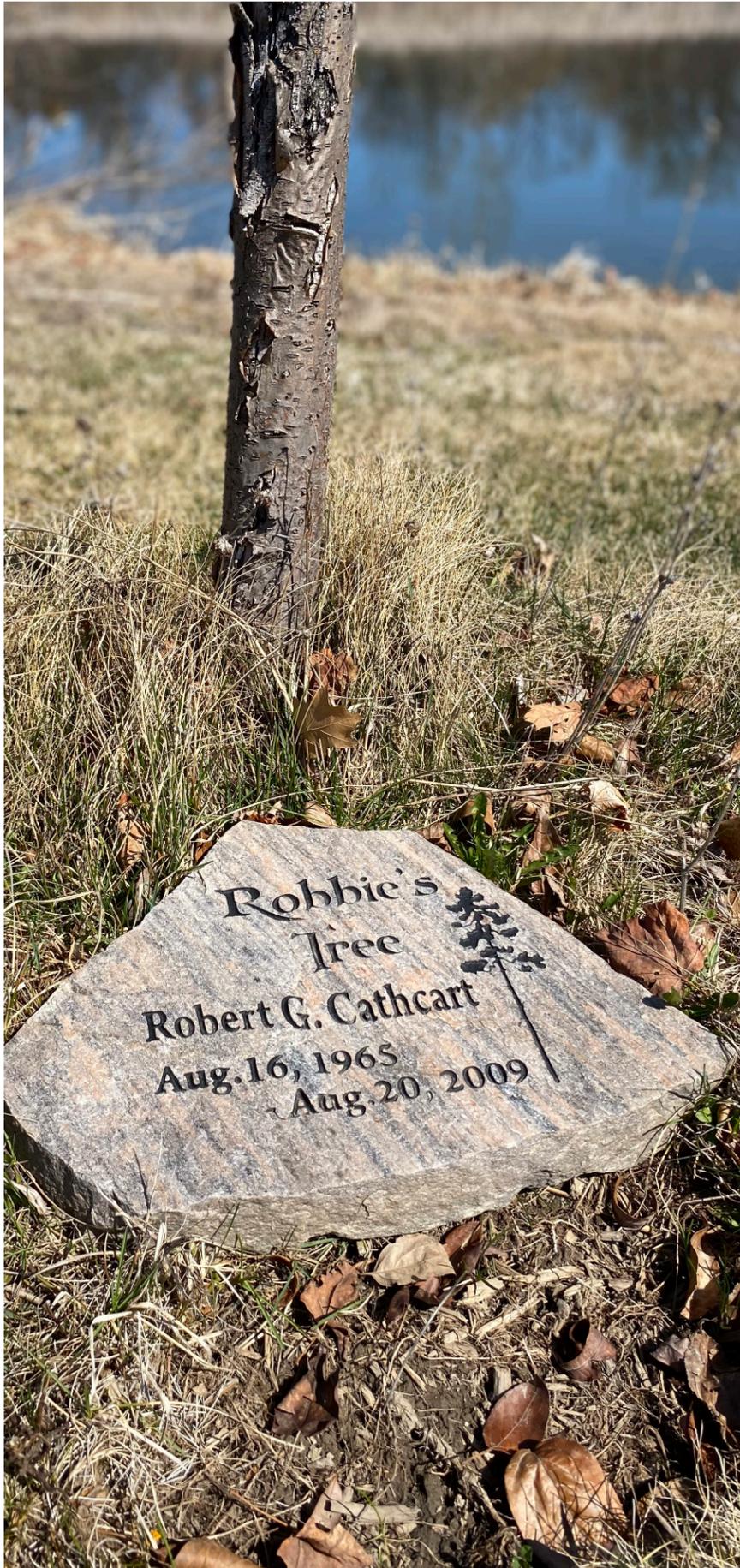
- Prioritize the design and develop a new cremation garden, with a priority focus on adding new cremation lots and columbaria niches to the cemetery's undeveloped lands, and
- Expand the range and volume of cremated remains interment and memorialization options at Keswick Cemetery in response to the strong and growing preference toward cremation in Georgina (e.g., memorial walls, bronze plaques, family columbaria, family vessels, etc.), and
- Increase the number of cremated remains permitted to be interred in a casket lot to two urns (plus a casket) to increase the overall total interment capacity of its cemetery land.

Long Term Strategy (3+ Years)

- Develop a more diverse array of sales and service options for traditional in-ground burial to attract more families to Keswick Cemetery (e.g., family estates, green burial, etc.), and
- Implement additional casket lot development in Keswick cemetery's undeveloped areas to ensure the Town will be ready to meet the expected increased sales demand from community members in the future due to the Town's projected market area growth.

These recommendations will provide the additional supply required by the Town to fully meet the community member needs for cemetery inventory sales, interment, and memorialization services expected over the next 25 years.





Chapter 3: Cemetery Product, Service + Pricing Review

This chapter provides a review of the current availability and diversity of Keswick Cemetery's offerings and an overview of new interment and memorialization options offered by other Canadian cemeteries that the Town could consider to further enhance its offerings and revenue streams.

Key Findings

A summary of the key findings from the cemetery product, service + pricing review highlighted the following:

- Keswick Cemetery has less diversity and range of interment services, inventory, and memorialization options than comparable Canadian cemeteries. For comparison, municipal cemeteries typically offer a minimum of two in-ground and two above-ground interment options;
- Keswick Cemetery fees are below the regional average for most of its products and services. It is reasonable for the Town to increase its fees in the coming year to align its cemetery rates with the surrounding communities in the region;
- The Town has not historically increased its cemetery rates each year. There is an opportunity for the Town to improve the cost recovery of its operating costs, by introducing a fixed minimum annual price increase on its cemetery rates, to offset the effect of inflation;
- The Town could provide new interment options to community members such as green burial, family columbaria, family estates, family vessels, ossuary, and scattering garden interments;
- The Town could add new memorialization options at Keswick Cemetery, such as engraving and inscriptions on a range of monuments; plaques and inscriptions on walls, benches, stone pillars, sculptures; as well as memorial vases and wreaths, and
- There is an opportunity for the Town to add new support services options such as tent, chair, and lowering device rental and other graveside services, and a service for making arrangements for cleaning and modifying memorials and monuments.

Product + Services Diversity Assessment

This product and services review compares the Town's offerings relative to those at municipal cemeteries across Canada and comparable cemeteries in communities near the Town of Georgina.

The comparable communities include the City of Barrie, the Town of Innisfil, the Town of Bradford West Gwillimbury, the Town of East Gwillimbury, and the locality of Thornton. These communities have been selected for comparative benchmarking because they serve community members with a similar demographic and disposition profile as those in the Town's market area.

They also operate in similar climate and weather conditions as Keswick Cemetery and assume a similar cost for their service delivery. Municipal cemeteries typically set the price of their offerings above the cost of service while remaining competitive with the alternative cemetery service providers that are likely to serve their market area's residents.

All selected cemeteries are municipally operated, except for Innisvale Cemetery & Crematorium Ltd. Innisvale Cemetery was included in this benchmarking study because of its proximity to Keswick Cemetery and the Town of Georgina's residents. Its cemetery prices are also below average for a private cemetery in the region and its prices are comparable to municipal cemeteries' fees in the region.

Current Cemetery Services + Offering Options

This section reviews the nature of the products and services that are currently offered at Keswick Cemetery.

In-ground Interment Options

Keswick Cemetery currently offers:

- **Full Burial Lots** – Also known as “casket lots” they can accommodate one or two caskets (depending on the location) in the cemetery, and
- **Cremation Lots** – These smaller lots can accommodate up to two cremated remains.

Casket and cremation lots are common offerings at Canadian cemeteries with casket lots more popular, as they can typically accommodate multiple interments, and are often used as a family estate plot where families inter multiple cremated remains.

At Keswick Cemetery, from 2017 to 2022:

- 46% of services were casket interments, 32% of sales were for casket lots; and
- 34% of services were cremation lot interments, and 40% of sales were for cremation lots.

In addition to casket and cremation lot areas, Canadian municipalities often offer dedicated in-ground burial sections for:

Infant and child burials;

- Prominent religious groups (e.g., a Catholic Section);
- Prominent local ethnic groups, (e.g., an Asian Section), and
- Veterans interred within a “Field of Honour.”

Keswick Cemetery does not have dedicated lots or sections for infants, veterans, religious or ethnic groups.

Given that Keswick Cemetery is inclusive and available to everyone, and the market area served is becoming increasingly secular and equitable- it is not necessary to develop separate sections on an ethnic or religious basis unless there is a clear and strong request from the residents.

Communities that add a Veterans “Field of Honour” often do so because there is a strong presence of the military, former military personnel, or Legion members among their residents. The Town is advised to identify and assess the presence of these individuals in their community and engage its members to determine if there would be an interest in a dedicated veteran’s section at Keswick Cemetery.



Figure 11: Map of Benchmark Cemeteries + Communities, Product + Services Review. Source: LEES+Associates, 2023.

Double Depth Burial

Double depth burial is common in Canadian municipal cemeteries, including in Keswick. Currently, among the benchmark communities reviewed, the City of Barrie, the Town of Bradford West Gwillimbury, the Town of East Gwillimbury, and Thornton offer double depth burial to their residents.

Ideally, a cemetery would allow double depth casket burial for the owner/operator to maximize their interment capacity and potential service revenue. However, double depth burials can pose operational challenges.

Rocky soils, seasonal saturation, and safety concerns necessitate the use of vaults and specialized equipment for double depth burials in cemeteries. These measures address difficulties in digging to extra depth and ensure proper accommodation for two casket burials.

Community Columbaria

Keswick Cemetery also offers the above-ground interment of cremated remains (also known as inurnment) in columbaria niches. Community columbaria are above-ground structures or walls with many recessed niches, which accommodate cremation urns. A standard columbarium unit will house the cremated remains from multiple families in separate niches.

Up to two inurnments are typically allowed in one standard columbaria niche.

Columbaria construction costs (and their relative niche price to the customer) vary widely, depending on size, design details, and associated amenities placed in the adjacent landscape.

All columbaria installations typically have a high return on investment (approximately 200% or more) and provide a growing source of revenue, due to the rising demand for cremation.

Columbaria also have a lower cost to deliver an interment with significantly less time and cost to place an urn within a niche than to inter an urn within a burial lot.

Columbaria also preserve interment land capacity, take little space, and can be placed in areas unusable for other types of interment. In addition, the opening and closing of columbaria niches are not constrained by seasonal ground conditions.

At Keswick Cemetery, from 2017 to 2022:

- 12% of services were columbaria niche interments, and 18% of sales were for niches.

Scattering Gardens

Scattering gardens are attractive natural or ornamental areas that offer a place for the scattering of cremated remains.

Scattering gardens are a flexible and efficient use of land for interment capacity. This is a common feature at Canadian cemeteries, offering families the option to scatter all or a portion of the cremated remains in a garden.

Cremated remains are alkaline and salty, so limiting their spread in the scattering garden extends the life of plants in the area. One common method to achieve this is by using an in-ground or above-ground ossuary placed in the garden, where a ceremonial scattering of some remains occurs, and the rest are stored. An ossuary is a container for holding the cremated remains of multiple individuals.

Keswick Cemetery currently hosts a scattering garden. It also offers options for memorialization in its scattering garden, including various sizes of wall-mounted bronze plaques.

At Keswick Cemetery, from 2017 to 2022:

- 8% of services were cremated remains scatters and 10% of sales have been for scattering rights.



Figure 12: Existing casket lots at Keswick Cemetery. Source: LEES+Associates, 2023.



Figure 13: Columbarium, Keswick Cemetery. Source: LEES+Associates, 2023.



Figure 14: Scattering Garden at Keswick Cemetery. Source: LEES+Associates, 2023.

Additional Services

In addition to the interment services provided, the Keswick Cemetery also offers the following additional support services:

- Winter interment services;
- Saturday and Holiday services;
- After Weekday Hours services;
- Exhumation / Disinterment services, and
- Interment Rights Certificate Transfer service.

All of these additional services (and their associated fees) are common at cemeteries across Canada and should be continued.

New Cemetery Services + Offering Options

This section identifies new services and offerings options common at other Canadian cemeteries that could be introduced to Keswick Cemetery.



Figure 15: Road and Burial Lots at Keswick Cemetery. Source: LEES+Associates, 2023.

Infant/Child Plots

Many Canadian municipalities offer smaller, discounted plots for the burial of infants (less than two years old) and children.

Among the benchmark communities in this product and services review, infant lots are offered in the Town of Bradford West Gwillimbury, the Town of East Gwillimbury, and the City of Barrie. Child plots and interment services are also offered in the City of Barrie and the locality of Thornton.

Family Estate Plots

A family estate plot is a small area of cemetery land that is exclusively dedicated to one family. They often consist of one large headstone or memorial dedicated to the family and smaller individual headstones for each family member interred in the plot. The dimensions, number of interments, and types of interments allowed vary among cemeteries. They are typically established by the operator of the cemetery and enforced by the Cemetery Bylaw. The price of a family estate should reflect the associated development cost and ongoing maintenance of the landscape features included.



Figure 16: Kelowna Memorial Park Family Estate, Kelowna, BC. Source: LEES+Associates.

For example, the **Kelowna Memorial Park** Family Estates are 4-metre by 4.5-metre plots that have interment spaces for 20 family members and landscape features. They include:

- Two double-depth lawn crypts, (that can accommodate four traditional in-ground burials);
- Cremation lots (that can accommodate up to 16 cremation interments);
- A granite memorial bench;
- An upright marker foundation;
- Planting beds, and
- Custom fencing or hedging that helps differentiate the family plots from the rest of the cemetery.

Family estates may be a larger plot of land that has room for more than one grave, permitting a mix of multiple caskets and cremated remains interments. Cemeteries also offer smaller cremation family estates, dedicated solely to the interment of cremated remains.

Family Columbaria

Family columbaria are smaller columbaria units that are scaled for a single-family, which holds the exclusive right-of-interment to all the niches or other features.

Family columbaria vary in size, price, and design. All memorialization is dedicated to members of that family. Features can be added to meet personal family tastes, customs, and religious practices while meeting cemetery standards. Personal engravings can also be added to key features such as the roofline, sidewalls, and shutters.

The cemetery operator owns the family columbarium, and the family purchases the right of interment for its exclusive use.

Some cemeteries work with the families in choosing an appropriate location for their family columbaria.

Other cemeteries prepurchase its family columbaria inventory, and develop a dedicated family columbaria area, with a range of installed units for community members to choose from.

Woodlawn Cemetery, in Guelph, is an example where family columbaria are part of the cemetery's range of offerings



Figure 17: Family Columbarium, Woodlawn Cemetery, Guelph, ON. Source: Woodlawn Cemetery, 2022.

Family Vessels

Family vessels are large urns, designed for placement at key locations, along pathways, and in cremation gardens. Each vessel accommodates up to 4 hard urns, 10 soft urns, or 15 co-mingled remains.

Each vessel is owned by the cemetery, which sells families a right-of-interment for its exclusive use. Since these vessels are a new offering in North America, their introduction would require marketing to increase community awareness. As such, family vessels should be installed in phases, beginning with one or two units placed in the cemetery.

Family vessels are offered at several Canadian and American cemeteries. Rates range from \$6,000 to \$13,000 each, depending on their size and location in the cemetery. Services for placing a nested urn or comingling remains within the vessel are typically \$200 for each interment.

Like columbaria, family vessels preserve interment land capacity because they take little space and can often be placed in areas unusable for other types of interment.



Figure 18: Family Vessel at Shuswap Cemetery, City of Salmon Arm, BC. Source: LEES+Associates.

Green Burial

Green Burial is also known as "natural burial," "country burial," or "woodland burial," and is defined as an earth burial with:

- No embalming;
- A fully biodegradable casket or shroud;
- No use of grave liners or concrete vaults;
- A form of habitat restoration of the gravesite such as planting with native species; and
- A communal marker, no marker, or a simple marker made of local and natural materials.

The Jewish, Muslim, and Baha'i communities have traditionally interred the deceased according to green burial principles. Most recently, the Catholic Church has begun to actively embrace green burial, based on the tenets of green burial aligning well with its core beliefs and practices.

Many cemeteries across Canada plan to add green burial to serve their communities. Green burial is an emerging trend as the philosophy of having a lighter touch on the environment resonates with many peoples' philosophy of trying to live in a way that has less impact on the planet.



Figure 19: Cobourg Union Cemetery Natural Burial Area, Cobourg, Ontario (Left)



Figure 20: Green Burial Section Marker at Royal Oak Burial Park, Victoria, BC (Right), Source: LEES+Associates.

The Canadian-based Green Burial Society of Canada (GBSC) (<http://www.greenburialcanada.ca/>) is a non-profit organization that offers a certification program to qualifying service providers and lists the Canadian cemeteries currently offering green burial.

The process to become certified by the Green Burial Society of Canada, and the related documentation required to apply for certification can be found at the GBSC website. This process includes three steps.

1. **REVIEW** the GBSC Approved Provider Criteria to determine the appropriate category for your cemetery. It includes a Glossary of Terms to assist the Town in choosing the appropriate category;
2. **COMPLETE** the Approved Provider Application. Submit it to the GBSC via: gbscapplcations@gmail.com.
3. **REVIEW** the GBSC Statement of Ethical Practices. Every Approved Provider is required to sign this document and post it at their cemetery office.

There are currently, two certified providers in Ontario. Fairview Cemetery in Niagara Falls and Glenwood Cemetery in Picton have been certified by the GBSC. Although not certified, several other cemeteries in Ontario are now offering a green burial option as part of their services.

The greatest challenge to green burial is **public awareness** and **industry education**. Green burial is not yet a wide-spread option in Canadian cemeteries, and community members lack awareness of green burial

options. Without an understanding of green burial principles and practices, many families, funeral, and cemetery service providers may perceive health and safety concerns, environmental protection, and reasonable cost as not achievable.

Green burial should be just as valued – and valuable as traditional burial grounds and for that reason should be priced commensurate with other full depth burial options. When the Town adds green burial to its cemetery fees list, green burial lot inventory should be offered at the same rate as those lots in its traditional casket burial grounds.

Over the long term, maintenance costs for green burial can be less than more traditional casket burial with mown lawns and irrigation. The habitat restoration practice within green burial areas requires less maintenance after plant establishment.

Committing to providing green burial offers a marketing opportunity for the Town and could increase connections between the community and the cemetery. Media and social network sites are especially attuned to stories about green burial.

Memorialization Options

Keswick Cemetery currently offers a variety of wall-mounted bronze plaques as memorialization options at its scattering garden and inscription services at its columbaria.

The Town could diversify its offerings and introduce a range of memorialization options by offering some of the following:

- Photoceramic frame memorials;
- Niche and graveside vases and wreaths;
- Engraving and inscriptions, on a range of monuments (headstones, boulders, etc.);
- Plaques on memorial benches, stone pillars, walls, statuary, niche doors, and
- Communal living memorial areas with plantings, shrubs, and flower beds.

Memorialization can occur with or without interment at a cemetery.

With increasingly mobile families, many people are choosing not to inter the cremated remains of their loved ones in a cemetery; however, they are still interested in memorializing them in some way.

There is a potential market for the Town to sell a range of options for commemoration without interment, particularly for people who may have lived in the Keswick area and have family members there, but who are interred elsewhere.

From the benchmark review, some services offered by other communities and not the Town of Georgina include:

- **Barrie Union Cemetery** in Barrie offers memorial benches with plaques and memorial tree plantings, and
- **Queensville Cemetery** in East Gwillimbury offers ceramic photo memorialization.



Figure 21: Bronze Memorial Plaques, mounted on a Modular Concrete Block Wall at Keswick Cemetery, Source: LEES+Associates, 2023.



Figure 22: Memorial Leaf & Vine Sculpture with Inscriptions. Source: City of Kitchener Cemeteries

Additional Support Services + Fees

Canadian cemeteries often offer a wide range of additional fee-based support services. These services vary widely across different municipal cemeteries. Additional support services charged for by other cemeteries in Ontario that are not currently charged by Keswick Cemetery include:

- Discards
- Bench permit
- Snow removal
- Cornerstones
- Legal inquiries
- Sunday services
- Urns & urn vaults
- Pallbearer services
- Marker re-leveling
- Monument cleaning
- Delayed burial storage
- Concurrent service fee
- Surrender and sell backs
- Oversized liners & caskets
- Flower placement service
- Concrete slab for lanterns
- Curbing & lifting of curbing
- Tree/shrub planting and removals
- Memorial/marker provision
- Memorial/marker installation
- Memorial bench and installation
- Marker repair and modification
- Deed / Certificate replacement fee
- Special order processing fee
- Wreath refinishing handling fee
- Reservation fee for adjacent lots
- Retrieval of records from archives
- Custom lot landscaping services fee
- Winter grave-care services (e.g., snow shovelling)
- Tent, chairs, and lowering device rental fee for graveside services
- Urgent accommodation fee for unplanned services
- Bronze marker order/handling fee/installations
- Handling & placing of funeral home-supplied liners
- Making arrangements for monuments and foundations
- Issuance of a duplicate or replacement certificate of interment rights
- Administration, Registration, and Cancellation services

In deciding which new service fees to add, it is important to consider that too many additional charges can make people feel that they are being overcharged for small tasks or standard items. This can lead to community member resentment and disengagement.

In addition to considering the impact to residents, new support service fees should be balanced with the anticipated resourcing and administrative cost to implement and maintain those services.

Several of these services could be implemented easily and with little to no cost to the Town.

From the benchmark review, examples of additional support services and fees on the price lists of other communities that the Town of Georgina does not include, are as follows:

- **Queensville Cemetery** in East Gwillimbury offers graveside chair and tent rentals, interment rights certificate replacement, monument cleaning, resealing a monument, cornerstones, marker/memorial provision, urns, vaults, and tree/shrub removal services.
- **Mount Pleasant Cemetery** in Bradford West Gwillimbury has a lot marking and staking fee;
- **Thornton Union Cemetery** in the locality of Thornton offers cornerstones and vaults, and
- **Barrie Union Cemetery** in the City of Barrie has a fee for delayed burial storage, plot repurchases, pallbearer services, additional support staff at funeral services, monument cleaning, as well as for shrub and flower bed planting services.

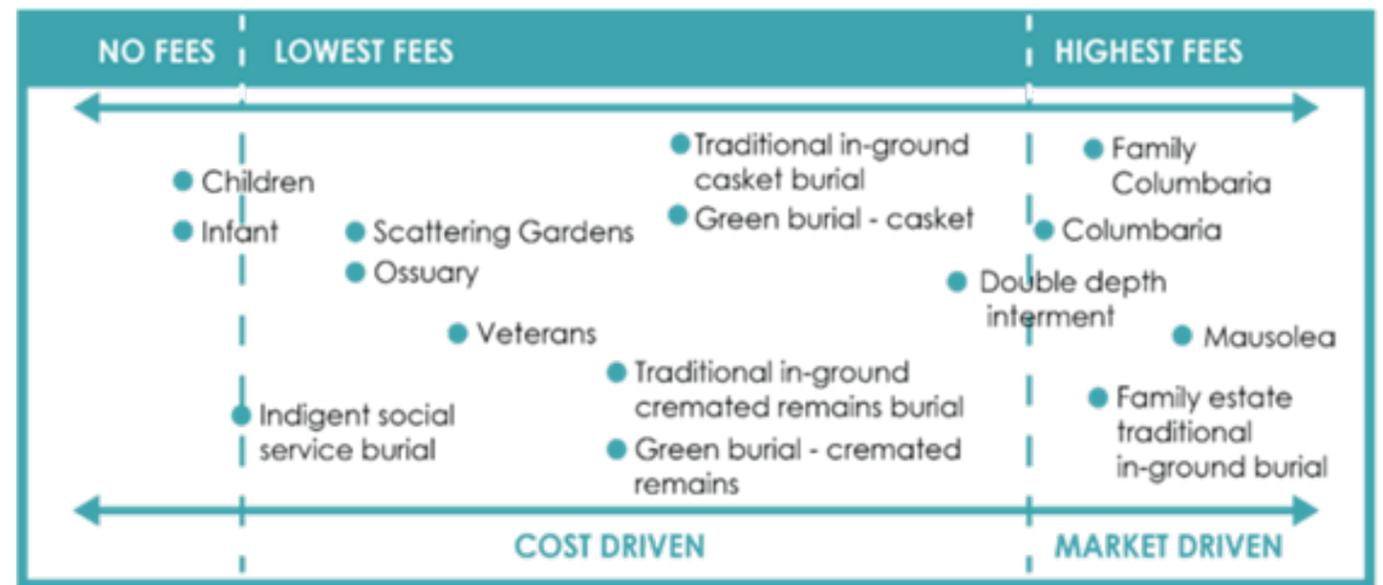
Cemetery Pricing Benchmarking Study

This section analyzes the offerings at Keswick Cemetery and compares the prices to other similarly sized cemeteries in the region and across Canada.

Market Trends

Cemetery pricing in Canadian cemeteries tends to follow consistent market trends. Large urban centres often have higher rates than small towns and rural communities due to the increased demand relative to local supply. Cemeteries in large urban centres also tend to provide a greater diversity of offerings than small towns and rural communities. Families value a variety of interment options and are willing to pay a premium to accommodate their cultural, religious, and personal preferences.

The following figure shows the pricing continuum for typical Canadian cemetery offerings:



LEES+ASSOCIATES PRICE BENCHMARKING ANALYSIS

Figure 23: Pricing Continuum for Typical Canadian Cemetery Offerings. Source: LEES+Associates.

PRICE BENCHMARKING

Best practices for cemetery pricing entail annually comparing the rates of cemeteries in communities with similar landscapes and demographic profiles. This involves reviewing the rates of other cemeteries with similar business models, climate conditions, as well as population, ethnic, and religious composition.

This price benchmarking study reviewed Keswick's rates relative to the averages at similar cemeteries in communities near Keswick. These communities include Innisfil, Bradford West Gwillimbury, East Gwillimbury, Thornton, and Barrie.

The following table compares and summarizes the resident rates for the most common, primary offerings available at the cemeteries in this study, including the care and maintenance fund fee portion.

Cemetery Offering	Keswick Rate	Regional Rates ⁷	Canadian Rate ⁸	Price Comparison: Keswick's Relative Position
Casket and Cremation Lots/Niches/Scattering Area				
Adult Casket Lot	\$1,297 to \$1,958	\$1,959 to \$2,299	\$1,000 to \$3,000	Regional: <u>Below Average</u> Canadian Average: <u>On Par</u>
Cremation Burial Lot	\$756 to \$1,255	\$1,198	\$500 to \$1,500	Regional: <u>Below Average</u> for its Flat Marker Lot. <u>On Par</u> for Upright Marker Canadian Average: <u>On Par</u>
Columbaria Niche	\$1,962 to \$2,415	\$2,175 to \$3,248	\$1,000 to \$5,000	Regional: <u>Below Average</u> Canadian Average: <u>On Par</u>
Opening and Closing Services				
Adult Casket Burial	\$882 to \$1,102	\$1,027 to \$1,307	\$750 to \$2,000	Regional: <u>Below Average</u> Canadian Average: <u>On Par</u>
Cremation Burial	\$441	\$476 to \$696	\$250 to \$750	Regional: <u>Below Average</u> Canadian Average: <u>On Par</u>
Niche Inurnment	\$315	\$381 to \$416	\$100 to \$500	Regional: <u>Below Average</u> Canadian Average: <u>On Par</u>
Scattering Service	\$278	\$255 to \$650	\$250 to \$500	Regional: <u>Below Average</u> Canadian Average: <u>On Par</u>

Table 7: Price Benchmarking Summary of Prime Offerings, Source: LEES+Associates.

Keswick's cemetery prices are generally **lower** than the regional average rates for the services and offerings they are providing to their community members.

This means that Keswick can substantially increase its fees in the coming year, without exceeding the fair market value for cemetery services in the region. Keswick is justified in increasing its rates beyond the rate of inflation since greater increases are necessary to ensure more equitable pricing with its neighbouring cemeteries and communities.

The detailed results of the price benchmarking study for the Keswick cemetery system can be found in **"Appendix A – Detailed Price Benchmarking Study."**

⁷The minimum and maximum averages of cemetery rates for an option in comparable communities in the region surrounding Keswick.

⁸The spectrum of rates for low to high quality offerings within LEES+Associates price analyses for cemetery plans from 2014 to 2021.

Price Changes + Strategic Positioning

Keswick Cemetery's last raised its fees, by **5% in 2019**. Before that, rates had not increased since 2015.

The standard practice for most cemeteries, as analyzed by LEES+Associates over the past two decades, has been to increase fees annually by the rate of inflation~ (at minimum). Consumer Price Index reports from the International Monetary Fund find that inflation has averaged 2% in North America over the past decade. Many municipalities will also add 1% to this, to improve the cost recovery of its operations over time. Therefore, to align its pricing practices with other municipal cemeteries in Ontario, Keswick should plan to increase its prices annually by a minimum of **3% per year**.

Community residents and other stakeholders, such as funeral homes and religious groups, frequently request a municipality to explain price increases that exceed the rate of inflation. This justification can be achieved by providing information and education regarding the notable disparities between:

- The current cemetery rates and the average rate in the region.
- The cemetery's operating revenue and expenses.
- The current balance of the Cemetery's care and maintenance fund (C&MF) and the projected balance required for full funding. A C&MF is considered fully funded when its future interest income is expected to cover its future care and maintenance costs.

Greater price increases can also be justified by a commitment by the owner-operator to develop and improve a cemetery's infrastructure, aesthetic, and interment capacity.

These pricing practices align with the common municipal philosophy of the 'individual user payment' and moving cemetery operations towards financial self-sustainability. This is the preferred position of many Canadian and American municipal cemeteries - rather than the whole community paying for a service that is subsidized by tax dollars in perpetuity.

Cemetery demand is relatively inelastic, meaning that there is usually little impact from price changes on the demand and need for a cemetery's services. Currently, several of Keswick Cemetery's key rates are lower than its' neighboring cemeteries. This means Keswick can continue to increase its rates, with little risk of losing revenue to residents choosing to be interred elsewhere, provided they continue to be increased within the expected regional price range (also known as the fair market value).

Most municipal cemeteries operate on a "cost leadership" business model where they tend to compete on affordability. Private and some religious cemeteries operate a "differentiation" model, which entails offering a highly diverse range of customized services and premium offerings. Cemeteries with many interment and memorialization options are often perceived as being more attractive and as offering better value. This enables them to charge higher rates than other cemetery operators can charge.

Almost all municipal cemeteries are run as a service to their communities, and these municipalities support their cemetery system, subsidizing them with tax dollars to some degree. Keswick will need to decide where its business model sits on this spectrum of cost recovery. There is an understanding that few municipal cemeteries operate a full break-even cost recovery model. It is even more unusual for a municipal cemetery to operate a "for-profit" model.

Non-Resident Pricing

Keswick does not presently charge a non-resident premium. A significant number of Canadian municipal cemeteries, including the two cemeteries managed by Bradford West Gwillimbury, do charge a non-resident premium on inventory sales.

The purpose of the higher non-resident fee is in part, an acknowledgement by municipalities that its residents have supported the cemeteries through their annual tax contributions for many years. Non-residents interred in municipal

cemeteries usually have not made a comparable contribution. Therefore, the non-resident premium is intended to make the overall, long-term financial support of the cemetery system more equitable.

Non-residents typically pay a premium on top of the resident rate, ranging from 10% to 200% on cemetery lot, crypt, and niche sales. Though less common, some communities also choose to charge a premium for their cemeteries' interment services. Alternatively, some North American communities intentionally opt to list and/or present their cemetery offerings at the upper end of the regional market price spectrum and then offer their residents a "discount" – rather than charge a "premium" to non-residents.

Cemeteries that charge a non-resident premium, usually define a "non-resident" as an individual that did not reside or own property in the cemetery operator's municipality for a minimum of one year, before that individual's date of death. Less commonly, some communities choose to make the required period of residency or property ownership longer, requiring five or ten years of local residence.

Community surveys undertaken by LEES+Associates have historically found that most resident respondents typically support a pricing policy whereby non-residents pay more than residents.

There tends to be particularly high support for these premiums in communities with land scarcity, where they are used as a strategy to reserve the limited cemetery land for the municipality's residents.

Of the benchmark communities examined for this report, Bradford West Gwillimbury charged a 15% premium for non-resident interment rights.

Services-Oriented Pricing Strategies

Some Canadian communities have a social services policy that directs their cemetery staff to offer free service or a discounted rate to select residents. This may include rates for:

- **Social Services supported residents (for those on disability and low-income households);**
- **Emergency responders including members of the police, fire, and ambulance services;**
- **Veterans, and**
- **Infants and children.**

Keswick does provide social services burials to its indigent residents at a discounted rate.

Keswick presently does not offer a discounted rate to families for the lot and burial services of an infant or child on its price list. Bradford West Gwillimbury, East Gwillimbury, and Barrie do offer a lower rate for infants and children.

Whether a municipality offers service-oriented pricing for any or all these groups, depends on the philosophy of its Council and Elected Board members. Canadian municipal cemeteries are commonly supported as a public service to the community and are subsidized by residents' tax dollars.

These groups are typically a very small proportion of the community members served by municipal cemeteries. Therefore, offering discounted rates to members of these group are not expected to significantly affect the financial sustainability of a cemetery's operations.

Given the limited amount of developed inventory available at Keswick's existing cemeteries, expanding discounted pricing to attract these groups may not be the best option right now. At this stage in the cemeteries' lifecycles, new lands need to be developed to create additional inventory. It is also expected that a municipality would seek to maximize the potential revenue from its remaining developed cemetery inventory during this time. Therefore, expanding service-oriented pricing may be a more feasible option after Keswick develops additional interment spaces and expands the size of its active cemetery site.

Recommendations – Product + Services Review

The following recommendations will ensure the Town will continue to have enough inventory to meet the needs of the community, maximize its land capacity, attract more residents to the Keswick Cemetery, diversify its services, and improve its financial sustainability.

Products and Services Diversity

- Identify the start-up and ongoing operating cost for cemetery operations to provide the new products and services it plans to offer because of this plan;
- In the short term, expand the amount of cremation inventory available and diversify the range of cremation interment options. Add more columbaria niches and scattering gardens, as well as new offerings such as cremation family estates, family columbaria, and family vessels;
- In the long term, develop new in-ground interment options, such as additional casket lots, green burial, and family estates.
- In the long term, introduce a more diverse range of memorialization options (such as engraved boulders, plaques on memorial walls and monuments, etc.) and a select number of new support services that are low-cost to provide and easy to implement.
 - This may include fees for tent, chair, and lowering device rentals and other graveside services, custom landscaping services for lots; and a service for cleaning and modifying memorials and monuments.

Cemetery Pricing

- Increase all Keswick's cemetery rates annually by a minimum of 3% per year to offset inflation.
 - Add to the cemetery bylaw a schedule that includes a list of the current fees and terms, which will automate the addition of this annual increase.
- Introduce a minimum non-resident premium of 15% to the Keswick cemetery price list.
 - As part of this process, Keswick will need to define its qualifying criteria for residency and non-residency and add this to the Cemetery Bylaw.
- Implement a one-time increase to the following Keswick's rates (including care and maintenance) in 2024, to better align the Town's fees with the average price range for cemetery services and offerings in the region:
 - Adult Casket Lot rates increase to \$1,800 (Section 2A) and \$2,100 (Sections 2B, 2C, 2D).
 - Adult Casket Burial standard rate increases to \$1,000 and the winter rate increases to \$1,300.
 - Cremation Flat Marker Lot increases to \$1,000;
 - Cremation Burial rate increases to \$500;
 - Columbaria Niche top row rate increases to \$2,750;
 - Columbaria Niche inurnment rate increases to \$400;
 - Interment Rights Transfer Fee increases to \$200;
 - Extra burial depth service premium increases to \$325, and
 - Weekend, holiday, and weekdays after-hours service premium changes to \$275 for cremated remains and \$550 for casket burials.
- Consider adding a discounted infant and child lot and interment rate after the cemetery has expanded its number of developed inventory available, and

- Undertake a financial plan to determine the current difference between the cemetery’s operating expenses and its earned revenue.
 - The purpose of this plan would be to identify the Town’s degree of cost recovery for its cemetery operations. This would provide further information to guide the Town’s appropriate price positioning for Keswick’s inventory and services. Pricing is optimized when it is tied and tailored to the operating cost of a cemetery site.

Governance

Prior Governance Model

Keswick Cemetery has traditionally relied on an independent Board of Directors that manages interment sales, maintenance, capital investment, and related finances (note that this board is independent of the Cooke’s Cemetery Board). Decisions regarding the property have been made by the Cemetery Board with no formal oversight by the Town. The Town is the legal landowner of record and completes reporting to the BAO based on data provided by the Board. The Town conducts the process for appointing Board members and establishing related policies to formalize the Board’s role.

New Governance Model

Early in the project process and in conjunction with discussions had as part of the Pioneer Cemeteries Management Plan project, LEES recommended that the Town take on full ownership of the fiscal responsibilities, rate setting, customer care, capital planning, and general oversight of all cemetery sites, in particular Keswick Cemetery due to the active sales and interment practices.

The Town conducted a jurisdictional scan in June and July 2023 to determine how other municipalities operate their municipally owned cemeteries. Town staff consulted with each municipality within York Region (East Gwillimbury, Newmarket, King, Aurora, Whitchurch-Stouffville, Richmond Hill, Markham and Vaughan) and found that no Cemetery Boards, Advisory Committees or Boards of Management exist within the Region. Instead, each municipality confirmed that their Council had delineated full ownership of the fiscal responsibilities, rate setting, customer care, capital planning and general oversight of each Municipally Owned Cemetery to Staff.

After consultation with the previous Cemetery Boards, various municipalities both within and outside of York Region, the Town intends that the Keswick Cemetery Board and Cooke’s Cemetery Board, be dissolved. The Town desires to align with other municipalities within York Region and other similar municipalities across the province to assume the governance of all Municipally Owned Cemeteries, ensuring the Town is protecting and retaining its own assets, while achieving complete transparency and control of public records and aligning itself with the legislated requirements of the BAO.

Chapter 4: Site Analysis

In April of 2023, the LEES+Associates team traveled to Keswick Cemetery to assess the suitability, opportunities, and constraints for the enhancement and expansion of the cemetery.

Opportunities and Constraints

This section outlines the opportunities and constraints of enhancing the existing cemetery, as well as designing and expanding onto the potentially developable lands. This assessment is used to inform the initial concept designs for the Keswick Cemetery Master Plan through to design details.

The opportunities and constraints are set out under the following headings:

- Adjacencies and Land Uses
- Interment and Memorialization
- Landscape Character
- Access and Circulation
- Signage and Wayfinding
- Water and Drainage
- Amenity and Infrastructure

Adjacencies and Infrastructure

- The site is located on the east side of Varney Road. The cemetery is bounded by the Deer Park Public School to the north and enclosed by residential properties and agricultural land on the south and east sides of the property.
- The agricultural fields are currently under a lease agreement with LSRCA. Encroachment is recognized by the landowner, LSRCA, and a letter acknowledging the Town rights has been issued. The town needs to address ownership and lease schedules, but the land is considered available for development with suitable notice.
- The eastern portion of the site is currently being leased to the Keswick Model Aircraft Club until future expansion is required for interment purposes. The flying club brings people to the site and could be a rental revenue source. There is also a liability hazard and noise will be a barrier to continuing shared use when the rear area is needed for interment expansion.

- Keswick Cemetery is located about 1.5km from Lake Simcoe.

Interment and Memorialization

The cemetery currently offers full casket burial, in-ground cremation burial, scattering and one columbarium.

- **Casket Lots** – This area at the southwest corner of the site is bound by the gravel cemetery entry driveway to the north and secondary access road to the south. The ground is uneven and susceptible to flooding and saturated soils. The edge is defined by boulders to prevent vehicular traffic from veering into the burial area.
- **In-Ground Cremation Lots** – These lots are west of the casket lots and next to the small pond. The lots directly adjacent to the pond are unusable due to seasonal flooding and saturated soils.
- **Scattering Garden** – The scattering garden is a landscaped mound with a winding gravel trail. Access is off the north-south driveway and near the parking area. A memorial wall consists of a concrete modular wall with bronze plaques. The scattering garden is at capacity with expansion needed.
- **Columbarium** – A single columbarium is located north of the parking area with access off the north/south driveway. The columbarium is made of grey polished granite with black polished granite shutters and is bound by pavers and decorative gravel, and is nearing capacity. There is open lawn space surrounding the columbarium with opportunity to add another unit to fulfill demand.

Landscape Character

- The land is relatively flat grassland with a larger mound in the centre with an elevation gain of approximately 1.5 metres. The open hill provides some desirable vistas.
- There is an opportunity to enhance the landscape character and provide additional shade to visitors with more trees and plantings throughout the site. A phased tree planting plan would allow the Town to plant trees in advance of site development with the goal of more mature tree canopy cover on the site.
- The area contains four ponds and transitions to a wet marshy area towards the northwest that is undesirable for interment, circulation, or infrastructure. There is an opportunity to span the marshy watercourse with a pedestrian bridge and to use the naturalized area as a memorialization trail.





Figure 24: View of Entrance Pillars and Burial Area from inside Keswick Cemetery, Source: LEES+Associates.



Figure 25: One of four ponds located on site, Source: LEES+Associates.



Figure 26: Existing scattering garden and columbarium seen from atop the central mound, Source: LEES+Associates.



Figure 27: Access road and area currently used by the Keswick Model Aircraft Club, Source: LEES+Associates.

- An existing hedgerow is located in a central, low-lying area of the site and contains predominantly invasive and low-quality short species. There is an opportunity to enhance plantings in this area to re-establish a natural division of space or an opportunity to infill this zone to create a more cohesive space.

Access and Circulation

- Two parallel gravel roads bordered by pillars provide an entrance to the cemetery from Varney Road. The entrance pillars are in good condition and are recommended to be retained.
- The roads lead to a gravel parking area bordered by large boulders. These boulders cause issues during snow clearing and require relocation when burials take place. There is an opportunity to repurpose the parking area for interment and future roadways and relocate parking along the roadways. Hearses access the burial area through a back road. There is potential to unify the processional route and subsequently repurpose the back road for additional interment space.
- Granular roadways across the site are in poor condition and exhibit signs of frequent ponding. Paving should be considered to improve circulation and reduce maintenance.
- A turnaround was developed as part of the previous master plan. It is an inefficient use of space that can be redesigned to be more effective.
- There is an informal, unsanctioned access for the adjacent residential property to the south of the site.
- There are opportunities to create a strong spinal network through the cemetery connecting to the potential expansion area to the west.
- The cemetery has a ‘park-like’ feel that can be enhanced through additional pedestrian paths and trails.
- Accessibility needs should be considered throughout the design.

Signage and Wayfinding

- There is an opportunity to improve the signage and wayfinding to provide clarity to the site. Signage along pedestrian trails would provide clarity to the site’s layout.
- There is an opportunity to install an information kiosk with a cemetery map and special notifications bulletin board near the cemetery entrance.

Water and Drainage

Keswick Cemetery has been prone to issues with surface and groundwater drainage that have resulted in ponding of roadways and low-lying areas. Other issues include seasonal flooding caused by pond overflow, saturation of potential interment plots, and retention ponds running dry during summer months.

- There is an opportunity to investigate pond function and to identify any potential for additional water storage. Possibilities include increasing depths and surrounding elevations to allow more volume to be retained in ponds.
- There is an opportunity to repair damaged culverts and upgrade culverts to better manage water flow on-site.
- The geotechnical engineering assessment summarized in Section 4.3 indicates additional drainage enhancement opportunities.

Amenities and Infrastructure

- There is an opportunity to provide ceremonial nodes throughout the expansion area to provide gathering spaces for visitors and families.
- There is an opportunity to provide a dedicated Park Operations building for staff use. This space has the potential to be used as a celebration hall or gathering space for visitors and families.
- An opportunity for a formalized operations yard would allow for consolidate storage of spoils piles, equipment and other materials.

Geotechnical Engineering Assessment

A site reconnaissance was conducted by geotechnical sub-consultant, Peto MacCallum Ltd. (PML), on April 14, 2023, to better understand the groundwater and drainage at the site and the potential impact on future development and operations at the Cemetery. The geotechnical review provided insights into the challenges at the site including:

- Ponding water in low-lying areas/roadways
- Retention ponds running dry
- Challenges in installing plot foundations as a result of groundwater
- A variety of other surface water and drainage issues

According to the geotechnical report, the groundwater elevation measured in the boreholes is not reflective of Lake Simcoe elevation levels. The measured groundwater is more likely a part of a localized groundwater regime, perched groundwater, or due to the four ponds located on site. Adjacent lands at a higher elevation to the north and northwest of the site likely contribute to surface water flows. There are opportunities to mitigate these flows and enhance drainage on site. PML suggests four general recommendations:

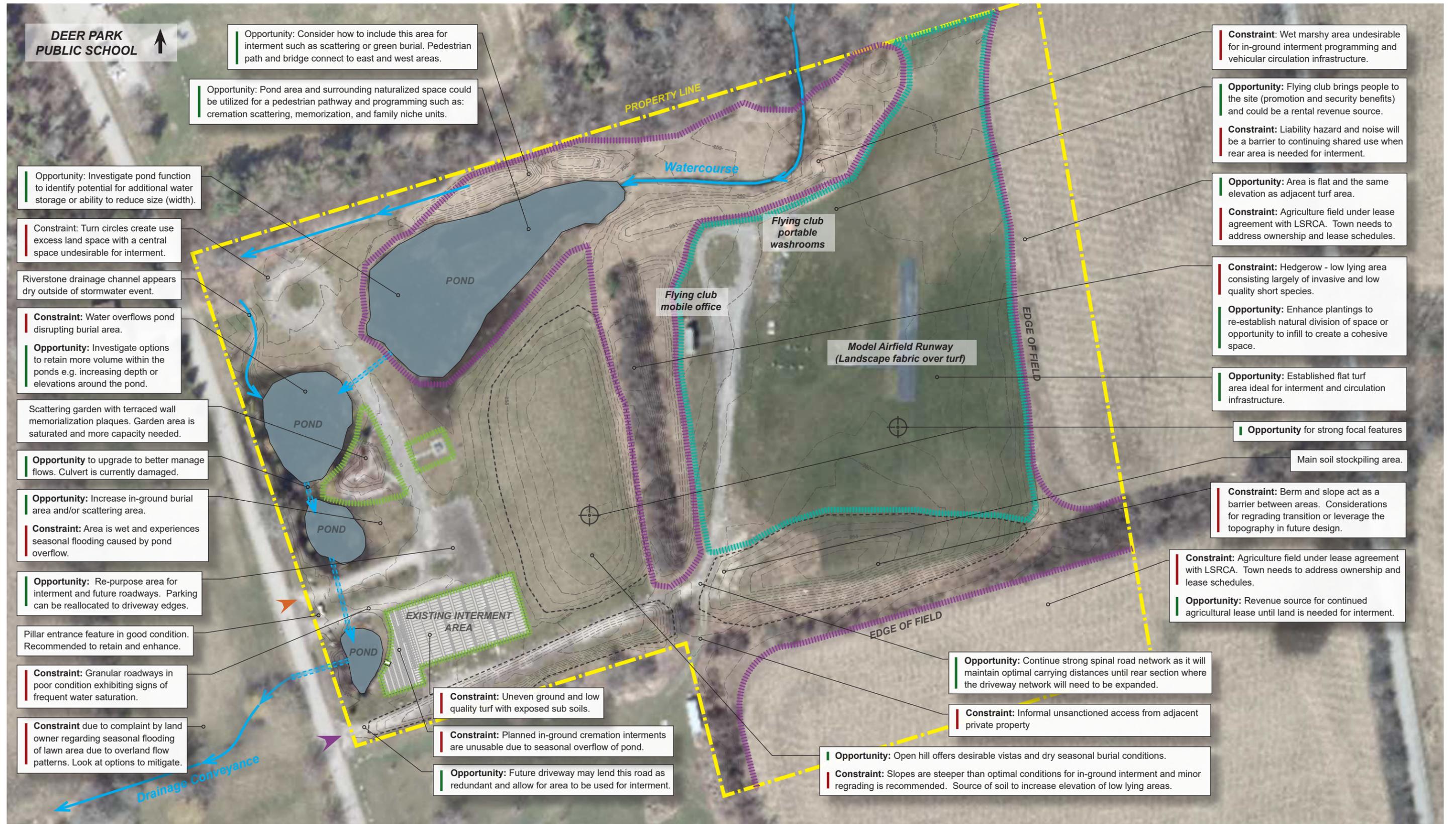
- Enhancing drainage at the site boundaries through a system of ditches and/or subsurface drains such as perforated pipes or drain tiles which intercept and divert surface water flowing towards the cemetery areas.
- As an alternative, a series of French drains can be installed around the perimeter of the burial plots to intercept and divert groundwater.
- Planting vegetation that tolerates or benefits from moist conditions will help absorb excess moisture from the soil and will reduce the water table.
- Considering the potential of raising grades for future burial plots to avoid groundwater issues.

Recommendations provided by PML will be incorporated into future cemetery development recommendations and concept options.

Impacts of Climate Change

Climate change will be felt with increasingly warm, dry summers with more severe heat waves as well as an increased frequency of extreme rainfall events. Proposed planting should be drought tolerant where possible, and site grading should take into consideration the possible increase of stormwater. Because climate change threatens biodiversity, planting which supports local pollinators and provides habitat is encouraged.

Keswick Cemetery Opportunities and Constraints Diagram



LEGEND:

- Hedgerow/Naturalized Area/Field
- Scattering Garden, Columbarium & Existing Interment Area
- Watercourse/Wet Area
- Roadway utilized by funeral vehicles and for access to flying club activity area.
- Keswick Cemetery Entrance
- Property Line
- Model Airfield Space
- Existing Culverts

0 30 60 90 120m

Chapter 5: Engagement Summary

This chapter summarizes engagement activities and feedback from consultations with Town of Georgina staff, senior leadership, and cemetery stakeholders, including community residents through a public survey. The consulting project team also held bi-weekly meetings with the Town's Senior Project Manager to ensure that the project's momentum and progress met the Town's expectations.

The Site Visit & Consultation were carried out on April 14th, 2023. The project team representatives met with the subcontractor for the cemetery, Jen Baker of Baker Vaults, who also heads the cemetery operations, and Courtney Rennie, Town of Georgina Project Manager.

Consultation with Town Staff and Operational Stakeholders

On May 1st, 2023, LEES+ Associates hosted a 'Cemetery 101' informational presentation on current trends, best practices, and considerations in cemetery planning and design. The workshop was an opportunity to present the project's goals, objectives, and preliminary findings to Town staff and allow for discussion and sharing of information. The presentation was hosted on the Mural App and enabled discussion through collaborative brainstorming tools.

Workshop highlights:

- When asked what the Keswick Cemetery's strengths are, comments noted that the site has a lot of potential, particularly the ponds and topography, and there is room for expansion. The Scattering Garden is well-used and the cemetery has a 'park feel' that draws people in.
- Foundations on the hill, pedestrian paths, mixed interment options, and additional tree planting were all identified as opportunities to build on the cemetery's existing strengths.
- When asked about the site's challenges, respondents noted:
 - The entryway can be confusing (there are two entrances).
 - The parking lot has ruts and includes dead ends. There is a limited capacity for 10-15 cars and then road parking must be used.
 - Interment in cremation lots is done beneath the markers and no urn vaults are used. Some of the flat markers are heaving.
 - The processional flow could be improved with more roadways.
 - There is a need for additional pedestrian trails with improved wayfinding, signage, and benches. There are opportunities to increase the 'park feel'.

- The driveway appearance needs improvement. Paved roads could reduce maintenance.
- The boulders on site create an issue for snow clearing and need to be moved for burials. Grass maintenance around the boulders is costly.
- Respondents noted that the Master Plan would help to:
 - Capture the requirements and resources necessary to run a cemetery, and help to determine whether operations should be internal or external.
 - Provide support to staff in the sale of plots.
 - Guide whether a board is necessary and delineate the respective responsibilities of the board and the staff.
 - Provide support with updating and capturing bylaw amendments.
 - Guide the cemetery towards a more sustainable future.
 - Inform on rate updates and ensure financial self-sufficiency.

Funeral Industry Engagement

Communication was maintained through phone and email and input via the survey link was requested from MW Becker Funeral Home, Forrest & Taylor Funeral Home, and Taylor Funeral Home on April 21, 2023. The Funeral Home representatives were invited to an in-person stakeholder meeting. No funeral industry representatives attended the in-person session. The link to the original survey was reopened and emailed to the industry representatives in May 2023.

Adjacent Landowners' Engagement

Communication was maintained with adjacent landowners through phone and email regarding the survey and other planned work including the geotechnical investigation fieldwork. The neighbouring property owners were requested to attend an in-person session when scheduled. The adjacent landowner to the south of Keswick Cemetery is also the president of the Keswick Model Aircraft Club currently leasing the eastern portion of the site.



Local Religious Organizations Engagement

The survey link was sent via email on May 26, 2023, to the following organizations. If no email was available, voicemails were left:

- Keswick Presbyterian Church
- Ravenshoe United Church
- Hope for Today Fellowship
- Maple Hill Baptist Church
- St Mary and St. Joseph Coptic Orthodox Church
- Harvest Family Community Church
- Our Lady of the Lake Mission, Keswick
- Keswick Christian Church
- Immaculate Conception Parish Sutton
- Knox United Church
- St. George’s Anglican Church
- Kingdom Hall of Jehovah’s Witnesses (Keswick)
- Kingdom Hall of Jehovah’s Witnesses (Pefferlaw)
- Port Bolster Baptist Church
- Egypt Church of the Nazarene
- Udora United Church
- Cedardale Church of the Nazarene
- Our Lady of Smolensk Orthodox Church
- Khmer Buddhist Temple
- Chabad Jewish Centre of Georgina

Keswick Cemetery Public Survey

The project team developed a public survey designed to gauge public opinion about Keswick Cemetery and to gain input on possible operational and capital improvements. The survey was hosted online using Survey Monkey and was publicly open for 3 weeks, from April 21st, 2023, through May 12th, 2023. The survey was reopened on May 25th and made available to Funeral Home representatives and local religious organizations.

The survey included eight multiple-choice and open-ended questions. Participation in the survey was actively promoted by the Town of Georgina with a survey link posted on the Project website, the Town’s Webpage ‘News’ Headline Section on the Main Page, and the social media platforms Twitter, Instagram, and Facebook. The Town also subsequently paid for an ad campaign on Instagram and Facebook managed through Meta. The link

was emailed directly to Funeral Home representatives and local religious organizations.

Survey Highlights:

- The survey attracted 237 respondents, with 97% identifying as residents of the Town of Georgina. Ages typically ranged between 25-65+ with 55-64 years old being the age bracket with the most respondents.
- When asked how respondents were connected with the cemetery, 49.1% reported they have no connection and/or were not aware of the cemetery and 22.8% said they have loved ones buried at the cemetery. Of respondents who selected “other” from the options available (23.7%), many cited being a Georgina Resident or living nearby. The remaining connections included having pre-purchased a burial plot, being a researcher, or working in the funeral industry.
- 20.9% of respondents plan on purchasing a burial lot, scattering garden rights, or columbaria niche at Keswick Cemetery, and 7.8% have already reserved a lot/scattering rights/niche.
- Of the products or services options not currently offered at Keswick Cemetery, the following were the most popular options considered among survey respondents:
 1. Memorial Walls - An inscription on a memorial wall to commemorate a loved one, possibly even memorializing those buried elsewhere (41.7%);
 2. Natural or Green- Interment in a biodegradable casket without embalming, grave liners, or vaults. It involves minimal grave marking/memorialization and involves habitat restoration on the burial lands (39.7%); and
 3. Ossuary - An above or below-ground vessel for cremated remains (27.8%).
- Only 9.0% of respondents said they would be incorporating faith-based, cultural, or secular practices into their end-of-life interment arrangements. Respondent comments included Jewish service, Catholic, and Evangelical Christian ceremonies.
- The top features that respondents and their families were interested in as part of future cemetery improvements were:
 1. To include additional seating and rest areas (74.3%).
 2. Enhance the overall aesthetics in the cemetery (73.5%).
 3. Develop additional walking paths (64.0%).
 4. Expand the range of interment options at the cemetery (46.3%).
 5. Develop a new ceremonial/gathering space (35.3%).

6. Of respondents who selected “other” from the options available (6.6%), responses included removing excessive surface water from the property, more space or allocations for Ontario Works, ODSP, and Unclaimed bodies, increased number of trees, additional water features, and natural gardens.

- In the additional comments section, respondents noted:
 - The need for improvement in general maintenance, particularly keeping grass cut and markers well-tended.
 - Additional planting and improvements to landscaping to provide a less stark/barren atmosphere, particularly surrounding the columbarium.
 - Expanding the scattering garden.
 - Interest in green burials with the use of GPS to locate loved ones rather than markers.
 - Improvements to accessibility, particularly for those using walkers or wheelchairs.
 - Interest in an infant/children’s area.
 - Need for improvements regarding the social service burial options.
 - Paved roads and the need to alleviate ponding after heavy rain and snow melt.
 - Requests for mausoleums (indoor/multi-level).
 - Capturing additional revenue streams with memorial plaques in a range of options (allowing a wider variety of more affordable interment options).
 - Interest in the gazebo design from the previous master plan.

Views of the public expressed in the survey were incorporated into the future cemetery development recommendations and concept options.

Key Considerations Summary

Most respondents to the public survey are residents of the Town of Georgina and many have no connection to the site apart from living nearby and are undecided about their end-of-life arrangements. Of those indicating interest in purchasing interment services at Keswick Cemetery in the future, the majority planned on purchasing a lot (10.3%), followed by rights to scatter in the scattering garden (5.39%), with columbaria niches having the least amount of interest (4.9%).

Among the options not currently offered at Keswick, memorial walls had the highest number of respondents, while there was significant interest in green/natural burial as indicated in the comments. This interest was particularly notable for options like tree memorials or GPS-based locations

without physical markers. One comment highlighted the potential of memorial wall/plaques to expand the range of affordable interment choices at the cemetery, and affordability was mentioned several times in the comments.

Although a small percentage (9.0%) of respondents incorporated faith-based, cultural, or secular practices into their end-of-life interment arrangements, several comments stressed the importance of reserving a designated section for the practices and ceremonies of different ethnic groups.

Additionally, some respondents requested the inclusion of mausoleums on the site.

Based on the results and comments, respondents place the highest importance on adding more seating and enhancing the overall aesthetic of the cemetery, to create a 'park-like' atmosphere, as suggested in the staff workshop comments. Other features that require improvement include additional rest areas, walking paths, and better accessibility for pedestrians and wheelchairs.

The comments also expressed a desire for additional landscaping, especially around the columbarium, an increase in the number of trees, and the potential addition of water features. Feedback highlighted the need for road improvements, addressing excess surface water and ponding, and enhancing grass maintenance.

Furthermore, many respondents showed interest in unmarked, green burials, indicating a preference for a more naturalized burial park setting.



Chapter 6: Cemetery Concept Design and Recommendations

Keswick Cemetery currently has 2-3 years of in-ground casket interment sales remaining, 1-2 years of in-ground cremation and columbaria niches sales remaining, with social service lots expected to be sold out within 1 year.

The Master Plan and recommendations are primarily in response to the need to provide additional inventory via the development of new interment areas and options, as well as a holistic design. This approach ensures that the existing cemetery and future expansion areas can adapt to meet the community's future interment and memorialization needs.

This chapter provides a written and visual description of the Cemetery Concept Plan and the design elements proposed for the new cemetery. This chapter of the report is organized under the following headings:

- Key Objectives
- Cemetery Design and Recommendations
- Interment and Memorialization
- Implementation Plan

Key Objectives

Key objectives of the Keswick Master Plan are:

- To ensure that the Town can provide long-term sustainable cemetery services to Keswick residents for decades to come.
- To integrate the existing cemetery and the future burial expansion areas as part of a holistic cemetery experience.
- To create an interment and memorialization plan that provides a variety of options that can be implemented in phases and is adaptable to meet the future needs of the community.
- To address the surface and groundwater challenges to improve drainage and water flow on site and to limit the impact of water on future planning decisions.
- To create a more naturalized memorial parkland with park-like amenities and an improved trail network

Cemetery Design and Recommendations

The physical master plan envisions the full build-out of the cemetery and incorporates feedback from the community and stakeholders, an understanding of the physical site characteristics, and recommendations from the geotechnical investigation. New products and services are introduced along with expansion of current interment services to meet demand. This is supported by the Demands / Needs Analysis and Products and Services Review. Primary design considerations include the following:

- Increased interment capacity
- Improved site circulation and access (pedestrian and vehicular)
- A grading and drainage strategy to address saturated soils
- New types of interments and memorialization options
- Operations improvements

The design considerations are on the proposed Keswick Cemetery Concept Plan included in this report.

An update to the cemetery bylaw is required should any of the proposed products and services be considered. The bylaw update should apply to the inactive and semi-active cemeteries within the Town of Georgina.

Interment and Memorialization

The interment and memorialization plan includes expansion of current interment areas and the introduction of new types of products and services.

The following is a list and description of the proposed interment and memorialization:

Cremation Garden (Columbaria Expansion) – A propose cremation garden encompasses the existing columbarium. This plaza-type space would include a phased implementation to new columbaria units, opportunities

for memorialization, scattering, family vessels and other types of cremation interment.

Cremation Walk – A loop path around the large pond allows opportunity for different cremation and memorialization options. Those opportunities would include the following:

- Scattering Gardens
- Memorial Walls
- Family Vessels or Family Columbaria
- In-ground cremation burial
- Memorial Benches and/or trees

The pathway on the north side would include a French drain to collect surface run-off from the northern property and redirect to the water to the pond.

Casket and In-ground Cremation Burial Expansion – A layout for new in-ground burial extend from the existing burial to the east property line. This area would be phased over time. Within the in-ground burial areas are ceremonial nodes to support cremation gardens.

Green Burial – A proposed green burial section to the northeast and southwest edges of the cemetery offer a new service to the cemetery. The first phase would be implement near the southeast corner of the large pond and continue to expand to the north. This location was selected as it blends with the existing naturalized area

Operation Building – The operations building is located at the northwest corner of the site and the end of the existing cemetery driveway. The realigned road leads to a small parking area and building that would support full-time operations staff. Proper siting of the building could take advantage of views to the existing ponds and surrounding naturalized areas. A community space and amenities such as washrooms could be incorporated and would support interment services.

Operations Yard – An operations yard is proposed at the south corner of the site. Typically enclosed by fencing and screen from neighbouring properties, this area would allow for storage of equipment, materials and soil stockpile.

*Forests may be gorgeous but there
is nothing more alive than a tree
that learns to grow in a cemetery*

-Andrea Gibson

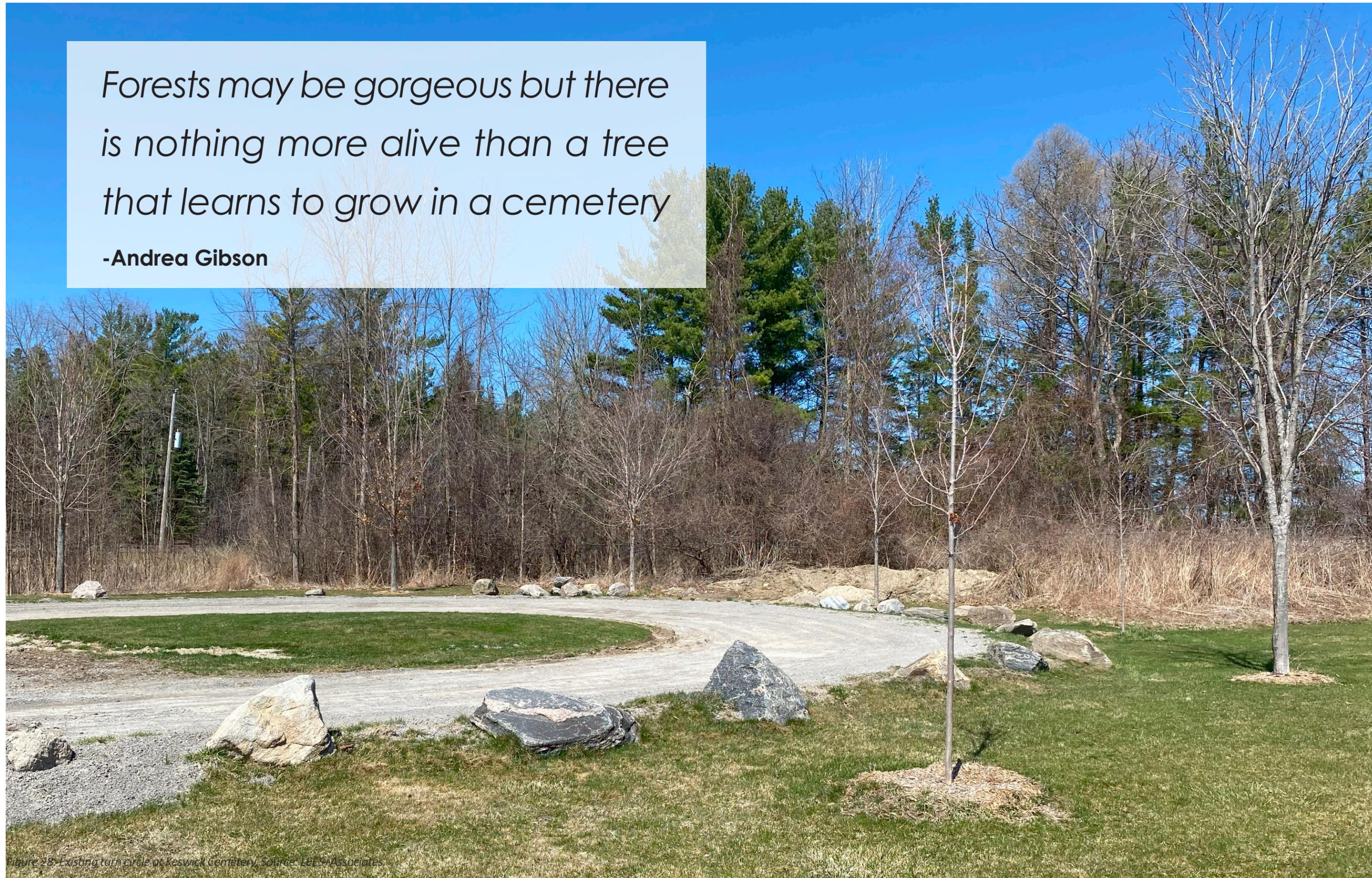


Figure 28: Existing turn circle at Keswick Cemetery. Source: LEES+Associates

Chapter 7: Cemetery Concept

Implementation Plan

A phased implementation is recommended to address the current needs of the cemetery, with future phases implemented over time. With land capacity to exceed over 100 years, the Town of Georgina can continue to allow the model flying club to operate and continue to allow farming on the encroached areas to the east and south. The Town should consider lease agreements with the adjacent landowners.

The following is a list of priorities to be implemented over the next 25 years and is supported by this report:

- **1-2 Years:**
 - Add social services Lots, Casket and In-ground Cremation, Scattering and Columbaria Expansion
 - Fee update to align with market rates
 - Update the bylaw to incorporate new products and services
 - Investigate and plan drainage infrastructure upgrades, increase conveyance of stormwater through the site, and potential for reestablishing creek corridor across Varney Road
- **3-5 Years:**
 - Grading of existing mound
 - Implement drainage infrastructure
 - Open in-ground burial on mound
 - Planning of Operations building
 - Extend cemetery driveway
- **5-25 years:**
 - Continued phased implementation as needed
 - Operations building
 - Decommission secondary driveway
- **25 Years:**
 - Renew cemetery master plan



Keswick Cemetery - Concept Site Plan - Phase 1



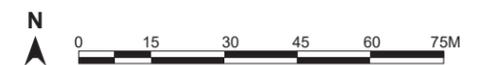
LEGEND

- C - Casket/cremation burial zones
- GB - Green/natural burial zones
- Proposed Trees
- Existing Culverts
- Property Line
- Asphalt road
- Gravel road

PHASE 1 SCATTERING GARDEN EXPANSION
 EXISTING COLUMBARIUM
 EXISTING SCATTERING GARDEN
 PHASE 1 EXPANSION ZONE
 REALIGN ROAD
 EXISTING ENTRANCE PILLARS

EXPAND PLANTING BUFFER

OPERATIONS YARD + MATERIAL STORAGE WITH FENCING AND PLANTING BUFFER

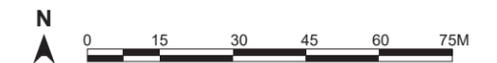


Keswick Cemetery - Concept Site Plan - Phase 2



LEGEND

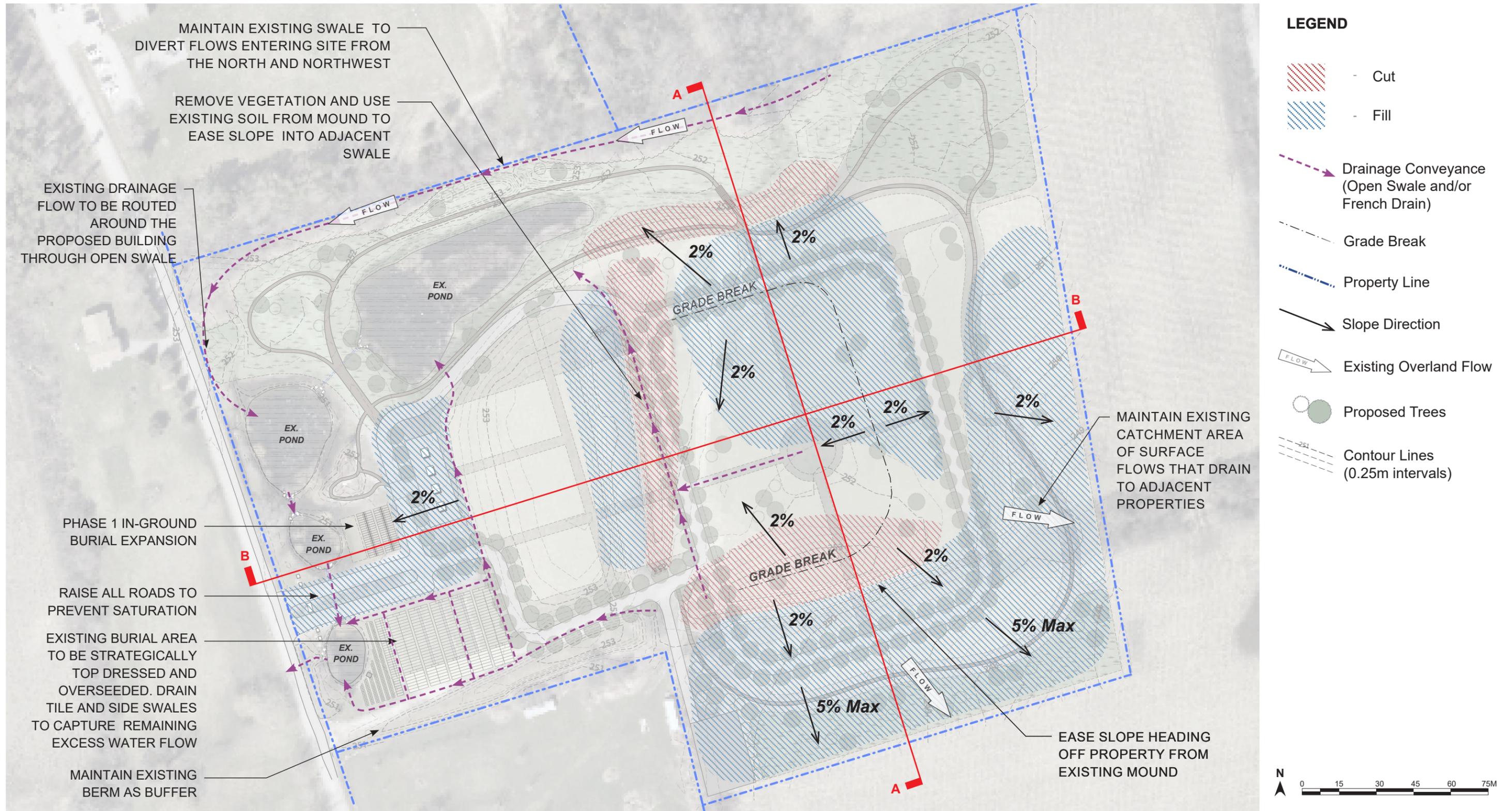
- C - Casket/cremation burial zones
- M - Memorialization and cremation zones (scattering, cremation memorials, family vessels, etc.)
- GB - Green/natural burial zones
- Naturalized/No Mow Area
- Proposed Trees
- Existing Culverts
- Property Line
- Asphalt road
- Gravel road



Keswick Cemetery - Concept Site Plan - Phase 3



Keswick Cemetery - Concept Grading Plan



Precedents

The following images showcase a variety of precedents for the memorialization nodes indicated along the pond loop trail in the Cemetery Master Plan. These photos encompass a range of landscape designs, offering different possibilities for the physical embodiment of the memorialization nodes. This page provides an array of resources for stakeholders to envision and explore the countless options available.

The precedents featured on this page include columbaria plazas, trails with memorial boulders, serene breathing and resting spaces, family columbaria, and striking memorial walls. These diverse examples showcase a wealth of possibilities for memorialization, allowing for a more informed understanding and exploration of the options presented in the Cemetery Master Plan.



Figure 29: Rendered image of a natural walk design for The Town of Cochrane, Cemetery Master Plan, Source: LEES+Associates.



Figure 30: Green Burial Communal Marker, Royal Oak Burial Park, Victoria, BC. Source: LEES+Associates.



Figure 31: Community Columbaria, Veteran's Cemetery (God's Acre), Esquimalt, BC. Source: LEES+Associates.



Figure 32: Memorial bench. Source: Meadowlark Memorials, Victoria, BC.



Figure 33: Cremation pedestal-style memorial. Source: The Johns-Carabelli Co.(JC Memorials), Cleveland, Ohio.



Figure 34: Memorial Wall, Lakeview Cemetery, City of Cold Lake, AB. Source: LEES+Associates.



Figure 35: Family Columbaria, Woodlands Memorial Gardens, Guelph, ON. Source: LEES+Associates.

Capital Improvement Cost Estimate

The high-level Recommended Budget Allowances represent a conservative estimate of the total cost of all the major capital development and consulting recommendations if they were to be fully realized over the next 25 years and beyond.

It is highly likely that each recommendation will be implemented in phases over several years if not decades. It is for the Town of Georgina to determine the priorities and phasing strategy as part of the budget planning process to implement the recommendations in this report.

Capital Project List Site: Phase 1 Development

Ref #	Category	Projects	Target Parameters	Item	Quantity	Unit	Unit Cost	Total Cost Per Item	Project Budget	Forecasted Timeline
1	Cemetery Driveway	New Cemetery Driveway	Cemetery driveway realignment, new road base and surfacing	Removals/Site Preparation	2,164	sq. m	\$ 8.00	\$ 17,312.00	\$ 255,352.00	2027
				Asphalt Paving & Base	2,164	sq. m	\$ 110.00	\$ 238,040.00		
2	Burial Expansion	New Burial Expansion Areas	Development of the phase 1 expansion zone, and casket burial zones	Survey Layout	1	Allowance	\$ 10,000.00	\$ 10,000.00	\$ 20,000.00	2025-2026
				Fine Grading, Topsoil Placement, Seeding	1	Allowance	\$ 10,000.00	\$ 10,000.00		
3	New Columbarium	New Columbarium and paving	1 Unit - 48 Niche columbarium, extend pavers and infill pavers around existing unit	Columbarium	48	each	\$ 650.00	\$ 31,200.00	\$ 55,200.00	2024
				Concrete Unit Pavers	120	sq. m	\$ 200.00	\$ 24,000.00		
4	New Scattering Garden Area	New Pathway and Planting	Add capacity for 90+ cremated remains	Compacted stone dust screening path 2.0m wide on 150mm base	120	sq. m	\$ 40.00	\$ 4,800.00	\$ 20,590.00	2026
				Site Preparation to 450mm depth	350	sq. m	\$ 25.00	\$ 8,750.00		
				Planting Area	88	sq. m	\$ 80.00	\$ 7,040.00		
5	New Green Burial Section	Green Burial section with Pathway, Naturalized Planting	Capacity for 50-100 lots with communal marker	Compacted stone dust screening path 2.0m wide on 150mm base	410	sq. m	\$ 60.00	\$ 24,600.00	\$ 70,200.00	2027
				Memorial Stone	1	each	\$ 6,000.00	\$ 6,000.00		
				Naturalized Seed mix	2,200	sq. m	\$ 6.00	\$ 13,200.00		
				Site Prep + Grading	2,200	sq. m	\$ 12.00	\$ 26,400.00		
6	Operations Yard + Materials Storage	New 3.5m wide Gravel Road and Storage	Clearing of all trees and shrubs within existing hedgerow New road base and surfacing	Clearing & grubbing	525	sq. m	\$ 8.00	\$ 4,200.00	\$ 41,400.00	2027
				Granular A and B, Compacted	775	sq. m	\$ 40.00	\$ 31,000.00		
				Removals/Site preparation	775	sq. m	\$ 8.00	\$ 6,200.00		
7	Decorative Landscaping	New Plantings	Materials and labour to establish new decorative plantings.	Planting	500	sq. m	\$ 80.00	\$ 40,000.00	\$ 49,000.00	2026
				Trees	20	each	\$ 450.00	\$ 9,000.00		
8	Monument Foundation Walls	Foundation Walls	Install new foundation walls to new burial areas	Cast in Place concrete	1	Allowance	\$ 30,000.00	\$ 30,000.00	\$ 30,000.00	2024

Table 9: Capital Improvement Cost Estimate for Phase 1 Development.

Subtotal	\$ 541,742.00
30% Contingency	\$ 162,522.60
Total (excluding taxes)	\$ 704,264.60

Capital Project List

Site: Phase 2 Development

Ref #	Category	Projects	Target Parameters	Item	Quantity	Unit	Unit Cost	Total Cost Per Item	Project Budget	Forecasted Timeline
1	Cemetery Driveway Expansion	Continue Cemetery Driveway	Expand East section of road	Removals/Site Preparation	2,684	sq. m	\$ 8.00	\$ 21,472.00	\$ 213,447.00	
				Asphalt Paving + Base	1,097	sq. m	\$ 175.00	\$ 191,975.00		
2	New Columbaria (2)	New Columbaria and paving	2 Units - 96 Niche columbarium, extend pavers and infill pavers around existing unit	Columbarium	96	each	\$ 650.00	\$ 62,400.00	\$ 114,400.00	
				Concrete Unit Pavers	208	sq. m	\$ 250.00	\$ 52,000.00		
3	New Memorialization Areas	New spaces and planting surrounding memorialization nodes along the pond loop path	Add capacity for 90+ cremated remains	Site Preparation to 450mm depth	500	sq. m	\$ 45.00	\$ 22,500.00	\$ 62,500.00	
				Planting Area	500	sq. m	\$ 80.00	\$ 40,000.00		
4	New Pathway	New pathway loop around the large pond		Compacted stone dust screening path 2.0m wide on 150mm base	780	lin. m	\$ 40.00	\$ 31,200.00	\$ 84,575.00	
				Site Prep + Rough Grading	2,135	sq. m	\$ 25.00	\$ 53,375.00		
5	New Bridge	Bridge over existing drainage			1	each	\$ 65,000.00	\$ 65,000.00	\$ 65,000.00	
6	Burial Expansion	Tree and Shrub Removal	Clearing of all trees and shrubs within existing hedgerow	Clearing + Grubbing	2,190	sq. m	\$ 8.00	\$ 17,520.00	\$ 77,545.00	2028+
		Site Grading	Grade existing mound and fill ditch	Soil Stripping, Earthworks	4,000	sq. m	\$ 15.00	\$ 60,000.00		
		Site Preparation	Topsoil and lawn seeding	Fine Grading, Topsoil Placement, Seeding	4,000	sq. m	\$ 25.00	\$ 25.00		
7	Decorative Landscaping	New Plantings	Materials and labour to establish new decorative plantings.	Planting	500	sq. m	\$ 80.00	\$ 40,000.00	\$ 49,000.00	
				Trees	20	each	\$ 450.00	\$ 9,000.00		
8	Naturalized Area	New Plantings	Materials and labour to establish naturalized area.	Trees	10	each	\$ 450.00	\$ 4,500.00	\$ 13,800.00	
				Naturalized Seed mix (2m offset from both sides of the pond loop path)	1,550	sq. m	\$ 6.00	\$ 9,300.00		
9	Drainage Improvements	French Drains	Add French drains as needed	Perforated drain pipe in clear crush gravel, Depth 0-1m	1	allowance	\$ 150,000.00	\$ 150,000.00	\$ 150,000.00	

Table 10: Capital Improvement Cost Estimate for Phase 2 Development.

Subtotal	\$ 830,267.00
30% Contingency	\$ 249,080.10
Total (excluding taxes)	\$ 1,079,347.10

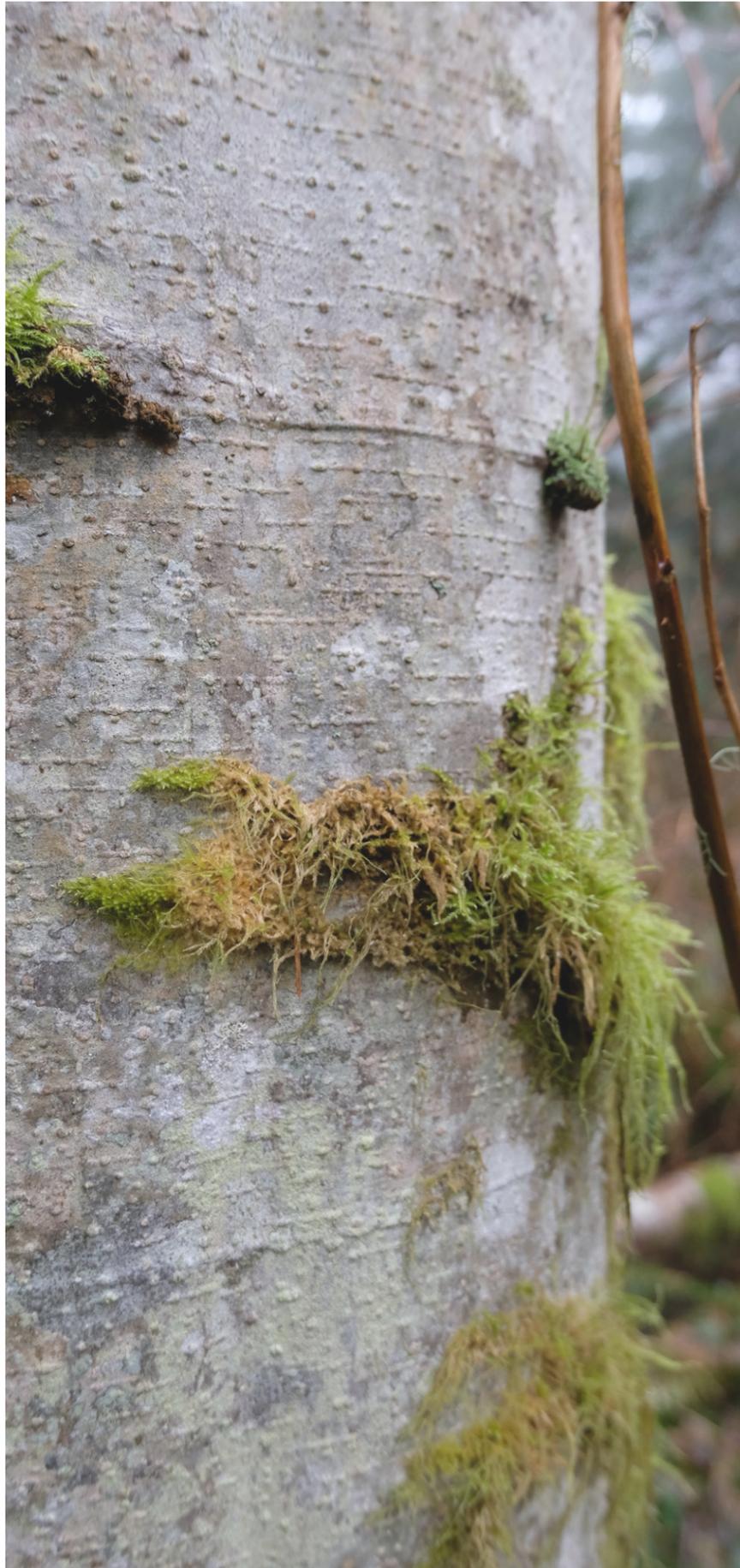
Capital Project List

Site: Phase 3 Development

Ref #	Category	Projects	Target Parameters	Item	Quantity	Unit	Unit Cost	Total Cost Per Item	Project Budget	Forecasted Timeline
1	Cemetery Driveway	New Cemetery Driveway	Cemetery driveway realignment, new road base and surfacing	Removals/Site Preparation	2,018	sq. m	\$ 8.00	\$ 16,144.00	\$ 369,294.00	2032+
				Asphalt Paving	2,018	each	\$ 175.00	\$ 353,150.00		
3	New Memorialization Areas	New cremation Garden plaza at Central Node	Space for columbaria expansion, scattering gardens, memorialization, etc.	Cremation Garden	2	allowance	\$ 750,000.00	\$ 1,500,000.00	\$ 1,500,000.00	
4	New Green Burial Sections	Green Burial expansion areas with Pathway, Naturalized Planting		Granular Pathway with 150mm base	160	lin. m	\$ 250.00	\$ 40,000.00	\$ 540,118.00	
				Memorial Stone	5	each	\$ 6,000.00	\$ 30,000.00		
				Naturalized Seed mix	9,218	sq. m	\$ 6.00	\$ 55,308.00		
				Site Prep + Grading	9,218	sq. m	\$ 45.00	\$ 414,810.00		
5	East Pathway			Compacted stone dust screening path 2.0m wide on 150mm base	950	sq. m	\$ 40.00	\$ 38,000.00	\$ 58,680.00	
				Removals/Site preparation	2,585	sq. m	\$ 8.00	\$ 20,680.00		
6	Interment Areas & Monuments	Tree and Shrub Removal	Clearing of all trees and shrubs within existing hedgerow	Clearing + Grubbing	2,010	sq. m	\$ 8.00	\$ 16,080.00	\$ 16,105.00	
		Site Grading	Grade existing mound and use material on-site	Soil Stripping, Earthworks	24,770	sq. m	\$ 15.00			
		Site Preparation	Topsoil and lawn seeding	Labour and materials	24,770	sq. m	\$ 25.00	\$ 25.00		
7	Decorative Landscaping	New Plantings	Materials and labour to establish new decorative plantings.	Planting	1,000	sq. m	\$ 80.00	\$ 80,000.00	\$ 181,250.00	
				Trees	225	each	\$ 450.00	\$ 101,250.00		
8	Drainage Improvements	French Drains	Add French drains as needed	Perforated drain pipe in clear crush gravel, Depth 0-1m	1	allowance	\$ 350,000.00	\$ 350,000.00	\$ 350,000.00	

Table 11: Capital Improvement Cost Estimate for Phase 3 Development.

Subtotal	\$ 3,015,447.00
30% Contingency	\$ 904,634.10
Total (excluding taxes)	\$ 3,920,081.10



Chapter 8: Conclusion

Keswick Cemetery has a significant land base to allow for future development to continue to serve the residents of the Town of Georgina. The current development of the cemetery has allowed for a thoughtful approach to add immediate burial capacity while also introducing new products and services. The Town is well positioned to introduce new interment options to meet the current needs of the community and with the potential for generating significant revenue over time.

Priorities should focus on opening a new in-ground burial section, increasing capacity for scattering cremated remains, building a new columbarium, and consideration of a green burial section. Subsequent phases of development are opportunities to introduce new products and services in key locations throughout the western half of the cemetery.

Appendices

Appendix A - Detailed Cemetery Price Benchmarking Study

Town of Georgina Cemetery Price Benchmarking Study - 2023 Rates Comparison															
Product / Service Offered	Georgina Resident	Georgina Non-Resident	Innisfil Resident	Innisfil Non-Resident	Bradford West Gwillimbury Resident	Bradford West Gwillimbury Non-Resident	NR%	East Gwillimbury Resident	East Gwillimbury Non-Resident	Thomton Resident	Thomton Non-Resident	Barrie Resident	Barrie Non-Resident	Average Resident	Average Non-Resident
	Keswick Cemetery		Innisvale Cemetery		Mount Pleasant Cemetery + Ebenezer United Church Cemetery			Queensville Cemetery		Thomton Union Cemetery		Barrie Union Cemetery			
Population 2021 - National Census	47,642		43,326		35,325			34,637		985		147,829			
Right of Interment for Lots + Niches															
Adult Casket Plot - MIN	\$ 1,296.54	\$ 1,296.54	\$ 1,475.00	\$ 1,475.00	\$ 1,825.72	\$ 2,099.58	15%	\$ 3,500.00	\$ 3,500.00	\$ 1,394.00	\$ 1,394.00	\$ 1,600.00	\$ 1,600.00	\$1,959	\$2,014
Adult Casket Plot - MAX	\$ 1,958.04	\$ 1,958.04	\$ 1,475.00	\$ 1,475.00	\$ 1,825.72	\$ 2,099.58	NA	\$ 4,500.00	\$ 4,500.00	\$ 1,394.00	\$ 1,394.00	\$ 2,300.00	\$ 2,300.00	\$2,299	\$2,354
Casket Family Estate - MIN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$ 3,200.00	\$ 3,200.00	\$3,200	\$3,200
Casket Family Estate - MAX	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$ 4,600.00	\$ 4,600.00	\$4,600	\$4,600
Infant Plot (<2 yrs)	NA	NA	NA	NA	\$ 775.22	\$ 891.50	15%	NA	NA	NA	NA	NA	NA	\$775	\$892
Child Plot (>2 yrs)	NA	NA	\$ 495.00	\$ 495.00	NA	NA	NA	NA	NA	NA	NA	\$ 575.00	\$ 575.00	\$535	\$535
Social Assistance Plot	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$ 632.50	\$ 632.50	\$ 600.00	\$ 600.00	\$616	\$616
Cremation Plot - MIN	\$ 756.32	\$ 756.32	\$ 895.00	\$ 895.00	NA	NA	NA	\$ 1,200.00	\$ 1,200.00	NA	NA	\$ 1,500.00	\$ 1,500.00	\$1,198	\$1,198
Cremation Plot - MAX	\$ 1,254.65	\$ 1,254.65	\$ 895.00	\$ 895.00	NA	NA	NA	\$ 1,200.00	\$ 1,200.00	NA	NA	\$ 1,500.00	\$ 1,500.00	\$1,198	\$1,198
Outdoor Columbaria Niche - MIN	\$ 1,962.19	\$ 1,962.19	\$ 1,850.00	\$ 1,850.00	\$ 1,900.00	\$ 2,185.00	15%	\$ 4,850.00	\$ 4,850.00	\$ 1,076.25	\$ 1,076.25	\$ 1,200.00	\$ 1,200.00	\$2,175	\$2,232
Outdoor Columbarium Niche - MAX	\$ 2,415.00	\$ 2,415.00	\$ 2,550.00	\$ 2,550.00	\$ 2,550.00	\$ 2,932.50	15%	\$ 5,850.00	\$ 5,850.00	\$ 1,691.25	\$ 1,691.25	\$ 3,600.00	\$ 3,600.00	\$3,248	\$3,325
Indoor Glass Niche - MIN	NA	NA	\$ 2,400.00	\$ 2,400.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$2,400	\$2,400
Indoor Glass Niche - MAX	NA	NA	\$ 6,350.00	\$ 6,350.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$6,350	\$6,350
Mausolea Crypts Single - MIN	NA	NA	\$ 12,500.00	\$ 12,500.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$12,500	\$12,500
Mausolea Crypts Multiple - MAX	NA	NA	\$ 36,000.00	\$ 36,000.00	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$36,000	\$36,000

Appendix A - Detailed Cemetery Price Benchmarking Study Continued

Town of Georgina Cemetery Price Benchmarking Study - 2023 Rates Comparison															
Product / Service Offered	Georgina Standard Rate	Georgina Winter Rate	Innisfil Standard Rate	Innisfil Winter Rate	BWG Standard Rate	BWG Winter Rate	NR%	EG Standard Rate	EG Winter Rate	Thornton Standard Rate	Thornton Winter Rate	Standard	Winter	Standard	Winter
	Keswick Cemetery		Innisvale Cemetery		Mount Pleasant Cemetery + Ebenezer United Church Cemetery			Queensville Cemetery		Thornton Union Cemetery		Barrie Union Cemetery			
Population 2021 - National Census	47,642		43,326		35,325			34,637		985		147,829			
Opening / Closing Services															
Adult Burial - Single Depth	\$ 882.00	\$ 1,102.50	\$ 940.00	\$ 1,540.00	\$ 862.00	\$ 862.00	NA	\$ 1,400.00	\$ 1,700.00	\$ 854.63	\$ 854.63	\$ 1,080.00	\$ 1,580.00	\$1,027	\$1,307
Infant Burial (<2 yrs)	NA	NA	\$ 275.00	\$ 875.00	\$ 662.00	\$ 662.00	NA	\$ 600.00	\$ 900.00	NA	NA	\$ 275.00	\$ 775.00	\$453	\$803
Child Burial (>2 yrs)	NA	NA	\$ 445.00	\$ 1,045.00	NA	NA	NA	NA	NA	\$ 205.00	\$ 205.00	\$ 350.00	\$ 350.00	\$333	\$533
Social Assistance Interment	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$ 700.00	\$ 700.00	\$ 818.00	\$ 1,318.00	\$759	\$1,009
Cremated Remains Lot Burial	\$ 441.00	\$ 441.00	\$ 365.00	\$ 965.00	\$ 650.00	\$ 650.00	NA	\$ 600.00	\$ 900.00	\$ 338.25	\$ 338.25	\$ 425.00	\$ 625.00	\$476	\$696
Additional Cremated Remains Burial (same time + lot)	\$ 275.63	\$ 275.63	NA	NA	\$ 300.00	\$ 300.00	NA	\$ 375.00	\$ 375.00	NA	NA	NA	NA	\$338	\$338
Evening Cremated Remains Interment	\$ 358.31	\$ 358.31	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Common Ground Burial	NA	NA	\$ 420.00	\$ 1,020.00	NA	NA		NA	NA	NA	NA	NA	NA	NA	NA
Columbaria Niche Inurnment	\$ 315.00	\$ 315.00	\$ 265.00	\$ 265.00	\$ 525.00	\$ 525.00	NA	\$ 600.00	\$ 600.00	\$ 214.23	\$ 214.23	\$ 300.00	\$ 475.00	\$381	\$416
Additional Columbaria Inurnment (same time + niche)	\$ 157.50	\$ 157.50	\$ 300.00	\$ 300.00	\$ 300.00	\$ 300.00	NA	\$ 375.00	\$ 375.00	NA	NA	NA	NA	\$325	\$325
Evening Columbaria Interment	\$ 236.25	\$ 236.25	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Common Niche Wall Interment	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	\$ 650.00	\$ 825.00	\$650	\$825
Mausolea - Entombment	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Cremation Garden - Scattering	\$ 277.83	\$ 277.83	\$ 255.00	\$ 255.00	NA	NA	NA	\$ 650.00	\$ 650.00	NA	NA	NA	NA	\$453	\$453
Disinterment - Adult Casket	*TBD	TBD	\$ 3,150.00	\$ 3,150.00	TBD	TBD	NA	\$ 4,500.00	\$ 4,500.00	\$ 3,587.50	\$ 3,587.50	\$ 4,400.00	\$ 4,400.00	\$3,909	\$3,909
Disinterment - Child Casket	TBD	TBD	\$ 1,525.00	\$ 1,525.00	TBD	TBD	NA	NA	NA	\$ 1,742.50	\$ 1,742.50	\$ 2,000.00	\$ 2,000.00	\$1,756	\$1,756
Disinterment - Cremated Remains Plot	TBD	TBD	\$ 475.00	\$ 475.00	NA	NA	NA	\$ 900.00	\$ 900.00	\$ 384.38	\$ 384.38	\$ 425.00	\$ 425.00	\$546	\$546
Disinterment - Cremated Remains Niche	TBD	TBD	NA	NA	NA	NA	NA	\$ 600.00	\$ 600.00	\$ 205.00	\$ 205.00	\$ 300.00	\$ 300.00	\$368	\$368
*TBD - To be determined at the time required. NA - Not applicable to this cemetery site.															

Appendix A - Detailed Cemetery Price Benchmarking Study Continued

Town of Georgina Cemetery Price Benchmarking Study - 2023 Rates Comparison															
Product / Service Offered	Georgina Resident	Georgina Non-Resident	Innisfil Resident	Innisfil Non-Resident	Bradford West Gwillimbury Resident	Bradford West Gwillimbury Non-Resident	NR%	East Gwillimbury Resident	East Gwillimbury Non-Resident	Thomton Resident	Thomton Non-Resident	Barrie Resident	Barrie Non-Resident	Average Resident	Average Non-Resident
	Keswick Cemetery		Innisvale Cemetery		Mount Pleasant Cemetery + Ebenezer United Church Cemetery			Queensville Cemetery		Thomton Union Cemetery		Barrie Union Cemetery			
Population 2021 - National Census	47,642		43,326		35,325			34,637		985		147,829			
Memorialization + Other Fees															
Memorial / Marker Install (w/foundation) - MIN	NA	NA	\$ 30.00	\$ 30.00	NA	NA	NA	\$ 175.00	\$ 175.00	NA	NA	\$ 40.00	\$ 40.00	\$82	\$82
Memorial / Marker Install (w/foundation) - MAX	NA	NA	\$ 255.00	\$ 255.00	NA	NA	NA	\$ 175.00	\$ 175.00	NA	NA	\$ 200.00	\$ 200.00	\$210	\$210
Cremation Lot Plaque / Rail - MIN	NA	NA	\$ 950.00	\$ 950.00	NA	NA	NA	\$ 800.00	\$ 800.00	NA	NA	\$ 880.00	\$ 880.00	\$877	\$877
Cremation Lot Plaque / Rail - MAX	NA	NA	\$ 950.00	\$ 950.00	NA	NA	NA	\$ 1,900.00	\$ 1,900.00	NA	NA	\$ 880.00	\$ 880.00	\$1,243	\$1,243
Columbaria Niche Marker / Plaque / Inscription - MIN	\$ 705.60	\$ 705.60	\$ 575.00	\$ 575.00	\$ 450.00	\$ 450.00	NA	\$ 900.00	\$ 900.00	NA	NA	\$ 700.00	\$ 700.00	\$656	\$656
Columbaria Niche Marker / Plaque / Inscription - MAX	\$ 705.60	\$ 705.60	\$ 575.00	\$ 575.00	\$ 450.00	\$ 450.00	NA	\$ 1,200.00	\$ 1,200.00	NA	NA	\$ 700.00	\$ 700.00	\$731	\$731
Scattering Garden Marker / Plaque / Inscription - MIN	\$ 468.56	\$ 468.56	\$ 450.00	\$ 450.00	NA	NA	NA	\$ 700.00	\$ 700.00	NA	NA	NA	NA	\$575	\$575
Scattering Garden Marker / Plaque / Inscription - MAX	\$ 689.06	\$ 689.06	\$ 450.00	\$ 450.00	NA	NA	NA	\$ 1,800.00	\$ 1,800.00	NA	NA	NA	NA	\$1,125	\$1,125
Staking Fee	NA	NA	NA	NA	\$ 75.00	\$ 75.00	NA	NA	NA	\$ 205.00	\$ 205.00	NA	NA	\$140	\$140
Vaults - MIN	NA	NA	NA	NA	NA	NA	NA	\$ 1,250.00	\$ 1,250.00	\$ 358.75	\$ 358.75	\$ 770.00	\$ 770.00	\$793	\$793
Vaults - MAX	NA	NA	NA	NA	NA	NA	NA	\$ 5,025.00	\$ 5,025.00	\$ 358.75	\$ 358.75	\$ 950.00	\$ 950.00	\$2,111	\$2,111
Interment Rights Transfer + Admin Fee	\$ 38.59	\$ 38.59	\$ 200.00	\$ 200.00	\$ 200.00	\$ 200.00	NA	\$ 400.00	\$ 400.00	\$ 205.00	\$ 205.00	\$ 200.00	\$ 200.00	\$241	\$241
Extra Depth Burial Premium	\$ 220.50	\$ 220.50	\$ 265.00	\$ 265.00	\$ 100.00	\$ 100.00	NA	\$ 200.00	\$ 200.00	\$ 461.25	\$ 461.25	\$ 600.00	\$ 600.00	\$325	\$325
Monument Power Washing	NA	NA	NA	NA	NA	NA	NA	\$ 200.00	\$ 200.00	NA	NA	\$ 150.00	\$ 150.00	\$175	\$175
Weekends Surcharge - MIN	\$ 220.50	\$ 220.50	\$ 220.00	\$ 220.00	\$ 100.00	\$ 100.00	NA	\$ 350.00	\$ 350.00	\$ 281.88	\$ 281.88	\$ 425.00	\$ 425.00	\$275	\$275
Weekends Surcharge - MAX	\$ 220.50	\$ 220.50	\$ 575.00	\$ 575.00	\$ 300.00	\$ 300.00	NA	\$ 350.00	\$ 350.00	\$ 717.50	\$ 717.50	\$ 800.00	\$ 800.00	\$549	\$549
Holiday Surcharge	\$ 441.00	\$ 441.00	NA	NA	\$ 300.00	\$ 300.00	NA	NA	NA	\$ 717.50	\$ 717.50	NA	NA	\$509	\$509
After Hours Weekday Surcharge - MIN	\$ 220.50	\$ 220.50	\$ 205.00	\$ 205.00	NA	NA		NA	NA	\$ 307.50	\$ 307.50	\$ 500.00	\$ 500.00	\$338	\$338
After Hours Weekday Surcharge - MAX	\$ 220.50	\$ 220.50	\$ 340.00	\$ 340.00	NA	NA	NA	NA	NA	\$ 307.50	\$ 307.50	\$ 500.00	\$ 500.00	\$383	\$383

Appendix B - Geotechnical Report



**GEOTECHNICAL INVESTIGATION
DRAINAGE ISSUES
KESWICK CEMETERY
565 VARNEY ROAD
GEORGINA, ONTARIO**
for
LEES+ASSOCIATES

PETO MacCALLUM LTD.
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1 cc: LEES+ASSOCIATES (email only)
1 cc: PML Barrie
1 cc: PML Toronto

PML Ref.: 23BF003
Report 1
February 2024

February 2, 2024

PML Ref.: 23BF003
Report: 1

Mr. Joshua Bernsen
LEES+ASSOCIATES
#509-318 Homer Street
Vancouver, BC
V6B 2V2

Dear Mr. Bernsen

**Geotechnical Investigation
Drainage Issues
Keswick Cemetery
565 Varney Road
Georgina, Ontario**

We are pleased to present the results of the geotechnical investigation recently completed for the above referenced project. Authorization to proceed with this assignment was provided by Mr. Joshua Bernsen of LEES+ASSOCIATES via email dated April 11, 2013 and Subconsultant Agreement dated April 13, 2023.

We will retain the soil samples obtained during the investigation for three months from the date of this report. The samples will be discarded at the end of the three-month period, unless we are instructed otherwise. If you would like the samples stored beyond the three-month period, this can be arranged for a service fee.

We thank you for the opportunity to have been of service on this assignment and trust that this report is complete within the term of reference. Please contact this office should you have any questions and comments on this report.

Sincerely

Peto MacCallum Ltd.



Harry Gharegrat, MS, MBA, P.Eng.
Director
Manager, Geotechnical Services

HG:mc/tc



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ATTACHMENTS

Drawing 1 – Borehole Location Plan

List of Abbreviations Sheet

Log of Borehole Sheets 1 to 8

Figures GS-1 to GS-3 – Grain Size Distributions

Appendix A – Statement of Limitations

Appendix B – Engineered Fill



1. INTRODUCTION

It is understood that a Master plan and Phasing plan were prepared for the Keswick Cemetery in 2001 to provide a road map and broad vision for the Cemetery Board to follow; and since that time implementation of site works, including roadways, interment plots, a columbarium, scattering garden, stormwater ponds, and plantings have been undertaken which have strayed from the 2001 Master Plan. Further, the Cemetery Board has made other changes to the site that did not follow the 2001 Master Plan.

Site conditions and a high-water table have warranted further changes for existing and future interment areas and road locations. For many years, the Keswick Cemetery has experienced issues related to surface and ground water. Historical challenges at the site have included:

- Ponding water in low lying areas/roadways;
- Retention ponds running dry;
- Challenges in installing plot foundations as a result of groundwater; and
- A variety of other surface water and drainage issues.

The close proximity of this cemetery to Lake Simcoe and a generally high-water table are the broader issues. The high-water table causes standing water in low lying areas after rain and snowmelt. Water drains slowly on the property. Excavation on the property is challenging as a result of groundwater. Obstructed culverts between the stormwater retention ponds were a concern but the Town has since rectified this issue. Generally, drainage and groundwater issues are occurring at lower elevations around the cemetery.

It is understood that a new Master Plan will be developed for the cemetery and a geotechnical investigation is required to support the Master Plan. Specific improvements and grading details were not available at the time of this report.



The subject site is located at the east side of Varney Road and is bordered by the Deerhurst Public School to the north, existing farmland to the east, and residential property and farmland to the south. There are twin gravel driveways at the cemetery entrance which continue to the north, ending in a cul-de-sac. There are four ponds interspersed near the west portion of the cemetery of which the largest lies to the east of the cul-de-sac. An unnamed drainage feature runs from the entrance driveway of the cemetery to the east, draining into Cooks Bay. The east portion of the cemetery has been leased to the Keswick Model Aircraft Club. A relatively smaller portion of the cemetery to the south of the entrance driveways is currently being used as a burial site.

The existing ground surface at the cemetery is relatively level at the boundaries ranging from elevation 251.7 to 252.0 with a higher mound about 1.5 m higher at the approximate centre of the site.

The land to the north and northwest of the site are at a higher elevation than the subject site; surface water flow likely flows to the site from these lands.

The purpose of this investigation was to assess the subsurface soil and groundwater conditions at the site, and based on the information obtained, to provide geotechnical recommendations for mitigating drainage issues, foundation support recommendations for lightly loaded structures and pavement recommendations.

It should be noted that soil and groundwater sampling and testing for environmental quality was not part of the Terms of Reference for this assignment and no work was carried out in this regard.

The recommendations provided in this report are based on preliminary information available at the time of this report. Peto MacCallum Ltd. (PML) should review the final drawings when they are available. The review may result in a modification of our recommendations or require additional field or laboratory work to examine whether the design changes are acceptable from a geotechnical viewpoint.

This report is subject to the Statement of Limitations included in Appendix A which must be read in conjunction with this report.



2. INVESTIGATION PROCEDURES

A site reconnaissance was conducted on April 14, 2023 by representatives of PML, the Town of Georgina and LEES+ASSOCIATES. During this site reconnaissance, a general overview of the site was provided and suitable areas for drilling boreholes were tentatively decided by all parties.

The field work for this investigation was carried out on May 23, 2023, and comprised eight boreholes carried out at the locations indicated on Drawing 1, appended. The boreholes were drilled to a depth of 3.7 m.

The underground services were cleared with assistance from Ontario-One-Call and a specialist utility locating company. The ground surface elevations at the borehole locations were determined by PML with a differential GPS. It should be noted that the ground surface elevations at the boreholes are approximate and are referenced for describing the soil stratigraphy. The provided elevations should not be used or relied upon for any other purpose.

The boreholes were advanced using continuous flight solid stem augers, powered by a truck mounted drill rig, supplied and operated by a specialist drilling contractor. The drilling operations were supervised by PML personnel.

Representative samples of the overburden were recovered from the boreholes at frequent depth intervals using a conventional split spoon sampler. Standard penetration tests were conducted simultaneously with the sampling operation to assess the strength characteristics of the substrata in the boreholes.

The groundwater conditions in the open boreholes were closely monitored during the course of the borehole drilling. The boreholes were backfilled in accordance with MTO Regulation 903 upon completion of drilling.



3. LABORATORY TESTING

All the recovered samples were returned to PML's geotechnical laboratory in Toronto for detailed visual examination and moisture content determinations. Five grain size analyses were conducted on selected soil samples. Results of the grain size analyses are shown on Figures GS-1 to GS-3.

4. SUMMARIZED SUBSURFACE CONDITIONS

Reference is made to the appended Log of Borehole sheets 1 to 8 for details of the subsurface conditions, including soil classifications, inferred soil stratigraphy, standard penetration test data, groundwater observations as well as the results of laboratory grain size distributions, and moisture content determinations.

Due to the soil sampling procedures and limited sample size, the depth/elevation demarcations on the borehole logs must be viewed as "transitional" zones between layers, and cannot be construed as exact geologic boundaries between layers. PML should be retained during site works for further guidance.

Subsurface conditions encountered within the boreholes are shown in the below Table 1:



TABLE 1
SUMMARY OF SUBSURFACE CONDITIONS

Soil Layer	Boreholes Encountered	Depth / Elevation Encountered from (m)	Depth / Elevation Encountered to (m)	Thickness (m)	N Value Range	Moisture Content Range (%)
Topsoil	3 to 7	Ground surface	0.09 – 0.2 251.5 – 253.6	0.09 – 0.2	-----	-----
Granular Pavement	1	Ground surface	0.5 251.5	0.5	-----	-----
Asphalt Pavement	2,8	Ground Surface	0.12- 0.15 Asphalt 0.28-0.29 Granular 0.4-0.44 Total	0.4 - 0.44		
Fill	1 to 4, 6 to 8	0.09 – 0.5 251.2 – 253.7	1.0 – 3.2 248.5 – 251.6	0.5 – 3.0	Weight of hammer - 15	9 - 22
Silty Clay	4	2.1 251.6	2.9 250.8	0.8	11	12
Topsoil (lower)	7	1.8 250	2.4 249.4	0.6	11	20
Till	All Boreholes	1.0 – 3.2 248.5 – 251.0	3.7 248.0 – 250.0		6 - 54	9 - 22

Notes:

1. All boreholes were terminated in till at 3.7 m.



Five soil samples were submitted for grain size analyses with the results presented on Figures GS-1 to GS-3, appended. The results are summarized in the below Table 2:

TABLE 2
RESULTS OF GRAIN SIZE ANALYSIS

BOREHOLE AND SAMPLE ID.	MATERIAL	GRAVEL (%)	SAND (%)	SILT (%)	CLAY (%)
BH1, SS3	Till	6	31	35	28
BH1, SS4	Till	5	26	49	20
BH3, SS3	Till	4	18	52	26
BH4, SS4	Clayey Silt	1	15	44	40
BH8, SS2	Fill	22	36	28	14

Groundwater was contacted in Boreholes 1 to 3, 5 and 6 on completion of drilling. Ground water was measured at 1.8 to 3.0 m depth, elevation 249.2 to 250.2, about 1.0 to 3.5 hours after completion of drilling. All boreholes except 4 and 8 caved at 2.4 to 3.0 m about 1 to 3.5 hours after completion of drilling.

It should be noted that the water levels may not be representative of long-term groundwater levels as the boreholes were left open for a limited time after completion of drilling.

Groundwater levels are subject to seasonal fluctuation and should be expected to be somewhat higher during the spring months and in response to major weather events.



5. ENGINEERING DISCUSSION AND RECOMMENDATIONS

5.1 Drainage Issues

Ground water was measured at 1.8 to 3.0 m depth, elevation 249.2 to 250.2, about 1 to 3.5 hours after completion of drilling.

It should be noted that the cemetery is located about 1.5 kms from Lake Simcoe. The water levels in Lake Simcoe fluctuate between elevations 218.4 to 219.7 m, which are much below the ground elevations at the cemetery and the groundwater elevations encountered in the boreholes.

It appears the groundwater elevation measured in the boreholes is not reflective of Lake elevation levels and the measured groundwater may be a part of a localized groundwater regime or perched groundwater which is much higher than the Lake elevation.

Surface water from the lands north and northwest of the site are at a higher elevation than the cemetery, due to which the cemetery likely receives surface water from these lands. The higher groundwater levels may also be due to the presence of several localized ponds at the cemetery, of which the pond south of the entrance driveway is closest to the burial plots.

In order to mitigate drainage issues the following general recommendations are made:

- Enhance drainage at the site boundaries by a system of ditches / subsurface drains such as perforated pipes or drain tiles which intercept surface water flowing towards the cemetery areas and divert them to existing natural drainage paths which direct flow towards the municipal stormwater/sanitary system or a natural drainage feature. As a minimum the water from the higher lands at the north/northwest must be intercepted and diverted through suitable means.
- Alternatively, a series of French drains can be installed around the perimeter of the burial plots to intercept groundwater and direct it to perimeter stormwater pipes, which in turn drain into the municipal drainage system. The French drain depths must consider the seasonal groundwater fluctuation and the maximum excavation depth for burial plots.



- Plant vegetation which can tolerate or benefit from moist conditions. Deep-rooted vegetation can help absorb excess moisture from the soil, reducing the water table.
- Consideration may be given to raising grades for future burial plots to avoid ground water issues. This strategy must take into account the seasonal high groundwater table, maximum depth of excavation for burial plots and an appropriate safety margin.

5.2 Site Preparation for Non-Structural Fill Placement (Grade Raise)

It is understood that site grades may be raised to avoid groundwater issues. The following general procedures are recommended for preparation of the site for fill placement. Reference is made to Appendix A for Engineered Fill Placement Guidelines.

- Fill and loose native soil should be removed to a distance equal to at least 0.6 m from the area where grades are to be raised.
- The exposed subgrade after excavation should be inspected and any deleterious materials found during subgrade inspection, should be removed/excavated.
- The exposed slab subgrade surface should be proof rolled with a tandem truck or equivalent and inspected by geotechnical personnel from PML. Any soft/loose spots encountered during the process should be sub-excavated and replaced with approved on-site or imported material, compacted to at least 92% of the Standard Proctor Maximum Dry Density (SPMDD).
- Fill placement should be conducted with approved on site or imported material placed in lifts not exceeding 200 mm and compacted to at least 92% of the SPMDD.
- All backfilling and compaction operations should be supervised by geotechnical personnel from PML to examine and approve backfill materials, evaluate placement operations and verify that the specified degree of compaction is achieved uniformly throughout the fill.



5.3 Lightly Loaded Foundations

Generally subsurface conditions are variable across the site and local boreholes would be required to confirm conditions at specific structures prior to construction.

Assuming a foundation support at about 1.5 m below existing ground surface, it is anticipated that the foundations will generally bear within stiff clayey silt/silty clay till.

Conventional spread footings placed within native till should be designed for a factored net Ultimate Limit State (ULS) resistance of 110 kPa and a Serviceability Limit State (SLS) resistance of 75 kPa, subject to inspection during construction.

The geotechnical resistance for the founding soils at SLS normally allows for 25 mm of compression of the founding medium. Based on the borehole findings, differential settlement is expected to be less than 20 mm, provided the subgrade is not loosened or softened by construction activity or prolonged exposure to the elements.

If the footing concrete is not placed on the day of the footing inspection, it is recommended that the founding surfaces be covered with a 50 mm thick concrete mud slab immediately after excavation and approval to maintain the integrity of the subgrade.

Footings exposed to seasonal freezing conditions must be protected against frost. Thermal insulation equivalent to that of 1.5 m of earth cover should be provided as foundation frost protection. In general, a 25 mm thick layer of polystyrene insulation is thermally equivalent to 600 mm of soil cover.

Prior to placement of concrete, all founding surfaces must be inspected by geotechnical personnel from PML to ensure that the founding soils are capable of supporting the recommended bearing resistances.



5.4 Temporary Excavations

It is anticipated that shallow excavations (less than 2 m in depth) can be carried out with conventional equipment. Obstructions due to presence of debris within the fill should be anticipated.

All construction work must be carried out in accordance with the Occupational Health and Safety Act (OHSA) and local regulations. With respect to the OHSA, the undocumented fill materials, except Boreholes 6 and 8 should be considered Type 3 soils. The very soft to soft fill materials encountered in Borehole 6 and 8 must be considered Type 4 soils. Peat, soft clayey silt/silty clay and soils below groundwater level or in areas of persistent seepage are considered to behave like Type 4 soil.

The OSHA requires that the excavation be cut at a predetermined inclination based on soil types. Excavations in Type 3 soil, should be cut at an inclination of 1H:1V from the base of the excavation. Excavations in Type 4 soil should be cut at an inclination of 3H:1V.

If an excavation contains more than one soil type, the excavation slope geometry shall be governed by the highest soil type. Based on this, in general, the excavations will be in Type 3 soil and sloped at 1H:1V except in some localized areas.

All work should be carried out in accordance with the Occupational Health and Safety Act, 1990 and Ontario Regulation 213/91 for construction projects and with local regulations.

It is recommended that trench excavations be supervised on a full-time basis by experienced geotechnical personnel from Peto MacCallum Ltd. to examine actual in-situ soil conditions and verify that proper trenching procedures are implemented.

No surcharge should be placed in close proximity of excavation and trenches.

For safety reasons, excavations should not be left open overnight. Backfilling should be carried out as soon as possible following excavation and foundation or pipe installation to minimize potential soil loosening, sloughing and groundwater seepage.



5.5 Groundwater Control

The excavations for construction of drains are anticipated to extend to a maximum depth of about 2 m below ground surface. Ground water was measured at 1.8 to 3.0 m depth, elevation 249.2 to 250.2, about 1 to 3.5 hours after completion of drilling.

In general, it is expected that seepage or surface water that enters temporary excavations can be adequately handled by conventional sump pumping techniques. The possibility of encountering concentrated seepage from more permeable sections of the fill stratum or relatively permeable sand seams and layers within the native soil which require more active dewatering methods such as well points should not be overlooked.

5.6 Preliminary Infiltration Parameters

5.6.1 Particle Size Distribution

Five soil samples from the site were submitted for grain size analyses and Hydraulic Conductivity (K) was estimated based on the particle size distribution. The results of the laboratory testing are included in Figures GS-1 to GS-3 and the estimated Hydraulic Conductivity of the soil, based on the grain size distributions, is provided in the table below.

TABLE 3

HYDRAULIC CONDUCTIVITY ESTIMATES

SOIL TYPE	ESTIMATED K (cm/sec)
Silty Clay/Clayey Silt or Silty Clay Till	2.0×10^{-5} to 1.0×10^{-6}

The K value derived from the particle size distribution curve does not take into consideration site specific details such as compaction, soil structure, organic content and/or the degree of saturation.



6. PAVEMENT DESIGN AND CONSTRUCTION

6.1 Gravel Driveway and Parking Lot

Assuming the subgrade soils comprise silty clay/clayey silt till, the following pavement thicknesses for gravel covered parking and driveway areas have been provided for preliminary consideration. The provided thickness recommendation must be reviewed when the subgrade soil has been confirmed and the parking and driveway area locations are finalized.

TABLE 4
RECOMMENDED PAVEMENT STRUCTURE – GRAVEL PARKING LOT

PAVEMENT COMPONENT	PASSENGER CAR PARKING AREAS (mm)	DRIVEWAYS (mm)
Granular A Base Course	200	250
Granular B Type II Subbase Course	300	350

6.2 Asphalt Pavement

Assuming the subgrade soils comprise silty clay/clayey silt till, the following pavement thicknesses for light duty vehicles have been provided for preliminary consideration. The following pavement thickness recommendation must be reviewed when the subgrade soil has been confirmed and the parking and driveway area locations are finalized.



TABLE 5	
PAVEMENT THICKNESS RECOMMENDATIONS	
PAVEMENT COMPONENT	THICKNESS (mm)
Asphalt Surface Course	40
Asphalt Binder Course	60
Granular A Base Course	150
Granular B Type I Subbase Course	400
TOTAL THICKNESS	650

6.3 General Pavement Design and Construction Considerations

The anticipated subgrade materials for the parking and driveway areas will consist of native silty clay/clayey silt till.

A geotextile fabric such as Terrafix 200W or equivalent should be placed between the subgrade and the subbase layer to prevent migration of fines into the subbase for both granular and asphalt paved pavements. It is recommended that the parking lots and driveways be constructed during the drier time of the year. The pavement design assumes a stable subgrade under construction equipment/traffic. If the subgrade is wet and unstable, additional thicknesses of the subbase course material may be required.

The subgrade surface should be crowned and shaped to discharge surface water to the drains at the catch basins to promote drainage of the pavement granular materials.

Prior to placement of the base course hot mix asphalt, the surface of the granular base must be proof rolled. The proof roll should be conducted with several passes of a heavy construction equipment such as a minimum 20-ton loaded tandem axle dump truck or heavy-duty roller. Proof rolling operations should be supervised by geotechnical personnel from PML. Reference is made to the latest edition of OPS Specification 310, for asphalt compaction requirements. It is



recommended that the asphalt design be reviewed by PML before selection of the final mix design and prior to the start of paving.

The granular base and subbase courses should conform to the gradation specifications of the municipal version of Ontario Provincial Standards Specifications OPSS 1010 for select granular materials and should be compacted to a minimum of 100% MPMDD.

For the pavement to function properly, provision must be made for water to drain out of, and not collect in the granular base courses. Continuous perforated corrugated steel or plastic longitudinal sub-drains (minimum diameter 100 mm) should be used to prevent built-up of water in the pavement granular base courses. The pipes should be surrounded by a geotextile filter fabric. The sub-drains should be at least 300 mm below the subgrade level. Backfill above the drains comprise free draining OPSS Granular B Type 1 or equivalent granular filter material. The sub-drains should be on a positive grade and tied to the storm sewer system.

The backfill to catch basins and manholes should consist of compacted Granular B Type 1 or Type II material with provision for infiltration from the granular base course into these drainage structures. The catch basins and manholes and manholes should be perforated just above the drain obvert level, and these holes screened with geotextile filter fabric. This procedure will also alleviate the problems of differential movement between the pavement and catch basins or manholes due to frost heave.

Inspection should be carried out by PML personnel to examine and approve subgrade, backfill/granular materials, to carefully inspect placement operations, and to verify the compaction by in situ density testing using nuclear gauges.



7. CLOSURE

We trust that the information presented in this report is sufficient for your present purposes. Please do not hesitate to contact our office should you have any questions.

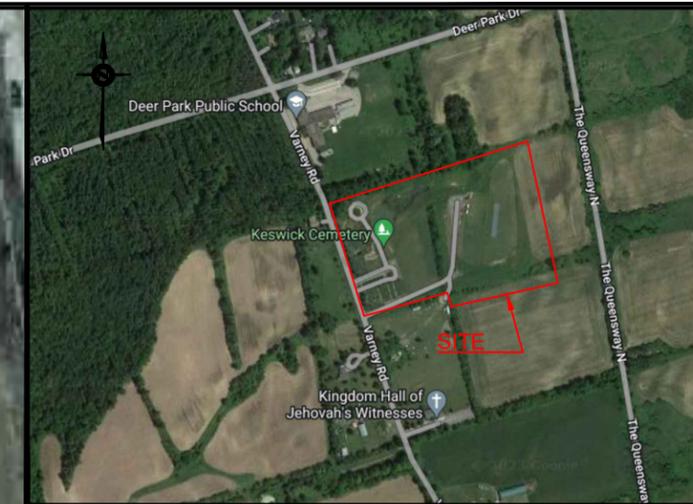
Sincerely

Peto MacCallum Ltd.



Harry Gharegrat, MS, MBA, P.Eng.
Director
Manager, Geotechnical Services

HG:mc/tc



KEY PLAN
GEORGINA, ONTARIO

LEGEND:

-  **BH 1** BOREHOLE 1 LOCATION
EL. 251.95 SURFACE ELEVATION
-  EXISTING CULVERT
-  APPROXIMATE SITE LIMITS

REFERENCE:

BASE PLAN PRODUCED FROM GOOGLE MAPS AND TOPOGRAPHIC SURVEY DATED OCTOBER 18, 2018 PREPARED BY E. R. GARDEN LTD.



BOREHOLE LOCATION PLAN

DRAINAGE ISSUES, KESWICK CEMETERY
565 VARNEY ROAD
GEORGINA, ONTARIO



DRAWN	NG	DATE	SCALE	PML REF.	DRAWING NO.
CHECKED	HG	FEB 2024	AS SHOWN	23BF003	1
APPROVED	HG				

LIST OF ABBREVIATIONS



PENETRATION RESISTANCE

Standard Penetration Resistance N: - The number of blows required to advance a standard split spoon sampler 0.3 m into the subsoil. Driven by means of a 63.5 kg hammer falling freely a distance of 0.76 m.

Dynamic Penetration Resistance: - The number of blows required to advance a 51 mm, 60 degree cone, fitted to the end of drill rods, 0.3 m into the subsoil. The driving energy being 475 J per blow.

DESCRIPTION OF SOIL

The consistency of cohesive soils and the relative density or denseness of cohesionless soils are described in the following terms:

<u>CONSISTENCY</u>	<u>N (blows/0.3 m)</u>	<u>c (kPa)</u>	<u>DENSENESS</u>	<u>N (blows/0.3 m)</u>
Very Soft	0 - 2	0 - 12	Very Loose	0 - 4
Soft	2 - 4	12 - 25	Loose	4 - 10
Firm	4 - 8	25 - 50	Compact	10 - 30
Stiff	8 - 15	50 - 100	Dense	30 - 50
Very Stiff	15 - 30	100 - 200	Very Dense	> 50
Hard	> 30	> 200		
WTLL	Wetter Than Liquid Limit			
WTPL	Wetter Than Plastic Limit			
APL	About Plastic Limit			
DTPL	Drier Than Plastic Limit			

TYPE OF SAMPLE

SS	Split Spoon	ST	Slotted Tube Sample
WS	Washed Sample	TW	Thinwall Open
SB	Scraper Bucket Sample	TP	Thinwall Piston
AS	Auger Sample	OS	Oesterberg Sample
CS	Chunk Sample	FS	Foil Sample
GS	Grab Sample	RC	Rock Core
	PH	Sample Advanced Hydraulically	
	PM	Sample Advanced Manually	

SOIL TESTS

Qu	Unconfined Compression	LV	Laboratory Vane
Q	Undrained Triaxial	FV	Field Vane
Qcu	Consolidated Undrained Triaxial	C	Consolidation
Qd	Drained Triaxial		

LOG OF BOREHOLE NO. 1

17T 621514E 4903736N

PROJECT Drainage Issues, Keswick Cemetery

PML REF. 23BF003

LOCATION 565 Varney Road, Georgina, Ontario

BORING DATE May 23, 2023

ENGINEER HG

BORING METHOD Continuous Flight Solid Stem Augers

TECHNICIAN NG

SOIL PROFILE			SAMPLES			SHEAR STRENGTH (kPa)				PLASTIC NATURAL LIQUID			UNIT WEIGHT kN/m ³	GROUND WATER OBSERVATIONS AND REMARKS		
DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	ELEVATION SCALE				W _p	w	W _L				
						+	Δ	○	○						50	100
0.0	SURFACE ELEVATION 251.95															
0.50	SURFACE GRANULARS: 100 mm of crushed limestone, over 400 mm of granular base and subbase, moist	[Symbol]	1A	GS	-											
251.45			1B													
0.95	FILL: Brown, sandy silt, some gravel, moist to very moist CLAYEY SILT TILL: Stiff to hard, grey, clayey silt, some sand to sandy, trace gravel, moist	[Symbol]	2	SS	8	251										
251.00																
			3						250							
			4													
			5						249							
3.7	BOREHOLE TERMINATED AT 3.7 m															
248.3														Upon completion of augering Water at 3.4 m No cave		
														Remeasured 2hrs after drilling Water at 1.8 m Cave at 2.4 m (sloughing)		
														Water seeping at 1.5 m		

NOTES

LOG OF BOREHOLE NO. 2

17T 621526E 4903639N

PROJECT Drainage Issues, Keswick Cemetery

PML REF. 23BF003

LOCATION 565 Varney Road, Georgina, Ontario

BORING DATE May 23, 2023

ENGINEER HG

BORING METHOD Continuous Flight Solid Stem Augers

TECHNICIAN NG

SOIL PROFILE			SAMPLES			SHEAR STRENGTH (kPa)				PLASTIC NATURAL LIQUID			UNIT WEIGHT kN/m ³	GROUND WATER OBSERVATIONS AND REMARKS
DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	+ FIELD VANE Δ TORVANE ○ Qu				LIMIT	MOISTURE CONTENT	LIMIT		
						▲ POCKET PENETROMETER ○ Q								
						DYNAMIC CONE PENETRATION ×				WATER CONTENT (%)				
						STANDARD PENETRATION TEST ●				w _p — w — w _L				
						20 40 60 80				10 20 30 40				
0.0	SURFACE ELEVATION 251.65													
0.44 251.21	PAVEMENT: 150 mm of asphalt, over 290 mm of granular base and subbase, moist		1A/B	GS	-									
1.00 250.65	FILL: Brown, clayey silt, trace to some sand, trace gravel, moist		2	SS	15									
	CLAYEY SILT/SILTY CLAY TILL: Firm to very stiff, brown to grey, clayey silt/silty clay, some sand to sandy, trace gravel, occasional cobbles, moist to very moist		3	SS	6									
2.0			4	SS	10									
3.0			5	SS	16									
3.7 248.0	BOREHOLE TERMINATED AT 3.7 m													First water strike at 3.0 m
4.0														Upon completion of augering Water at 2.7 m No cave
5.0														Remeasured 2hrs after drilling Water at 1.8 m Cave at 2.7 m (sloughing)

NOTES

LOG OF BOREHOLE NO. 3

17T 621570E 4903679N

PROJECT Drainage Issues, Keswick Cemetery
LOCATION 565 Varney Road, Georgina, Ontario
BORING METHOD Continuous Flight Solid Stem Augers

BORING DATE May 23, 2023

PML REF. 23BF003
ENGINEER HG
TECHNICIAN NG

SOIL PROFILE			SAMPLES			SHEAR STRENGTH (kPa)				PLASTIC NATURAL LIQUID			UNIT WEIGHT	GROUND WATER OBSERVATIONS AND REMARKS
DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	+ FIELD VANE Δ TORVANE ○ Qu				LIMIT	MOISTURE CONTENT	LIMIT		
						▲ POCKET PENETROMETER ○ Q	DYNAMIC CONE PENETRATION STANDARD PENETRATION TEST							
						50	100	150	200	W _p	w	W _L	kN/m ³	GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL
0.0	SURFACE ELEVATION 251.85													
0.20	TOPSOIL: Black, sandy silt, some organics, moist		1	SS	13									
251.65	FILL: Brown to grey, sandy silt/clayey silt, trace gravel, moist to very moist													
1.0			2	SS	13									
1.1	CLAYEY SILT/SILTY CLAY TILL: Stiff to very stiff, grey, clayey silt/silty clay, some sand to sandy, trace to some gravel, moist													
250.8			3	SS	16									4 18 52 26
2.0														
3.0			4	SS	22									
249														
3.7			5	SS	25									
248.2	BOREHOLE TERMINATED AT 3.7 m													Upon completion of augering No water No cave
4.0														Remeasured 3.5hrs after drilling Water at 2.2 m Cave at 2.8 m
5.0														
6.0														
7.0														
8.0														
9.0														
10.0														
11.0														
12.0														
13.0														
14.0														
15.0														

NOTES

LOG OF BOREHOLE NO. 4

17T 621648E 4903708N

PROJECT Drainage Issues, Keswick Cemetery
LOCATION 565 Varney Road, Georgina, Ontario
BORING METHOD Continuous Flight Solid Stem Augers

BORING DATE May 23, 2023

PML REF. 23BF003
ENGINEER HG
TECHNICIAN NG

SOIL PROFILE			SAMPLES			SHEAR STRENGTH (kPa)				PLASTIC NATURAL LIQUID			UNIT WEIGHT	GROUND WATER OBSERVATIONS AND REMARKS
DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	ELEVATION SCALE				W _p	w	W _L		
						+	Δ	○	Qu					
0.0	SURFACE ELEVATION 253.65													
253.55	TOPSOIL: Black, sandy silt, some organics, moist	[Cross-hatched pattern]	1	SS	8	●								
	FILL: Dark brown to black, silt, trace sand to sandy, trace clay to clayey, trace to some gravel, trace to some organics, occasional cobbles, moist to very moist		2	SS	7	●								
			3	SS	9	●								
2.1														
251.6	SILTY CLAY: Stiff, brown, silty clay, some sand, trace gravel, moist	[Diagonal lines pattern]	4	SS	11	●								
2.9			5	SS	27	●								
250.8	SILT TILL: Compact, brown, silt, some gravel, some clay, trace sand, occasional cobbles, moist	[Horizontal lines pattern]												
3.7	BOREHOLE TERMINATED AT 3.7 m													
250.0														
4.0														Upon completion of augering No water No cave
5.0														Remeasured 2hrs after drilling No water No cave
6.0														
7.0														
8.0														
9.0														
10.0														
11.0														
12.0														
13.0														
14.0														
15.0														

1 15 44 40

NOTES

LOG OF BOREHOLE NO. 5

17T 621753E 4903838N

PROJECT Drainage Issues, Keswick Cemetery
LOCATION 565 Varney Road, Georgina, Ontario
BORING METHOD Continuous Flight Solid Stem Augers

BORING DATE May 23, 2023

PML REF. 23BF003
ENGINEER HG
TECHNICIAN NG

SOIL PROFILE			SAMPLES			ELEVATION SCALE	SHEAR STRENGTH (kPa)				PLASTIC LIMIT W _p	NATURAL MOISTURE CONTENT w	LIQUID LIMIT W _L	UNIT WEIGHT kN/m ³	GROUND WATER OBSERVATIONS AND REMARKS
DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES		+ FIELD VANE	Δ TORVANE	○ Qu	▲ POCKET PENETROMETER					
							50	100	150	200					
0.0	SURFACE ELEVATION 252.15					252									
0.20	TOPSOIL: Black, sandy silt, some organics, trace clay, moist		1	SS	6										
251.95	CLAYEY SILT/SILTY CLAY TILL: Firm to hard, grey, clayey silt/silty clay, some sand to sandy, trace gravel, occasional cobbles, moist to very moist		2	SS	17	251									
1.0			3	SS	20										
2.0			4	SS	30	250									
3.0			5	SS	54	249									
3.5	Becoming sandy, with wet sand layer														
3.7	BOREHOLE TERMINATED AT 3.7 m														
248.5															
4.0															Upon completion of augering No water No cave
5.0															Remeasured 1.5hrs after drilling Wet cave at 3.0 m
6.0															
7.0															
8.0															
9.0															
10.0															
11.0															
12.0															
13.0															
14.0															
15.0															

NOTES

LOG OF BOREHOLE NO. 6

17T 621711E 4903765N

PROJECT Drainage Issues, Keswick Cemetery
LOCATION 565 Varney Road, Georgina, Ontario
BORING METHOD Continuous Flight Solid Stem Augers

BORING DATE May 23, 2023

PML REF. 23BF003
ENGINEER HG
TECHNICIAN NG

SOIL PROFILE			SAMPLES			SHEAR STRENGTH (kPa)				PLASTIC NATURAL LIQUID			UNIT WEIGHT	GROUND WATER OBSERVATIONS AND REMARKS
DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	+ FIELD VANE Δ TORVANE ○ Qu				LIMIT	MOISTURE CONTENT	LIMIT		
						▲ POCKET PENETROMETER ○ Q	DYNAMIC CONE PENETRATION STANDARD PENETRATION TEST × ●							
						50	100	150	200	W _p	w	W _L	kN/m ³	GRAIN SIZE DISTRIBUTION (%) GR SA SI&CL
0.0	SURFACE ELEVATION 251.70													
0.16	TOPSOIL: Black, sandy silt, some clay, some organics, moist		1	SS	4						○			
251.54														
1.0	FILL: Brown to grey, clayey silt/silty clay, trace sand, trace gravel, trace to some organics, organic pockets, moist to very moist with wet sand seams		2	SS	3						○			
2.0			3	SS	3						○			
3.0			4	SS	WOH						○			First water strike at 2.3 m
3.2														
248.5	CLAYEY SILT TILL: Very stiff, grey, clayey silt, some gravel, trace sand, moist		5	SS	23						○			
3.7														
248.0	BOREHOLE TERMINATED AT 3.7 m													Upon completion of augering Water at 2.7 m No cave
4.0														Remeasured 1hrs after drilling Water at 1.9 m Cave at 2.9 m (sloughing)
5.0														
6.0														
7.0														
8.0														
9.0														
10.0														
11.0														
12.0														
13.0														
14.0														
15.0														

NOTES

LOG OF BOREHOLE NO. 7

17T 621768E 4903669N

PROJECT Drainage Issues, Keswick Cemetery
LOCATION 565 Varney Road, Georgina, Ontario
BORING METHOD Continuous Flight Solid Stem Augers

BORING DATE May 23, 2023

PML REF. 23BF003
ENGINEER HG
TECHNICIAN NG

SOIL PROFILE			SAMPLES			SHEAR STRENGTH (kPa)				PLASTIC NATURAL LIQUID			UNIT WEIGHT	GROUND WATER OBSERVATIONS AND REMARKS	
DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	+ FIELD VANE Δ TORVANE ○ Qu				LIMIT	MOISTURE CONTENT	LIMIT			
						▲ POCKET PENETROMETER ○ Q									
						DYNAMIC CONE PENETRATION STANDARD PENETRATION TEST × ●				W _p — w — W _L			kN/m ³		
						20 40 60 80				10 20 30 40					
0.0	SURFACE ELEVATION 251.80														
251.71	TOPSOIL: Black, sandy silt, some organics, moist	[Cross-hatched pattern]	1	SS	6										
1.0	FILL: Dark brown to grey, sandy silt/silty sand, trace organics, trace gravel, trace clay, moist		2	SS	7										
1.8															
250.0	TOPSOIL: Black, sandy silt, some organics, moist	[Wavy pattern]	3	SS	11										
2.4															
249.4	SILTY SAND TILL: Compact, brown to grey, silty sand, some clay, some gravel, moist to very moist	[Diagonal hatched pattern]	4	SS	11										
3.0															
3.7															
248.1	BOREHOLE TERMINATED AT 3.7 m														
4.0														First water strike at 2.6 m	
4.0														Upon completion of augeing No water Cave at 2.9 m	
5.0														Remeasured 2hrs after drilling No water Cave at 2.9 m	
6.0															
7.0															
8.0															
9.0															
10.0															
11.0															
12.0															
13.0															
14.0															
15.0															

NOTES

LOG OF BOREHOLE NO. 8

17T 621627E 4903628N

PROJECT Drainage Issues, Keswick Cemetery

PML REF. 23BF003

LOCATION 565 Varney Road, Georgina, Ontario

BORING DATE May 23, 2023

ENGINEER HG

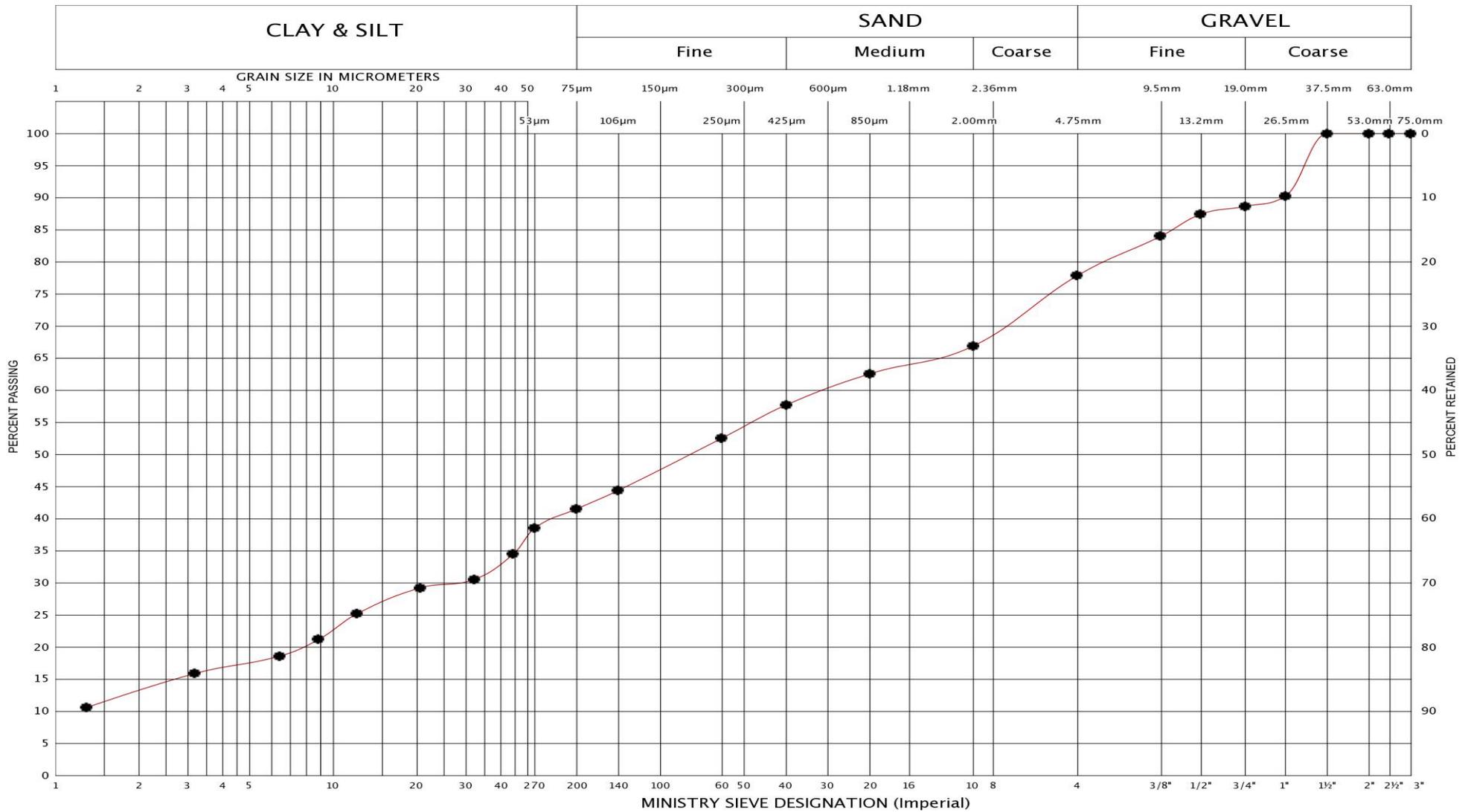
BORING METHOD Continuous Flight Solid Stem Augers

TECHNICIAN NG

SOIL PROFILE			SAMPLES			SHEAR STRENGTH (kPa)				PLASTIC NATURAL LIQUID			UNIT WEIGHT	GROUND WATER OBSERVATIONS AND REMARKS			
DEPTH ELEV (metres)	DESCRIPTION	STRAT PLOT	NUMBER	TYPE	"N" VALUES	ELEVATION SCALE				W _p	w	W _L					
						+	Δ	○	○						50	100	150
0.00	SURFACE ELEVATION 252.15																
0.40 251.75	PAVEMENT: 120 mm of asphalt, over 280 mm of granular base and subbase, moist		1	A/B	GS	-											
1.00	FILL: Black, silty gravelly sand, some clay, trace organics, moist		2	SS	10									22 36 28 14			
1.40 250.8	Becoming clayey silt, trace sand, trace organics, moist		3	SS	4												
2.00	CLAYEY SILT TILL: Stiff, grey, clayey silt, trace sand, trace gravel, occasional cobbles, moist		4	SS	10												
2.10 250.1																	
3.00																	
3.70 248.5	BOREHOLE TERMINATED AT 3.7 m		5	SS	15												
4.00														Upon completion of augering No water No cave			
5.00														Remeasured 3.5hrs after drilling No water No cave			

NOTES

UNIFIED SOIL CLASSIFICATION SYSTEM



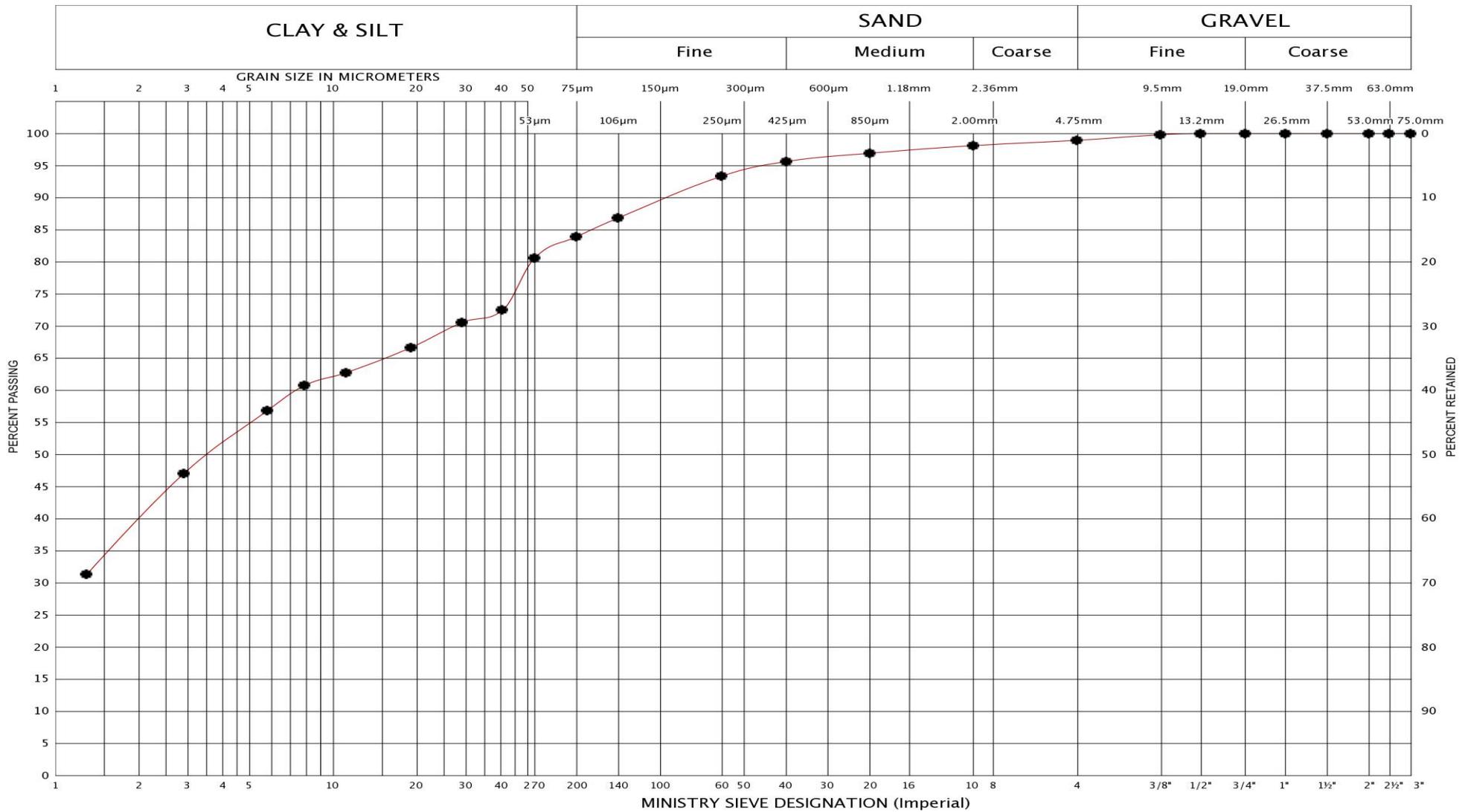
LEGEND	BH	8
	SAMPLE	2
	SYMBOL	•



GRAIN SIZE DISTRIBUTION
 FILL: Silty Gravelly Sand, Some Clay

FIG No.: GS-1
Project No.: 23BF003

UNIFIED SOIL CLASSIFICATION SYSTEM



LEGEND	BH	4
	SAMPLE	4
	SYMBOL	•

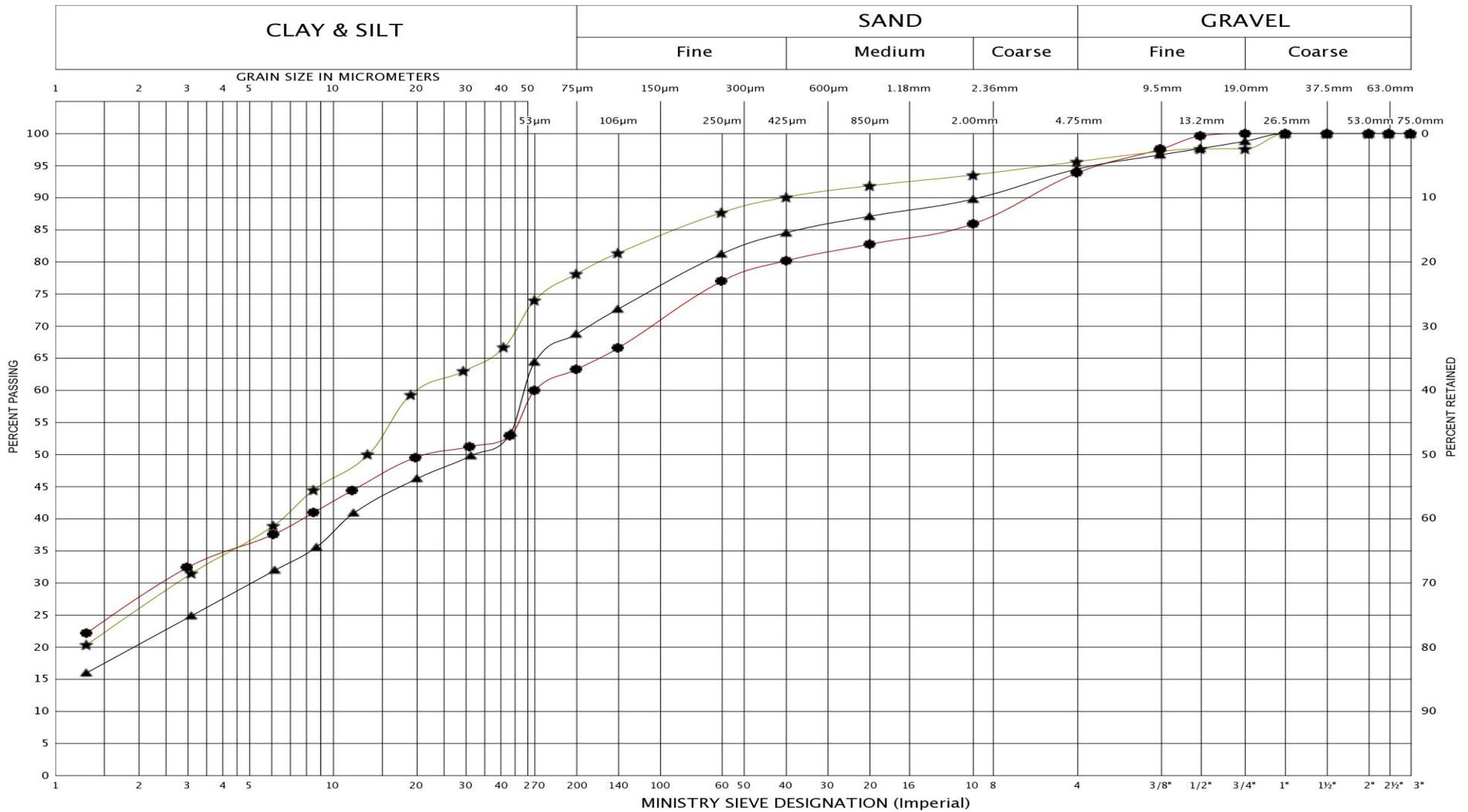
GRAIN SIZE DISTRIBUTION
 SILTY CLAY, Some Sand, Trace Gravel

FIG No.: GS-2

Project No.: 23BF003



UNIFIED SOIL CLASSIFICATION SYSTEM



LEGEND	BH	1	1	3
	SAMPLE	3	4	3
	SYMBOL	●	▲	★

GRAIN SIZE DISTRIBUTION

TILL: Clayey Silt/Silty Clay, Some Sand To Sandy, Trace Gravel

FIG No.: GS-3

Project No.: 23BF003





APPENDIX A

Statement of Limitations



STATEMENT OF LIMITATIONS

This report is prepared for and made available for the sole use of the client. Peto MacCallum Ltd. (PML) hereby disclaims any liability or responsibility to any person or entity, other than those for whom this report is specifically issued, for any loss, damage, expenses, or penalties that may arise or result from the use of any information or recommendations contained in this report. The contents of this report may not be used or relied upon by any other person without the express written consent and authorization of PML.

This report shall not be relied upon for any purpose other than as agreed with the client named without the written consent of PML. It shall not be used to express or imply warranty as to the fitness of the property for a particular purpose. A portion of this report may not be used as a separate entity: that is to say the report is to be read in its entirety at all times.

The report is based solely on the scope of services which are specifically referred to in this report. No physical or intrusive testing has been performed, except as specifically referenced in this report. This report is not a certification of compliance with past or present regulations, codes, guidelines and policies.

Environmental site assessment studies are performed in different phases by the application of different levels of effort and expense. The phase or phases in this report and the level of effort proposed for this assignment were based solely on PML's understanding of the client's needs as described in the scope of services contained in this report.

This assessment does not wholly eliminate uncertainty regarding the potential for existing or future costs, hazards or losses in connection with the subject property and must be viewed as a mechanism to reduce risk rather than eliminate the risk of contamination concerns.

The scope of services carried out by PML is based on details of the proposed development and land use to address certain issues, purposes and objectives with respect to the specific site as identified by the client. Services not expressly set forth in writing are expressly excluded from the services provided by PML. In other words, PML has not performed any observations, investigations, study

STATEMENT OF LIMITATIONS



analysis, engineering evaluation or testing that is not specifically listed in the scope of services in this report. PML assumes no responsibility or duty to the client for any such services and shall not be liable for failing to discover any condition, whose discovery would require the performance of services not specifically referred to in this report.

The findings and comments made by PML in this report are based on the conditions observed at the time of PML's site reconnaissance. No assurances can be made and no assurances are given with respect to any potential changes in site conditions following the time of completion of PML's field work. Furthermore, regulations, codes and guidelines may change at any time subsequent to the date of this report and these changes may affect the validity of the findings and recommendations given in this report.

The results and conclusions with respect to site conditions are therefore in no way intended to be taken as a guarantee or representation, expressed or implied, that the site is free from any contaminants from past or current land use activities or that the conditions in all areas of the site and beneath or within structures are the same as those areas specifically sampled.

Any investigation, examination, measurements or sampling explorations at a particular location may not be representative of conditions between sampled locations. Soil, ground water, surface water, or building material conditions between and beyond the sampled locations may differ from those encountered at the sampling locations and conditions may become apparent during construction which could not be detected or anticipated at the time of the intrusive sampling investigation.

Budget estimates contained in this report are to be viewed as an engineering estimate of probable costs and provided solely for the purposes of assisting the client in its budgeting process. It is understood and agreed that PML will not in any way be held liable as a result of any budget figures provided by it.

The Client expressly waives its right to withhold PML's fees, either in whole or in part, or to make any claim or commence an action or bring any other proceedings, whether in contract, tort, or otherwise against PML in anyway connected with advice or information given by PML relating to the cost estimate or Environmental Remediation/Cleanup and Restoration or Soil and Ground Water Management Plan Cost Estimate.



APPENDIX B

Engineered Fill

The information presented in this appendix is intended for general guidance only. Site specific conditions and prevailing weather may require modification of compaction standards, backfill type or procedures. Each site must be discussed, and procedures agreed with Peto MacCallum Ltd. prior to the start of the earthworks and must be subject to ongoing review during construction. This appendix is not intended to apply to embankments. Steeply sloping ravine residential lots require special consideration.

For fill to be classified as engineered fill suitable for supporting structural loads, a number of conditions must be satisfied, including but not necessarily limited to the following:

1. Purpose

The site specific purpose of the engineered fill must be recognized. In advance of construction, all parties should discuss the project and its requirements and agree on an appropriate set of standards and procedures.

2. Minimum Extent

The engineered fill envelope must extend beyond the footprint of the structure to be supported. The minimum extent of the envelope should be defined from a geotechnical perspective by:

- at founding level, extend a minimum 1.0 m beyond the outer edge of the foundations, greater if adequate layout has not yet been completed as noted below; and
- extend downward and outward at a slope no greater than 45° to meet the subgrade

All fill within the envelope established above must meet the requirements of engineered fill in order to support the structure safely. Other considerations such as survey control, or construction methods may require an envelope that is larger, as noted in the following sections.

Once the minimum envelope has been established, structures must not be moved or extended without consultation with Peto MacCallum Ltd. Similarly, Peto MacCallum Ltd. should be consulted prior to any excavation within the minimum envelope.

3. Survey Control

Accurate survey control is essential to the success of an engineered fill project. The boundaries of the engineered fill must be laid out by a surveyor in consultation with engineering staff from Peto MacCallum Ltd. Careful consideration of the maximum building envelope is required.

During construction it is necessary to have a qualified surveyor provide total station control on the three dimensional extent of filling.

ENGINEERED FILL



4. Subsurface Preparation

Prior to placement of fill, the subgrade must be prepared to the satisfaction of Peto MacCallum Ltd. All deleterious material must be removed and in some cases, excavation of native mineral soils may be required.

Particular attention must be paid to wet subgrades and possible additional measures required to achieve sufficient compaction. Where fill is placed against a slope, benching may be necessary and natural drainage paths must not be blocked.

5. Suitable Fill Materials

All material to be used as fill must be approved by Peto MacCallum Ltd. Such approval will be influenced by many factors and must be site and project specific. External fill sources must be sampled, tested and approved prior to material being hauled to site.

6. Test Section

In advance of the start of construction of the engineered fill pad, the Contractor should conduct a test section. The compaction criterion will be assessed in consultation with Peto MacCallum Ltd. for the various fill material types using different lift thicknesses and number of passes for the compaction equipment proposed by the Contractor.

Additional test sections may be required throughout the course of the project to reflect changes in fill sources, natural moisture content of the material and weather conditions.

The Contractor should be particularly aware of changes in the moisture content of fill material. Site review by Peto MacCallum Ltd. is required to ensure the desired lift thickness is maintained and that each lift is systematically compacted, tested and approved before a subsequent lift is commenced.

7. Inspection and Testing

Uniform, thorough compaction is crucial to the performance of the engineered fill and the supported structure. Hence, all subgrade preparation, filling and compacting must be carried out under the full time inspection by Peto MacCallum Ltd.

All founding surfaces for all buildings and residential dwellings or any part thereof (including but not limited to footings and floor slabs) on structural fill or native soils must be inspected and approved by PML engineering personnel prior to placement of the base/subbase granular material and/or concrete. The purpose of the inspection is to ensure the subgrade soils are capable of supporting the building/house foundation and floor slab loads and to confirm the building/house envelope does not extend beyond the limits of any structural fill pads.

8. Protection of Fill

Fill is generally more susceptible to the effects of weather than natural soil. Fill placed and approved to the level at which structural support is required must be protected from excessive wetting, drying, erosion or freezing. Where adequate protection has not been provided, it may be necessary to provide deeper footings or to strip and recompact some of the fill.

9. Construction Delay Time Considerations

The integrity of the fill pad can deteriorate due to the harsh effects of our Canadian weather. Hence, particular care must be taken if the fill pad is constructed over a long time period.

It is necessary therefore, that all fill sources are tested to ensure the material compactability prior to the soil arriving at site. When there has been a lengthy delay between construction periods of the fill pad, it is necessary to conduct subgrade proof rolling, test pits or boreholes to verify the adequacy of the exposed subgrade to accept new fill material.

When the fill pad will be constructed over a lengthy period of time, a field survey should be completed at the end of each construction season to verify the areal extent and the level at which the compacted fill has been brought up to, tested and approved.

In the following spring, subexcavation may be necessary if the fill pad has been softened attributable to ponded surface water or freeze/thaw cycles.

A new survey is required at the beginning of the next construction season to verify that random dumping and/or spreading of fill has not been carried out at the site.

10. Approved Fill Pad Surveillance

It should be appreciated that once the fill pad has been brought to final grade and documented by field survey, there must be ongoing surveillance to ensure that the integrity of the fill pad is not threatened.

Grading operations adjacent to fill pads can often take place several months or years after completion of the fill pad.

It is imperative that all site management and supervision staff, the staff of Contractors and earthwork operators be fully aware of the boundaries of all approved engineered fill pads.

Excavation into an approved engineered fill pad should never be contemplated without the full knowledge, approval and documentation by the geotechnical consultant.

If the fill pad is knowingly built several years in advance of ultimate construction, the areal limits of the fill pad should be substantially overbuilt laterally to allow for changes in possible structure location and elevation and other earthwork operations and competing interests on the site. The overbuilt distance required is project and/or site specified.

ENGINEERED FILL



Iron bars should be placed at the corner/intermediate points of the fill pad as a permanent record of the approved limits of the work for record keeping purposes.

11. Unusual Working Conditions

Construction of fill pads may at times take place at night and/or during periods of freezing weather conditions because of the requirements of the project schedule. It should be appreciated therefore, that both situations present more difficult working conditions. The Owner, Contractor, Design Consultant and Geotechnical Engineer must be willing to work together to revise site construction procedures, enhance field testing and surveillance, and incorporate design modifications as necessary to suit site conditions.

When working at night there must be sufficient artificial light to properly illuminate the fill pad and borrow areas.

Placement of material to form an engineered fill pad during winter and freezing temperatures has its own special conditions that must be addressed. It is imperative that each day prior to placement of new fill, the exposed subgrade must be inspected and any overnight snow or frozen material removed. Particular attention should be given to the borrow source inspection to ensure only nonfrozen fill is brought to the site.

The Contractor must continually assess the work program and have the necessary spreading and compacting equipment to ensure that densification of the fill material takes place in a minimum amount of time. Changes may be required to the spreading methods, lift thickness, and compaction techniques to ensure the desired compaction is achieved uniformly throughout each fill lift.

The Contractor should adequately protect the subgrade at the end of each shift to minimize frost penetration overnight. Since water cannot be added to the fill material to facilitate compaction, it is imperative that densification of the fill be achieved by additional compaction effort and an appropriate reduced lift thickness. Once the fill pad has been completed, it must be properly protected from freezing temperatures and ponding of water during the spring thaw period.

If the pad is unusually thick or if the fill thickness varies dramatically across the width or length of the fill pad, Peto MacCallum Ltd. should be consulted for additional recommendations. In this case, alternative special provisions may be recommended, such as providing a surcharge preload for a limited time or increase the degree of compaction of the fill

Appendix C - Glossary of Terms

Definitions Source: Adapted from various sources by LEES+Associates.

AT-NEED	<ul style="list-style-type: none"> At the time of, or immediately following death. Usually refers to the time of purchase of funeral or cemetery services.
BOOK OF MEMORIES	<ul style="list-style-type: none"> Plaque with a list of names of the deceased who typically are in areas not readily accessible. A type of memorial monument.
BURIAL	<ul style="list-style-type: none"> One form of interment. The placement of human or cremated remains in a grave.
BURIAL LINER	<ul style="list-style-type: none"> Like a burial vault, however, unlike a vault, it only covers the top and sides of the casket
BURIAL PERMIT	<ul style="list-style-type: none"> A legal document issued by a regulatory authority authorizing the final disposition of human remains.
BURIAL VAULT	<ul style="list-style-type: none"> A protective, sealable outer receptacle, into which a casket or urn is placed, and is designed to restrict the entrance of gravesite elements into the casket or urn.
BYLAWS	<ul style="list-style-type: none"> The written regulations, rules, or laws governing the organization, management, and operation of a cemetery, mausoleum, columbarium, or crematorium.
CAPASCRD	<ul style="list-style-type: none"> The maximum amount of cemetery inventory that a site can potentially contain, as defined by its geographic limits after all unused land is fully developed.
CARE AND MAINTENANCE FUND (also known as PERPETUAL CARE FUND or CARE FUND)	<ul style="list-style-type: none"> An irrevocable trust fund established, held, and administered in accordance with applicable law, with the income from the fund to be used for the upkeep and repair of a cemetery, mausoleum, or columbarium.
CASKET	<ul style="list-style-type: none"> A rigid container usually constructed of wood, metal, or similar material, ornamented and lined with fabric, designed for the encasement of human remains.
CASKET ENTOMBMENT	<ul style="list-style-type: none"> When a casket is interred in a mausoleum.

CEMETERY SERVICES	<ul style="list-style-type: none"> The disposition of human remains by interment or cremation and includes the supply of goods incidental to the provision of such service but does not include the sale of lots.
COLUMBARIUM (plural: COLUMBARIA)	<ul style="list-style-type: none"> A structure, building, an area in a structure or building that contains, as an integral part of the structure or building or as a freestanding section, niches for the inurnment of cremated remains. Can be “Individual,” “Family” or “Community,” based on the number of niches, and how they are sold.
COMMEMORATION	<ul style="list-style-type: none"> A ceremony, service, or symbol of memory for a person/people, or event.
COMMINGLING	<ul style="list-style-type: none"> The mixing of the cremated remains of more than one deceased person.
CONTAINER	<ul style="list-style-type: none"> A self-contained receptacle or enclosure other than a casket, made of rigid cardboard, pressed wood, or other similar material that is of sufficient strength to hold and conveniently transport human remains but does not include a metal or fiberglass casket, receptacle, or enclosure made of plastic or a similar substance, or a pouch or bag.
CREMATED REMAINS	<ul style="list-style-type: none"> The human bone fragments that remain after a cremation, including the residue of any other materials cremated with the human remains.
CREMATION	<ul style="list-style-type: none"> The irreversible reduction of human remains to bone fragments through the application of flame and intense heat; in some jurisdictions, this may include the repositioning or movement of the body during the process to complete the cremation; and the manual or mechanical reduction of the bone fragments after removal from the cremation chamber.
CREMATION LOT	<ul style="list-style-type: none"> A space used or intended to be used, specifically for the interment of cremated remains. Typically, it is smaller than a full-sized lot.
CREMATORIUM	<ul style="list-style-type: none"> The building or part of a building that is fitted with approved appliances for the cremation of human remains and includes everything incidental or ancillary to it.

CREMORIAL	<ul style="list-style-type: none"> ▪ A memorial property or columbarium niche that contains cremated remains. 	GRAVE	<ul style="list-style-type: none"> ▪ One kind of lot. ▪ A portion of ground in a cemetery, used or intended to be used, for the burial of human remains or cremated remains.
CRIB GRAVE	<ul style="list-style-type: none"> ▪ A grave lot surrounded by a small picket fence. 	GRAVE LINER	<ul style="list-style-type: none"> ▪ A fiberglass or concrete structure that is installed over a casket once it has been placed in the grave.
CRYPT	<ul style="list-style-type: none"> ▪ One kind of lot. ▪ Typically, a space in a mausoleum that is used or intended to be used for the entombment of human remains. 	GRAVE MARKER	<ul style="list-style-type: none"> ▪ Can be in-ground (flat) or upright.
DEATH CERTIFICATE	<ul style="list-style-type: none"> ▪ A legal document certifying the vital statistics pertaining to the life and death of a deceased person. 	GREEN BURIAL	<ul style="list-style-type: none"> ▪ A more environmentally conscious alternative to “traditional burial.” Typically includes: <ul style="list-style-type: none"> a. no embalming; b. burial directly in the ground, without a grave liner or vault; c. a fully biodegradable burial container (casket or shroud); d. interment sites planted with indigenous ground cover, and e. no individual grave markers.
DIRECT (or IMMEDIATE) DISPOSITION	<ul style="list-style-type: none"> ▪ The final disposition of human remains without any formal viewing or visitation, ritual, rite, service, or ceremony. 	INTERMENT	<ul style="list-style-type: none"> ▪ Disposition by: <ul style="list-style-type: none"> f. burial of human remains or cremated remains in a grave; g. entombment of human remains in a mausoleum, crypt, or; h. inurnment of cremated remains in a columbarium niche.
DISINTERMENT (also known as EXHUMATION)	<ul style="list-style-type: none"> ▪ The removal of human remains, along with the casket or container or any remaining portion of the casket or container holding the remains, from the lot in which the remains had been interred. 	INVENTORY	<ul style="list-style-type: none"> ▪ Represents the total amount of currently developed and installed interment spaces available for sale, including grave lots, crypts, and columbaria niches.
DOUBLE DEPTH LOT	<ul style="list-style-type: none"> ▪ A lot dug at extra depth at the time of the interment of the first casket to allow for the accommodation of a second interment at regular depth. 	INTERMENT RIGHTS HOLDER	<ul style="list-style-type: none"> ▪ Also known as a “lot holder” in other parts of Canada, this is the person in whose name the right of interment in a lot is registered in the records of a cemetery and, where the interment has taken place, includes the person who has legally acquired ancillary rights to the lot.
EASEMENT	<ul style="list-style-type: none"> ▪ The right acquired, whether or not supported by a certificate, to interment in a lot. 	INURNMENT	<ul style="list-style-type: none"> ▪ One form of cremated remains interment. ▪ The process of placing cremated remains in a receptacle including, but not limited to, an urn and placing the urn into a niche.
ENTOMBMENT	<ul style="list-style-type: none"> ▪ One form of interment. ▪ The placement of human remains in a mausoleum crypt. 	LAWN CRYPT	<ul style="list-style-type: none"> ▪ A concrete or other durable and rigid outer receptacle that is installed in a grave before burial.
FAMILY COLUMBARIUM	<ul style="list-style-type: none"> ▪ See columbarium 		
FAMILY ESTATE LOTS	<ul style="list-style-type: none"> ▪ A family estate lot contains 6-12 lots together. 		
FAMILY VESSEL	<ul style="list-style-type: none"> ▪ A large urn for several cremated remains. Remains may be comingled or may be contained in smaller, individual urns, held within the larger vessel. 		
FLAT MARKER	<ul style="list-style-type: none"> ▪ A grave marker that is set flush with the ground. 		
FUNERAL SERVICES	<ul style="list-style-type: none"> ▪ The arrangements, care, and preparation of human remains for interment, cremation, or other disposition and includes the supply of goods incidental to the arrangements, care, and preparation, but does not include the sale of lots. 		

LEVEL OF SERVICE	<ul style="list-style-type: none"> ▪ Level of service refers to the degree of investment an operator gives to its cemetery’s site care, asset maintenance, and other key processes that support its operations, as well as the extent of interment and memorialization services provided. The level of service is measured on a scale of Basic (Legislative Minimum), Average (Common Practice), and Optimal (Best Practice).
LOT HOLDER	<ul style="list-style-type: none"> ▪ Also known as the “interment rights holder” in Ontario, this is the person in whose name the right of interment in a lot is registered in the records of a cemetery and, where the interment has taken place, includes the person who has legally acquired ancillary rights to the lot.
MAINTENANCE FUND (also known as CARE FUND or PERPETUAL CARE FUND)	<ul style="list-style-type: none"> ▪ A fund established for the upkeep and repair of a cemetery, mausoleum, or columbarium.
MAUSOLEUM (plural: MAUSOLEA)	<ul style="list-style-type: none"> ▪ A structure or building that contains interior or exterior crypts designed for the entombment of human remains.
MAUSOLEUM CRYPT	<ul style="list-style-type: none"> ▪ A chamber of a mausoleum of sufficient size for the entombment of human remains.
MEMORIAL	<ul style="list-style-type: none"> ▪ A product, meeting the bylaw standard of a cemetery, used, or intended to be used to identify a lot or to memorialize a deceased person interred or to be interred in a lot, including but not limited to: <ul style="list-style-type: none"> a. a marker, headstone, tombstone monument, plaque, tablet, or plate on a lot; or b. a tablet inscription, lettering or ornamentation on a crypt or niche front, or c. a tree, boulder, or other feature so identified; ▪ A ceremony, rite, or ritual commemorating the life of a deceased individual without the human remains present.
NICHE	<ul style="list-style-type: none"> ▪ One kind of lot. ▪ A space, usually within a columbarium, for placing a receptacle containing cremated remains.

OSSUARY	<ul style="list-style-type: none"> ▪ A vessel for the interment of two or more cremated remains. ▪ Typically, the cremated remains are commingled.
OUTER CONTAINER	<ul style="list-style-type: none"> ▪ A receptacle, which is designed for placement in a lot to accept the placement of a casket or urn.
PERPETUAL CARE FUND (also known as CARE FUND or MAINTENANCE FUND)	<ul style="list-style-type: none"> ▪ An irrevocable trust fund established, held, and administered in accordance with applicable law, with the income from the fund to be used for the upkeep and repair of a cemetery, mausoleum, or columbarium.
PRE-NEED	<ul style="list-style-type: none"> ▪ Any time before death. ▪ Usually refers to the time of purchase of funeral or cemetery services. ▪ “Pre-need planning” refers to the process of making arrangements and/or entering into contracts regarding future cemetery services for one or more persons who are still alive at the time.
REGISTRAR	<ul style="list-style-type: none"> ▪ The person who is responsible for the administration and enforcement of applicable laws and regulations relating to cemetery and funeral services.
SCATTERING	<ul style="list-style-type: none"> ▪ The irreversible dispersal of cremated remains over land or water or commingling in a defined area in a cemetery.
SCATTERING GARDEN	<ul style="list-style-type: none"> ▪ An area within a cemetery, usually providing an attractive natural or ornamental setting, dedicated to the scattering of cremated remains.
SPIRIT HOUSE	<ul style="list-style-type: none"> ▪ A wooden shelter over a grave to house the spirit of the dead, typical of First Nations cemeteries.
UPRIGHT MARKER	<ul style="list-style-type: none"> ▪ A grave marker that is not flush with the ground is mounted on a footing and intended to be visible over the surrounding finished grade.
URN	<ul style="list-style-type: none"> ▪ A receptacle for holding cremated remains.

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