Aquafor Beech
Limited

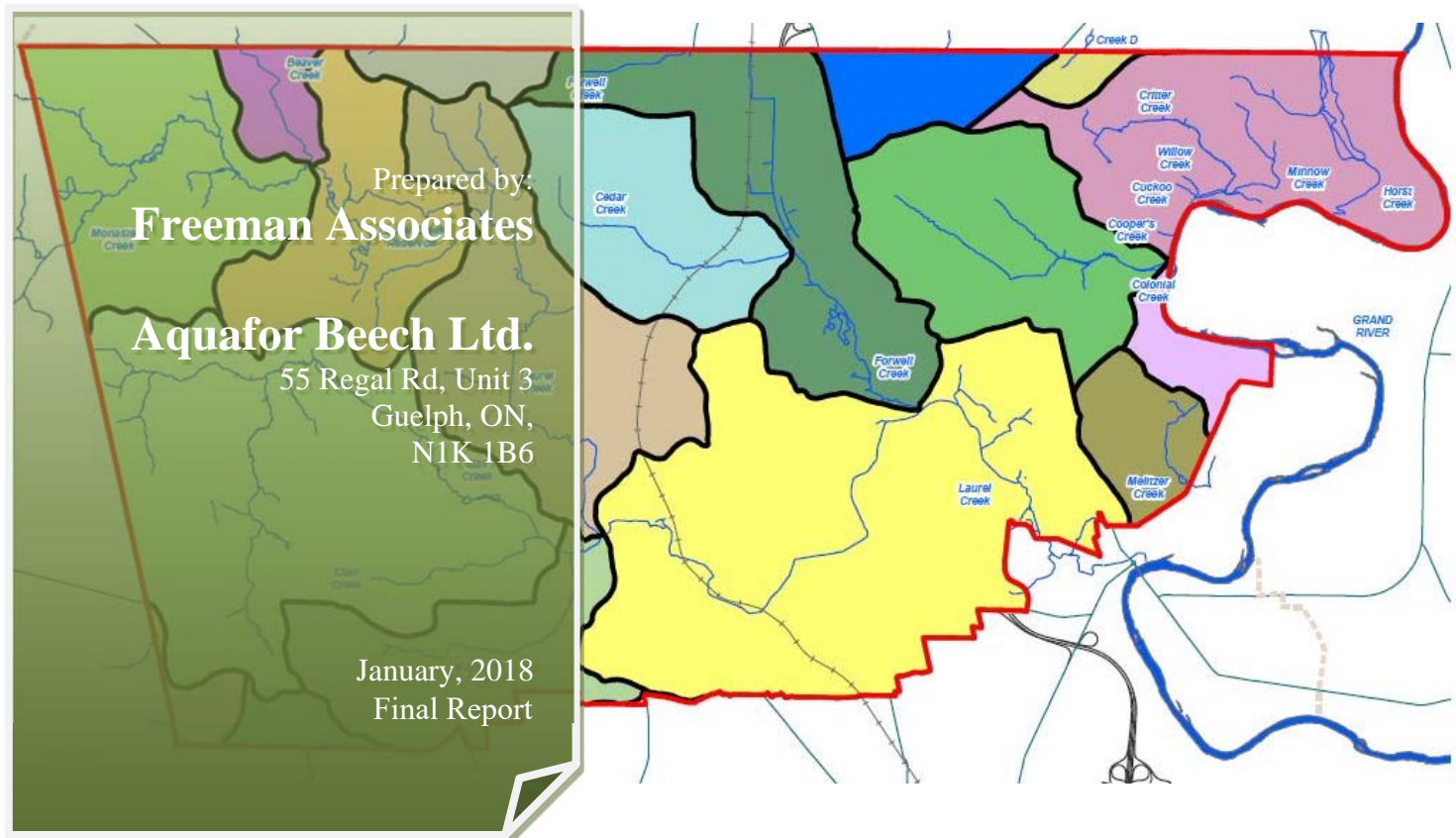# STORMWATER MANAGEMENT MASTER PLAN (SWM-MP)
MUNICIPAL CLASS ENVIRONMENTAL ASSESSMENT

Residential Market Research Analysis

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APPENDIX 1   Facilitator's Copy of Residential Questionnaire

1.0   Executive Summary

1.1   Background and Context

The City of Waterloo is currently in the process of creating an Stormwater Management Master Plan (SWM-MP) that will be completed by the end of 2018. The ultimate goal of the Master Plan is to protect the rivers, streams and groundwater - for now and for the future – sources of our drinking water and essential for the health and vitality of the natural environment and our communities.

Stormwater runoff is water that flows over land and hard surfaces - including roads, driveways and rooftops - into drainage systems and then directly into our creeks, lakes and wetlands. It comes from rain and snow melt, as well as the water residents use to wash their car and water their lawn, among other sources.

As the landscape changes from undeveloped, natural areas to cities with houses, businesses, roads and parking lots, the amount of "permeable" or "porous" area is reduced and replaced with hard surfaces that do not absorb stormwater. As the water moves over these impervious surfaces, it picks up debris and contaminants such as motor oil, road salt and fertilizers. Unlike sewage, stormwater is untreated when it enters our waterways - most of it flows directly from our streets and gutters into creeks, rivers and lakes.

The SWM-MP or Plan will provide the City of Waterloo with a preferred stormwater management strategy to identify, protect and enhance natural features and the health and integrity of the environment. The Plan will provide a roadmap for managing stormwater over the long-term and support City staff to effectively manage priorities by:
- establishing targets for water quality, water quantity, erosion, and infiltration;
- providing guidance with respect to the protection of natural features;
- addressing infrastructure issues, such as flooding;
- establishing stormwater management policy and guidelines; and,
- identifying and prioritize stormwater infrastructure.

As part of the SWM-MP, City staff and consultants are undertaking research and engaging with residents and business owners to determine the best way to provide information, resources and expert guidance on implementing stormwater mitigation measures – such as rain gardens, bioswales, redirecting downspouts. A review of leading jurisdictions in stormwater policy and programming, and primary research with property owners in the residential and ICI sectors is being undertaken to determine mechanisms and approaches to drive uptake of on-site stormwater management measures. This research analysis report provides a summary of the findings from a research session held with residents as part of the SWM-MP process.

1.2   Residential Research: Project Description

The residential research discussed in this report was undertaken to identify opportunities and constraints for stormwater mitigation on residential properties and to help City staff understand the vision residents have for their City, neighbourhood, and home and landscape. The information collected through research provides the City with insights into the expectations, needs and understanding of residents with respect to stormwater management and what can be done to support homeowners implementing measures on their properties to reduce runoff and the risk of flooding. To secure the needed data, a research session was held with a demographically representative sample of single-family homeowners in the City of Waterloo on October 25, 2017.

The objectives of the research with single family homeowners are as follows:

1. Determine the underlying motivations of homeowners of detached (and semi-detached) residences regarding their home's landscape.
2. Test landscape aesthetics and designs for on-site stormwater management.
3. Determine homeowners' perspectives of an "ideal" landscape and a "Naturescape"[1] for their homes.
4. Measure homeowners' understanding of various terms, including "Naturescape", "watershed", "Stormwater Utility", "Stormwater Credit", and "rain garden".

This information will help City staff to provide residents with resources and guidance to implement measures to reduce stormwater runoff on their properties and the risk of property damage due to flooding.

1.3   Research Sample

A demographic profile of single-family home-owners in the City of Waterloo was developed using Statistics Canada Census data (2016). A recruitment screener was developed from the demographic profile. A recruitment screener is a series of questions asked of potential participants for the homeowner research such as age, gender, income level, education, number of children living at home, country of origin, etc. This process is used to ensure that the sample of single-family homeowners recruited for the research session is representative of the demographic of single-family homeowners in the City of Waterloo.

A select sample of thirty-four homeowners (n=34) was recruited for the research session. The close demographic match of the research sample with single-family homeowners in the City of Waterloo, coupled with asking over ninety open-ended questions, provides a sound basis upon which to draw conclusions regarding the homeowners' motivations for their homes and landscapes.

1.4   Research Description

A facilatator guided homeowner participants through a series of questions. Participants were provided with a questionnaire form on which they recorded their answers to verbally asked questions by the facilatator. Respondents were alloted a limited amount of time to answer each question. This methodology ensures top-of-mind, non-rationalized responses which are critical to securing insights into the intrinsic values and beliefs of homeowner respondents. Intrinsic values are at the root of all decisions and perceptions individuals' hold, and therefore, are the key to determining constraints and opportunities amongst similar demographic groups. Respondents were also asked to draw pictures, a right brain, creative exercise that provides quality data about homeowners' perceptions and visions for their homes and yard landscapes.

The majority of the questions asked during the research session where open-ended, consequently, homeowner participants often provided more than one response for any given question. This is important to note, as the frequency distribution (quantification) of responses may total more than one hundred percent (100%) for indivdiual questions.

1.5   Research Findings

The research findings provided in this section, follow sequentially the facilitator guided questions asked of the homeowner research sample. Participants were first asked a series of questions about the City of Waterloo, and subsequently, their neighbourhood, and their home and landscape.

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[1] "Naturescape" is the name of the water efficient landscaping program offered to residents by the Region of Waterloo

1.5.1   City and Community

Early in the questionnaire participants were asked: "What does the City of Waterloo mean to you?" Seventy-seven percent of responses indicated that the City of Waterloo means "home, and a safe and friendly community". Another 69% of responses view the City as a "vibrant, innovative technology hub with growing opportunities and good jobs." Respondents were asked to describe the two things they most like about living in Waterloo. Given the virtual equal representation for respondents' second choice, the top three responses are provided as follows:

- A bustling community with easy access to universities, schools and the downtown core (51%).
- A clean, safe community with beautiful parks (45%)
- Friendly neighbours, good people, diversity, and a sense of community (44%)

1.5.2   Home and Landscape

When homeowners were asked, "what does your home mean to you", they said it is "a place where I feel free, **safe and secure,** where I can relax and spend time with family and friends."   A smaller number see their home as an investment and simply a place to live.

Respondents were asked a series of questions about their home's landscape. **The single most important motivation for homeowners regarding their home's surrounding landscape is that it "looks good and has curb appeal."** This motivation is repeated throughout the responses, including the reasons why landscape design, landscape maintenance, and lawns and trees are important. Aesthetics **(lush, green, neat and well maintained)** was identified as the primary reason why lawns are important to respondents as they "add curb appeal". **Nine out of ten respondents rated lawns as important to their homes' landscape.** Only three (out of 34) homeowners stated their "lawns aren't the most important aspect for their home's landscape and grass is too much work." Homeowners have "pride" in their homes and landscapes which provide "enjoyment" and a place to spend time with "family and friends".

When homeowners were asked to rate on a scale of 1 to 10 – with 1 being low and 10 being high – **the importance of landscape maintenance to their home landscape**, they gave a high average rating of 8.0 out of 10. Again, attractiveness of the home landscape was the main reason why and eight out of ten respondents gave a high rating of importance for maintenance (in the range of 7 to 10).   The most important tasks for maintaining their homes' landscape provided by respondents were: cutting the grass (77%), weeding (35%), trimming trees and shrubs (18%), tending gardens (18%), planting flowers (15%) and keeping the yard tidy (15%).

Eight out of ten homeowners have gardens. Their primary motivations for having gardens:

52%	**Beauty and curb appeal**	26%	Enjoy gardening, feel good and relax
41%	Love flowers and colour	19%	Love fresh vegetables

The importance of **lawns** to the home's landscape rated highly by respondents at 8.2 out of 10. The predominant reasons why respondents provided the high rating were: "**Looks"** and **"curb appeal"**. In addition, for eighty-two percent of respondents, lawn area comprises more than half of their homes' landscapes.

Respondents rated the importance of trees to the home landscape highly with a mean rating of 8.0 out of 10 and provided the following reasons for the high rating given: Trees provide shade (56%), they are good for the environment and wildlife (38%), and trees add beauty (29%). In addition, many people (15%) said they "like the privacy and feeling of comfort" trees provide.

Homeowner respondents were also asked to draw an "ideal landscape" and an "ideal Naturescape" landscape for the front yard of their homes. As previously identified, "Naturescape" is the name of the Region of Waterloo's water efficient landscaping program available to City residents. The drawing exercise is a right brain, creative activity that provides data about the visual perceptions homeowners' hold. After each drawing was completed by respondents, the facilitator asked them a number of questions regarding their "ideal landscape" and "ideal Naturescape" drawings, including asking respondents to describe their drawings and the feeling or emotions it evokes in them? Sample drawings and summary tables of respondents' answers to the associated questions are included in Section 4.5. Interestingly, the two types of landscapes elicited some similar responses from homeowners when asked what are the most important elements or aspects of both landscapes, as indicated below:

- Trees (their beauty and shade) are seen as the most important element for the ideal landscape (50%) and Naturescape (60%).
- Flowers and colour are the second most important element for ideal landscapes (47%), while a variety of flowers and plants, including native plants are chosen for the Naturescape (53%).
- Clean, weed-free grass is the third response (29%) for ideal landscapes, while stone and rock, water features, native plants, tall grasses and mulch (in other words a variety of natural design elements) are important aspects for Naturescapes, collectively totalling 65% of responses.

When asked to explain why the aspects or elements listed above were important for their ideal landscape, respondents indicated that curb appeal, shade and colour were the primary reasons. The top three reasons given by respondents for the **aspects or elements that respondents identified as important for an "Ideal Naturescape" for their home are, looks (beauty), nature and habitat, and shade**. Aesthetics or "curb appeal" is consistently the most important motivation for both ideal and Naturescape landscapes, although somewhat less so for the latter. The appearance of their front yards is important for homeowners, and they want to meet their neighbours' expectations of "curb appeal". Some homeowners are also motivated to have a front yard landscape the is "easy to maintain".

The feelings and emotions evoked by homeowners' drawings of their ideal front yard landscape and Naturescape have some overlap and some significant differences. Homeowners' feel **relaxed and calm about both types of front yards**, but the Naturescape evokes two times the frequency of this emotion (76% versus 38%), while the ideal landscape evokes twice the incidence of feelings of happiness (35% versus 18%) and beauty (21% versus 9%). And, there are a number of emotions and feelings evoked by their ideal landscape – pride, neat and tidy, comfort, colour, and satisfaction – that are not mentioned for Naturescapes. Instead, the Naturescape drawings evoke "good feelings about clean air and a healthy, natural landscape" (44%). However, a quarter of the emotions expressed by respondents regarding Naturescapes are negative: "sadness", "lazy", "ugly", "cold", and "disorganized".

Homeowners were asked what constraints or reasons might prevent them from having an ideal front yard landscape or Naturescape. There is significant overlap in respondents' answers to this question, specifically; **lack of money and time, and not having enough space or design knowledge** were identified as the primary constraints for both types of front yard landscapes. For respondents, Naturescapes are seen to have disadvantages, in particular; they not perceived as neat and tidy, nor as fitting into the neighbourhood, but they are seen by some respondents as more drought resistant.

Respondents were provided with three sets of photos: four front yard landscapes, four flower/rain gardens, and four downspout/drainage options (research photos are included in Section 4.6, 4.7, and 4.8). They were asked to consider the images in the photos and then to rate the appeal of the images depicted on a scale from 1 to 10, with 1 being low and 10 being high.

Picture 2 for the front yard landscape received a significantly higher rating (8.9 out of ten) than the next highest rated picture 1 (7.1 out of ten). The reasons respondents gave for rating Picture 2 highly are that it's *clean and tidy* (47%), it *looks good* (21%), and it has *nice trees* (18%), *lawn* (9%) and *flowers* (12%). Respondents articulated significantly negative views of the other three pictures, such as looks *messy* and *wild*, *too busy*, *unkempt*, *too crowded*, *cluttered*, *ugly*, *no grass*, *no curb appeal*, *stark and chaotic*.

For the images of gardens, respondents again rated one photograph (Picture 4) much higher (8.5 out of ten) than the others. Homeowners provided the following reasons for rating highly the appeal of Picture 4: *balance of design elements*, *attractive, clean and tidy*, *colour and easy to maintain*. The negatives responses given by homeowners for the remaining three pictures include: *ugly*, *crowded*, *not enough variety or colour*, *too busy*, and *cluttered*.

For the drainage and downspouts photographs, none of them rated highly (Picture 3 had the highest rating of 7.0 out of ten) and were all grouped in the middle of the pack (5.8 to 7.0). Picture 3 (rain barrel) was rated slightly higher because it was somewhat hidden and reflected reuse of rainwater. On the negative side, the rain barrel is an "eye sore", provides no benefit to the grass or garden, and the water will have to be used.

Keeping in mind the importance of family, friends and neighbours to homeowner respondents, and the strong connection they have to their neighbourhoods as a "friendly and safe place for their family", one should consider the links between conventional landscape aesthetic motivations and family, friends and neighbours. Coupling these influential relationships with the strong preference for more conventional landscape design and the tendency to seek landscape and garden design advice from their *friends, neighbours* and *family*, one can appreciate how homeowners would self-reinforce their current home landscape aesthetic. Nevertheless, this relationship in residents' motivations for beautiful landscapes and their trust of friends, neighbours and family when seeking landscape and garden design advice represents an opportunity for using peer assimilation or feelings of belonging as a motivator for change. The tendency to conform to neighbours and friends can serve as a barrier to alternative and sustainable landscapes, but positioned correctly, this same tendency to conform can be a driver for uptake of sustainable residential landscapes.

1.6   Understanding Terminology

A number of stormwater related terms ("watershed", "City of Waterloo Stormwater Utility", "Stormwater Credit", and "rain garden') were presented to the homeowners and they were asked what the terms meant to them. Most of the terms were not well understood or even known by the homeowners, and the most frequent response overall was "no answer."

1.7   Summary

The findings from the research with single-family homeowners in the City of Waterloo will be analysed in combination with the results of research being conducted with key informants in the industrial and commercial sectors and service provider businesses operating in the residential and industrial and commercial sectors. The findings will inform the development of a market-based strategy to enhance uptake of at-source stormwater management practices amongst property owners in all sectors.

2.0   Background and Context

The City of Waterloo's 2005 Master Drainage Study, is more than 10 years old and outdated in terms of key policies, acts and regulation standards. Since 2005, with improvements in watershed management and the collective understanding of the watersheds themselves, there has been an evolution in stormwater management (SWM). Because of this evolution in stormwater management and the policies and acts that reinforce their application, the City of Waterloo is undertaking a strategic planning process or Master Plan to guide an overall preferred SWM approach for the City. The plan will effectively serve as a:

- decision support tool and methodology for the prioritization of works;
- means to estimate future SWM requirements and costs; and,
- transparent community process ensuring the greatest benefits to City constituents and the natural environment over the next 10 to 15 years.

The main goal of the Plan is to provide the City with a preferred stormwater management strategy to identify, protect and enhance natural features, ecological functions and biophysical integrity. The plan will stablish stormwater management policy and guidelines, address stormwater infrastructure, ascertain and prioritize identified works.

Part of the development of the Plan involves City staff and consultants undertaking research and engaging with residents and business owners to understand their expectations for SWM, their vision for the City and their neighbourhoods, and information and resources they need to implement measures on their properties to mitigate stormwater and the risk of flooding. A review of leading jurisdictions in stormwater policy and programming, and primary research with City of Waterloo property owners in the residential and ICI sectors is being undertaken to determine mechanisms and approaches to drive uptake of on-site stormwater management measures. A summary of the findings from a primary research session held with residents as part of the Master Plan development process is provided herein.

3.0   Residential Research

In order to gain insight into the expectations, values, beliefs and understandings of homeowners in the City of Waterloo concerning their neighbourhoods, home and landscape, stormwater management and related concepts and ideas, a research session with 34 single-family homeowners was held at the Waterloo Recreational Complex on October 25, 2017.

3.1   Research Objective

The objectives of the research with single-family homeowners in the City of Waterloo were as follows:

1. Determine the underlying motivations of homeowners of detached (and semi-detached) residences regarding their home's landscape.
2. Test landscape aesthetics and designs for on-site stormwater management.
3. Determine homeowners' perspectives of an "ideal" front yard landscape and a "Naturescape"[2] front yard for their homes.
4. Measure homeowners' understanding of various terms, including "Naturescape", "watershed", "Stormwater Utility", "Stormwater Credit", and "rain garden".

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[2] "Naturescape" is the name of the water efficient landscaping program offered to residents by the Region of Waterloo.

3.2   Research Methodology

Freeman Associates worked together with the Aquafor Beech and City staff to determine an appropriate sample of homeowners of single detached and semi-detached residences for the research session. Using Statistics Canada Census 2016 data, a demographic profile of single-family homeowners in the City of Waterloo was developed. The profile provided demographic quotas. Thirty-four homeowners that met the demographic quotas were recruited (please refer to Table 2.1: Sample Description). The homeowners were recruited by phone using a "screener" that ensured a representative sample of single-family homeowners, based on specific demographic criteria (age, gender, education level, household income, marital status, country of birth). A one-hundred-dollar cash incentive was offered to homeowner recruits to ensure their participation in the research session.

Each homeowner participant was provided with a questionnaire form on which to provide written responses to over ninety closed- and open-ended questions. A facilitated inquiry method was used to guide respondents through the questionnaire (a copy of the facilitator's questionnaire is included in Appendix 1). Homeowners were verbally asked questions by the facilitator and given a limited timeframe in which to complete their written answers. This methodology assures top-of-mind (non-rationalized), unbiased responses reflecting homeowners' intrinsically held beliefs. Intrinsically held beliefs are an ingrained set of values and perceptions that directly influence all decisions individuals make. Furthermore, intrinsic beliefs are shared amongst common demographic groups.

During the research session, respondents were also asked to draw a picture of **"***your ideal front yard landscape for your home"* and a picture of **"***an ideal Naturescape front yard for your home*." Drawing uses the creative or right side of the brain, and therefore, provides significant insight into the emotions and perceptions of respondents vis-à-vis their home landscape. These pictures were grouped by visual theme and representative drawings are provided in Section 4.5 of this report.

The homeowners rated their level of satisfaction with the focus research session highly, with three quarters of respondents providing a rating in the range of 8 to 10, resulting in an average rating of 8.3 out of 10 with the most frequent response or mode of 8. Homeowners found the session "interesting and informative, with good questions well presented, and a quick pace." Two homeowners commented that they didn't like drawing pictures and there were four who found the pace a little fast.

Upon completion of the research sessions, the homeowners' verbatim (word-for-word) questionnaire responses were entered into a database, compiled, and grouped. Responses were then quantified (percentage frequency distribution) and qualified (idea, subject, theme, meaning, etc.) allowing for an unbiased analysis of the results. It is important to note that because many questions were open-ended, multiple answers resulting in total percentage frequencies greater than 100% (for any given question) are common. Results are presented by response and the frequency of a given response in the sample, or by the average rating, on a scale of 1 to 10, as provided by respondents.

3.3   Research Sample

As discussed, a demographic profile of City of Waterloo residents was compiled using 2016 Statistics Canada Census data. The profile is comprised of demographic variables such as income and education levels, gender, age range, marital status, etc., that represent the resident population of the City. In column 1 in Table 3.1 below the demographic variable is identified and in column 2 and 3, the actual number and corresponding percentage representation of the specific variable in the resident population based on 2016 Census data is provided.

3.3.1 Single-family Homeowner Demographic

Single-family homeowners in the City of Waterloo were the target demographic for the research session as they own their properties and are therefore more likely and better able (renters would require approval of the property owner or condominium corporation) to invest in on-site stormwater controls such as rain gardens. The recruiting quota numbers and the corresponding percentage representation that were set for the research session are included in columns 4 and 5 respectively. The actual homeowners who participated in the research session and the corresponding percentage representation are included in columns 6 and 7 respectively. Were necessary, recruitment targets were skewed toward those demographic variables that align with homeownership.

Table 3.1: Research Sample Description

Demographic Variable	Statistics Canada 2016		Research Session on October 25, 2017			
			Quota n = 34	% Rep	Quota n =34	% Rep
Total population	104,986	100%				
Total population 15 years and over	90,810	86%				
Total population aged 25 to 74	57,695	55%				
Total population aged 25 to 64	54,235	52%				
Total Households	40,385	100%				
Single-detached homes	22,115	55%				
Single-detached homeowners	20,920	95%	32	94%	32	94%
Semi-detached homeowners			2	6%	2	6%
Female (of total population)	52,500	50%	17	50%	20	59%
Male (of total population)	52,490	50%	17	50%	14	41%
Age			34		34	100%
25 to 34 (of population aged 25 to 74)	13,770	24%	4	12%	3	9%
35 to 54 (of population aged 25 to 74)	27,740	48%	15	44%	16	47%
55+ (of population aged 25 to 74)	16,185	28%	15	44%	15	44%
Education	**Statistics Canada 2011**			34		34
Completed high school or less	18,190	27%	7	21%	6	18%
College or trade certificate	19,835	29%	9	26%	10	29%
University degree or certificate	29,700	44%	18	53%	18	53%
Income (Household)	**Statistics Canada 2016**			34		34
Under $30,000	6,381	17%	2	6%		0%
$30,000 to $79,999	13,246	35%	12	35%	13	38%
$80,000 to $149,999	12,116	32%	14	41%	15	44%
$150,000 or more	8,642	23%	6	18%	6	18%
Households with children at home (2016)	28,160	46%	19	55%+	19	56%
Marital Status	**Statistics Canada 2016**					
Married/common law	49,555	56%	22	65%	23	68%
Single	28,630	32%	8	24%	4	12%
Divorced/Separated/Widowed	10,355	12%	4	12%	7	21%
Birth Country	**Statistics Canada 2016**					
Canada	72,255	73%	25	74%	24	71%
Outside Canada	26,150	27%	9	26%	10	29%

The sample recruiting target was a 50/50 split between women and men. The actual sample has a small skew towards females (20/34) versus males (14/34). Recruitment targets for "education", "household income" and "marital status" were skewed to reflect single-family homeowner demographics typical of the City of Waterloo.

The age groups for homeowners were chosen to represent both the stage of life in which people generally own homes (ages 25 to 75), and the demographic influence of the baby boom generation (born between 1946 to 1961 or 52 to 66 years old) on Ontario's population.

The education and income levels in the sample are consistent with what is expected for owners of single family homes (generally households with higher levels of income and education). While a quota was set for two homeowners in the under $30,000 household income level, none were able to be recruited as this income level has a very low frequency of home ownership.

This sample has a higher level of married/common law individuals (68%) than the overall population (56%) of Waterloo. This skew to married/common law recruits is also reflective of single-family homeowners. The married or common law sample size is on target, and the number of divorced or widowed respondents is higher than the quota versus single people (as self-reported).

To accurately reflect the City of Waterloo's cultural diversity, care was taken to recruit a sample that was representative. Seventy-one percent (n=24) of the sample population was born in Canada and twenty-nine percent (n=10) of respondents were born in various countries, including China, England, Germany, India, Scotland, Serbia, Ukraine, and the United States. Only one respondent speaks a language (Hindi) other than English most often at home.

3.4   Research Description

Homeowners were first asked to complete the demographic information on the questionnaire. Subsequently, they were asked a number of closed- and open-ended questions that dealt with the meaning of various terms related to the City of Waterloo, their neighbourhood and being a homeowner. As the research is intended to capture the underlying motivations of the homeowners, it was necessary to understand the personal context they bring to their perceptions of their home, landscape and community.

The questionnaire was designed using a Socratic learning method and was sequenced to ensure that respondents complete most of the questionnaire without knowing the direction of the inquiry. The intent was to draw out the knowledge that respondents hold within themselves and to avoid the problem of respondents seeking to provide 'correct' answers.

Early questions involved broader concepts such as: "What does your home mean to you?" or "What does your community mean to you?" As the research session progressed the questions became more specific, with successive questions building on the previous questions ensuring homeowners' growing reflection.

4.0   Research Findings

The data generated from the research session is rich in detail, emotion and meaning. The Verbatim Report (provided as a separate PDF document) includes all of the word-for-word responses that the homeowners provided.

With an overall sample size of thirty-four and a demographically representative sample of homeowner respondents, the percentage frequency distributions can be interpretted as representative of single family homeowners in City of Waterloo.

4.1   City of Waterloo

The first questions following the demographic section of the questionnaire focused on the City of Waterloo, what it means to homeowner respondents and what they like and dislike about living in the City.

The first open-ended questions participants were asked, was: "What does the City of Waterloo mean to you?" Table 5.1 shows the richness and depth of the responses. Seventy-seven percent of responses indicated that the City of Waterloo means "**home, and a safe and friendly community**". Another 69% of responses view the City as a "vibrant, innovative technology hub with growing opportunities and good jobs." Seventy-seven percent of responses indicated that the City of Waterloo means "**home, and a safe and friendly community**". Another 69% of responses view the City as a "vibrant, innovative technology hub with growing opportunities and good jobs."

Table 4.1: Meaning of the City of Waterloo
(Question 13)

Meaning Description	%
Home	**32%**
Vibrant	21%
Community	18%
Growing, opportunity	18%
Tech Hub	18%
Safe	15%
Friendly	12%
Good size	12%
Work	12%
Other positives	18%

Homeowners were asked to list two things they like and two things they dislike about living in Waterloo. Table 4.2 provides a summary of the things respondents like about living in City while Table 4.3 summarizes respondents' answers about the things they dislike.

Table 4.2: 'Like' about living in Waterloo
(Question 14)

Meaning Description	%
Community, good people	**35%**
Convenient, easy access	21%
Clean	15%
Safe	15%
Nature	15%
Universities	12%
Bustling, lots to do	9%
Downtown core	9%
Diverse	9%

Table 4.3: 'Dislike' about living in Waterloo
(Question 15)

Meaning Description	%
Taxes	**27%**
Construction	**27%**
Traffic	21%
City Services	15%
Location, too far from . . .	12%
University students	12%
Parking	9%
Expensive	9%
Limited transit	6%
Roads	6%

Respondents identified the sense of community and the easy assess to amenities as the primary things they liked about living in the City. The next answers most frequently provided by respondents were all eqally represented at 15%, taken collectively and using respondents own words, "a clean", "safe" community with "beautiful parks".

The dislikes these homeowners have about living in Waterloo are related to transportation (42% - traffic, roads, parking, limited transit) and the expense (36% - taxes, expensive). Construction is also a concern and is related to road and the LRT line being built along King Street. Other concerns include city services, such as only having garbage collection every two weeks, the green bin program, children programs, and poor snow removal on side roads.

Respondents were then asked to select their top five priorities (with number 1 being the most important) for where the City should focus its resources. Table 4.4 provides a summary of the priorities as ranked by respondents.

Table 4.4: Priority Areas for City of Waterloo Investment (Question 20)

Priority Area	Priority Rating (1 – 5)					Total
	#1	#2	#3	#4	#5	
1. Economic development	3	4	4	3	2	16
2. Programs for seniors	1	1	3	1	3	9
3. Control tax increases	**23**	**7**	**2**	**1**	**4**	**37**
4. Manage growth	4	2		2	3	11
5. Protect the environment	3	3	2	4	5	17
6. Invest in neighbourhoods					1	1
7. Improve libraries				1	1	2
8. Improve trails	3	4		2	4	13
9. Invest to decrease storm impacts	1	1	1	4	1	8
10. Improve transportation	2	6	7	5	3	23
11. Improve engagement			1		1	2
12. Improve recreation facilities		2	2	4	3	11
13. Invest in arts & culture		1		1	2	4
14. Preserve green space	3	5	9	4		21
Total	43	36	31	32	33	175

Top Five Priorities	Priority	% Frequency	% #1 Priority	% #2 Priority	#1 + #2
Control tax increases	1	21%	53%	19%	73%
Improve transportation	2	13%	5%	17%	21%
Preserve green space	3	12%	7%	14%	21%
Economic development	4	9%	7%	11%	18%
Protect the environment	5	10%	7%	8%	15%

The table shows the frequency of 1 to 5 priority ratings for the fourteen areas suggested by the City of Waterloo. Control tax increases received the most responses (37 out of a total of 175 responses, or 21%), and was a number 1 priority choice (23 out of 43 responses or 53%).

The top five priorities are ranked by adding the total number of responses for each of the fourteen areas and dividing by the total number of responses (175). Another way to look at the homeowners' choices is to total the number of priority 1 and 2 rankings for each area. As stated earlier, this ranking shows that "Control tax increases" is by far the number one priority. "Improve transportation" and "Preserve green space" are very closely ranked in the second and third spot (and could be considered equal). "Economic development" and "Protect the environment" are also very closely ranked.

4.1.1   Neighbourhoods and Communities

As shown in tables 4.5 and 4.6, there is significant overlap in meaning between respondents' perception of **community and neighbourhood**. A **safe, secure place** is a major and repeating meaning, which is again reiterated when respondents are asked about the meaning of their home (Table 4.7). The first response given by homeowner participants when asked the meaning of their "community" and their "neighbourhood" was **friendly** (44%). A feeling of belonging and family were also frequently given responses. These emotional motivations are fundamental to human beings sense of wellbeing and of place. These emotional motivations are a repeating theme and as the findings to follow will show, they have an important influence on the decisions homeowners make regarding their homes and landscapes.

Table 4.5: Meaning of Community
(Question 16)

Meaning Description	%
Friendly	**44%**
Safe	21%
Belonging	18%
Inclusive	15%
Prosperous	12%
Not much	9%
Diverse	6%

Table 4.6: Meaning of Neighbourhood
(Question 17)

Meaning Description	%
Friendly	**44%**
Safe	27%
Location	18%
Family	15%
Quiet	15%
Community	12%
Nice homes, status	9%
Stable	9%
Home	6%
Clean, green	6%

4.2   Home and Landscape

Respondents were asked what their home means to them. Table 4.7 provides a summary of their responses. A **safe, secure and peaceful place for family and friends** are the most common responses, which collectively represent 83% of the answers provided. Home also represents freedom and fun and a comfortable atmosphere, "where I can be me" (30%).   A number of homeowners' view their home as their "biggest investment".

Table 4.7: Meaning of Home
(Question 21)

Meaning Description	%
Safe, secure	**41%**
Peaceful	21%
Family	21%
Investment	18%
My life, where I live	15%
Freedom	12%
Fun	9%
Atmosphere	9%
Place to live	9%

When respondents were asked what their home's landscape meant to them, their responses moved away from meanings of safety and security to aethetics as indicated in Table 4.8. The home's landscape is seen as a reflection of the respondent and a source of pride. "**Curb appeal**" or an attractive appearance are the number one meaning for a home's landscape. People take pride in a well-maintained landscape and find it warm and welcoming. For a minority of respondents (15%), the home landscape is not as important in meaning.

Table 4.8: Meaning of Home' s Landscape
(Question 24)

Meaning Description	%
Curb appeal	35%
Important	24%
Not much	15%
Pride	15%
Well maintained	12%
Welcoming	9%
Gardens	9%

Homeowner respondents were asked a series of questions about the **importance** of their neighbourhood, home and landscape. Subsequently, respondents were asked to rate the importance of specific aspects pertaining to their home landscape, such as the design, maintenance and features (lawns and trees). Figure 4.1 summarizes the ratings given by respondents to each of these questions. With a mean rating of 9.1 out of 10, the importance of respondents' homes rated the highest (29 out of 34 homeowners gave a rating of 8 to 10). Their neighbourhood is also very important, with a mean rating of 8.4 out of 10. Maintaining the home's landscape also rates highly amongst respondents, with the landscape itself, the lawn and the trees having mean ratings 8.0, 8.2, and 8.0 (out of 10), respectively. The design of the landscape has the lowest mean rating in comparison at 7.1 out of 10.
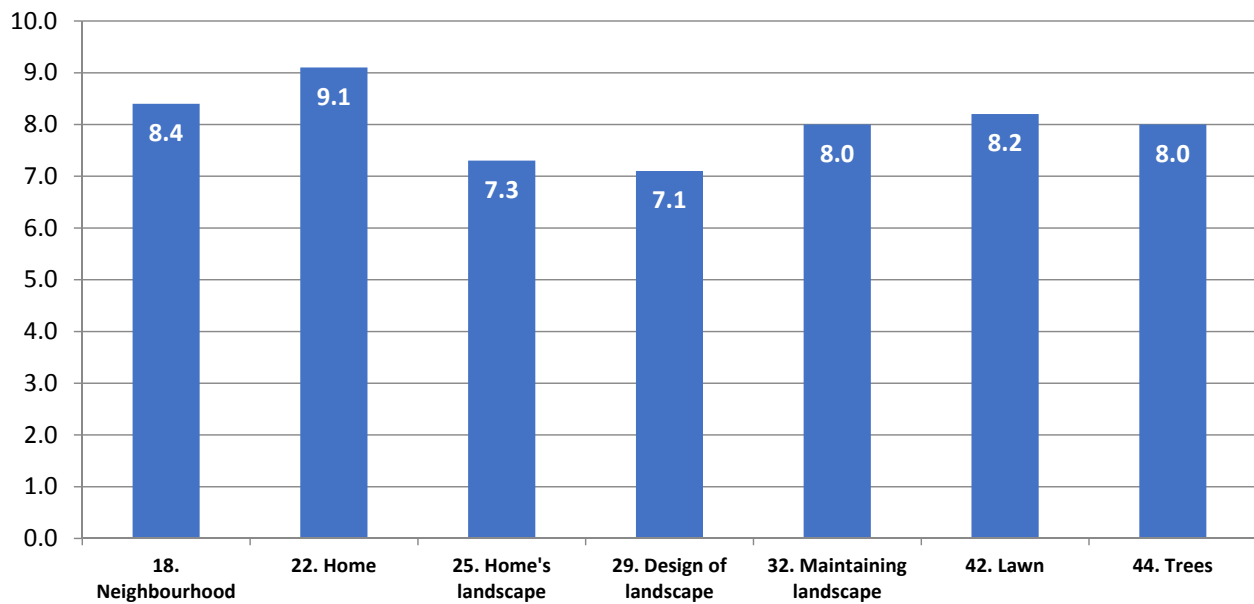
Figure 4.1: Importance Ratings (1 to 10)

It is important to understand the context of the rating number respondents assign. Although consistent use of numeric scales has provided a widely accepted interpretation of the meaning of the numbers assigned as shown in Table 4.9; given the remaining subjectivity of a number assignment from one individual to the next, respondents were subsequently asked to clarify their ratings as discussed below. Conjoint questioning, wherein a number rating and corresponding reason for the rating given are asked, provides a fuller understanding of the rating itself and the motivations or rationale for the ratings respondents assign.

Table 4.9: Context of ratings

Ratings	Interpretation
9+	Outstanding, exceptionally high
8 to 9	Excellent, very high
7.5 to 8	Above average, high
7 to 7.5	Average, good
6 to 7	Marginal, low
< 6	Very low

Respondents were asked to provide reasons for the ratings of importance they gave for their neighborhood, home and landscape (and related aspects). The reasons given by homeowners for the ratings illustrated in Figure 4.1 are summarized and compared in Table 4.10. People love their homes and friendly and safe neighbourhoods in the City of Waterloo. **The single most important motivation for homeowners regarding their home's surrounding landscape is its "appearance, curb appeal, and beauty."** This motivation is repeated throughout the responses, including as the reasons why landscape design, landscape maintenance, lawns and trees are important. Three quarters of responses for the reasons why lawns are important to respondents' home landscape pertain to **curb appeal and looking good** as reflected by such comments as "lawn adds best curb appeal." Only three responses stated lawns are "not the most important" or are "too much work". Trees are seen as having a triple benefit – "shade, environment and beauty" – by the majority of respondents. Homeowner participants also indicated "pride" in their homes and landscapes as a reason for ratings they provided. The home and landscape were also seen as a source of enjoyment for respondents.

Table 4.10: Homeowners' Reasons for Ratings

Description	Average rating (out of 10)	Reason for Rating		
19. Neighbourhood	8.4	Like the area (32%)	Safe (29%)	Community (27%)
23. Home	9.1	Family (35%)	Safe place (12%)	Enjoy my home (12%)
26. Landscape	7.3	Curb appeal (21%)	Not important (15%)	Needs more work (12%)
30. Landscape design	7.1	Appearance (27%)	No answer (21%)	Needs improvement (15%)
33. Landscape maintenance	8.0	Appearance (32%)	Important (24%)	Property Value (12%)
43. Lawn	8.2	Looks good (59%)	Love lawn (9%)	Family fun (9%)
45. Trees	8.0	Shade (56%)	Environment (32%)	Beauty (29%)

While landscape design had the lowest mean rating in comparison to the others, it is clearly important in creating the 'curb appeal' that is desired by homeowners. Respondents were asked what are the most important aspects of their home landscape. Their responses are summarized in Figure 4.2 and show how the aesthetic "look" respondents value is created by with a landscape layout comprised of trees, grass (lawns), flowers and gardens as a collective whole.
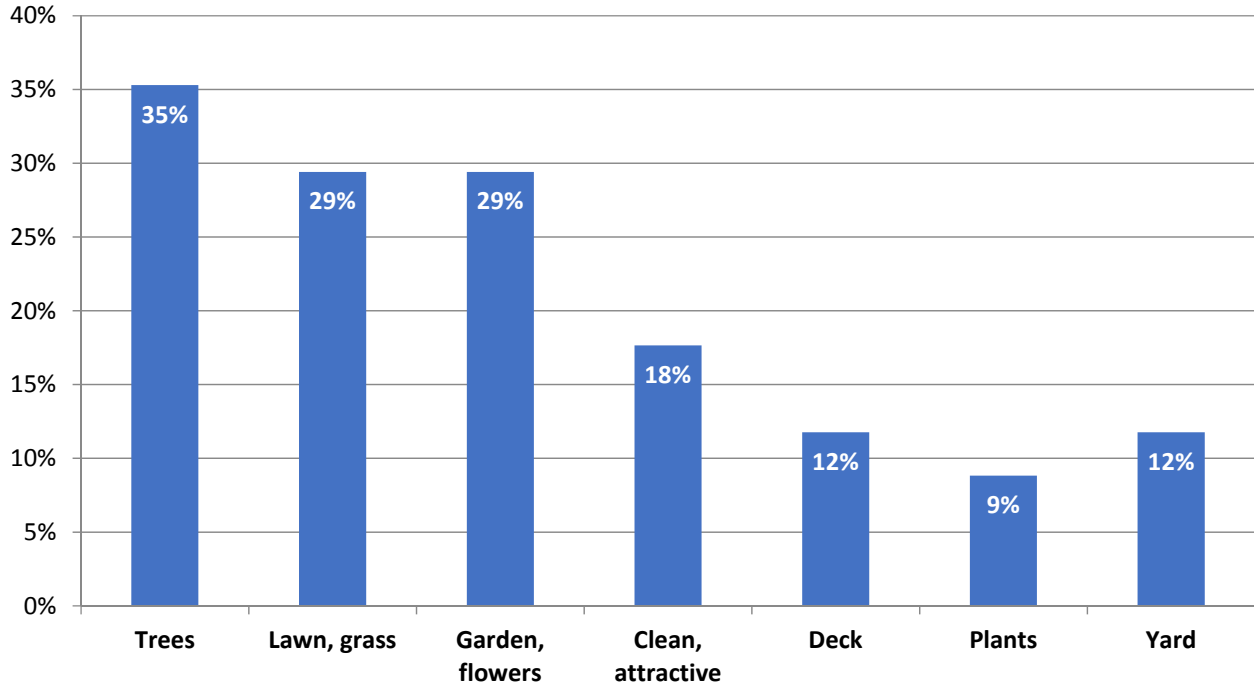
Figure 4.2: Most Important Aspects of the Home Landscape

Respondents were asked why the aspects they identified above "are the most important of their home's landscape." Table 4.12 provides a summary of their responses. **Curb appeal/looks** is the primary reason why various aspects of the landscape are important to homeowners. They value their homes and they want to show people they care about their homes. People also value their privacy and entertaining friends and family. A number of people enjoy gardening and feeling connected to nature. The shade provided by the trees keeps the house cool and allows recreational activities outside on the yard

Table 4.12: Reasons Why Landscape Aspects Important
(Question 28)

Description	%
Curb appeal/looks	47%
Privacy	18%
Nature	15%
Entertaining	15%
Enjoy	12%
Shade	9%
Recreation	6%

4.2.1   Landscape Design

When asked who designed their home landscape, the majority of respondents indicated they did it themselves or that is was done by the previous homeowner.   Table 4.12 provides a summary of the responses by grouping.

Respondents were subsequently asked, "from where or whom would you seek advice about landscape or garden design?"   Table 4.13 summarizes the responses provided by homeowners.   Fifty-nine percent said "friends, neighbours and family", thirty-five percent said the Internet, and twenty-four percent said a garden centre.   The responses to question 31 and question 37 taken together, and considered in conjunction with respondents' concepts of an "ideal front yard landscape for their home", a consistent theme emerges, specifically: conventional landscape design is a dominant and entrenched landscape aesthetic that is reinforced and, therefore validated, by previous homeowners, friends, neighbours and family, home builders, the internet and garden centres.

Table 4.12: Home Landscape Design (Question 31)			Table 4.13: Advice about Landscape or Garden Design (Question 37)	
Description	**%**		**Description**	**%**
Me	32%		Friends & neighbours	38%
Previous owner	32%		Internet	35%
Designer	18%		Garden centre	24%
Us	12%		Family	21%
Builder	9%		Myself	18%

4.2.2   Landscape Maintenance

Respondents were asked to identify the most important aspects of maintaining their homes' landscape (question 34). Figure 4.3 summarizes their responses.
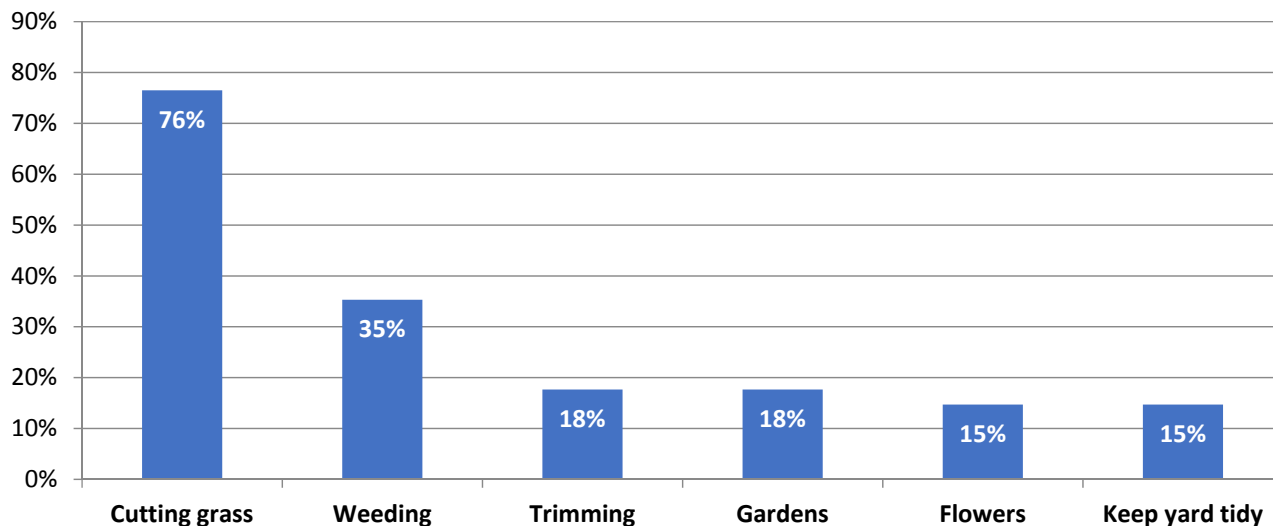
Figure 4.3: Important Aspects of Maintenance

The primary tasks cited by respondents for maintaining their homes' landscape are cutting the grass (76%), weeding the yard and gardens (35%), trimming shrubs and trees (18%), and generally keeping the gardens, flowers and yard tidy.

The overwhelming reason why the tasks identified in Figure 4.3 above are considered by respondents as important for maintaining the home landscape is aesthetics: "curb appeal/looks (59%) and neat and tidy (44%). Some particularly representative verbatim comments from respondents were:

- "Looks nice and matches neighbours"
- "Adds curb appeal to front of home"
- "Looks good, pride"
- "Adds beauty and curb appeal"
- "To keep grass like everyone around"
- "Makes property look neat and tidy"

Nine out of ten of these homeowners indicated that they themselves or a family member maintains their homes' landscape. Only three (out of thirty-four) respondents indicated that they hire professionals for regular maintenance.

4.2.3   Gardens

Eighty percent of homeowner respondents have a garden, and they identified three principal reasons for having them:

52% Appearance/beauty
41% Love flowers (colour)
26% Enjoy gardening
19% Love fresh vegetables

The homeowners who indicated they do not have gardens, gave the reasons that "(gardening) is too much work or they don't enjoy (gardening)".

As shown in Table 4.14, when respondents were asked, "Where do you purchase flowers, trees and shrubs?" Seventy percent of respondents purchase these items at local nurseries (20 out of 34) or garden centres (6 out of 34). The next most frequent answer given by respondents includes a selection of big box stores, with Lowes, Canadian Tire, and Home Depot being the most frequently cited by name. Grocery stores were also identified by respondents. Table 5.14 provides a summary of the responses.

Table 4.14: Where Flowers, Trees and Shrubs Are Purchased
(Question 46)

Description	%
Nursery	**59%**
Lowes	29%
Canadian Tire	21%
Home Depot	18%
Garden Centre	**18%**
Zehrs	12%
Walmart	9%
Grocery stores	9%
Costco	6%

4.2.4   Lawns

Respondents all indicated they have lawn area within their landscape with eighty-two percent having a lawn area covering one-half or more of the home landscape (see Table 4.15).

The importance of lawns to the home's landscape was rated very high by respondents at 8.2 out of 10. When respondents were asked the reason for the rating they provided, the overwhelming answer was "looks good", "appearance" and "curb appeal", as indicated in Table 4.16 below.

Table 4.15: Lawn Area of Home Landscape (Question 41)

Lawn Area	%
up to ¼ of Landscape	18%
½ of landscape	53%
¾ of landscape	29%

Table 4.16: Reason for Rating Importance of Lawn (Question 43)

Reason for Rating	%
Looks good	74%
Family activities	9%
Neighbours	6%
Too much work	6%

4.2.5   Trees

The importance of trees to the home landscape rated highly amongst respondents, with a mean of 8.0 out of 10. While trees are seen as an important ingredient for beautiful landscapes (29%), they also provide shade (56%) and environmental benefits (32%). Only four respondents had negative impressions of the trees on their homes' landscapes, "we have too many and they cause more trouble to maintain".

4.3   Home and Landscape Improvements

Respondents were asked if they had undertaken any home or landscape improvement projects and if so, what projects had they undertaken valued under $5,000 and valued over $5,000, in the past five years. All respondents except two, had undertaken a home or landscape improvement project.

For the projects under $5,000, one-third were "softscape" projects (gardens, planting and removing trees, and adding new lawns), one-third were outside structures (five decks, a fence, a pergola, and a new porch) and hardscapes (four walkways, five built stone patios, and four built or paved driveways), and one-third were improvements to the house (roof, flooring, kitchen, doors). An equal number of projects undertaken by respondents were "Do-It-Yourself" (DIY), a combination of DIY and a contractor, or a contractor.

Table 4.17: Home Improvement Projects (<$5,000 / >$5,000)

Home Improvements	< $5,000 (Q47)	> $5,000 (Q49)
House renovations	29%	65%
House roof	8%	12%
Landscape - hardscape	28%	18%
Landscape - softscape	35%	5%
Total	100%	100%

Three-quarters of the respondents had done projects worth more than $5,000 in the past five years with over 75% of these projects being home improvements, as shown in table 4.17. Only three were landscape projects (adding trees and gardens). Seven respondents indicated they replaced their roofs while other respondents identified kitchen, bathroom and basement renovations as project that had costs greater than $5000. For the more expensive renovation projects, half of respondents hired contractors to complete the work as can be seen in Table 4.18 below.

Table 4.18: Who does home/landscape improvements
(questions 48 & 50)

Who completes work	< $5,000	>$5,000
Do it yourself (DIY)	35%	6%
DIY/contractor combination	38%	29%
Contractor	24%	41%
No answer	3%	24%

4.4   Stormwater Management

Fifty-three percent of respondents have a fully finished basement, and 38% have a partially finished basement, leaving only three with an unfinished basement. Three quarters of these homeowners have never experienced basement flooding and they rate the possibility of this happening in the future a very low 2.2 out of 10. Even though the majority of these homeowners have never experienced flooding, half of them have taken preventative measures, such as fixing cracks in the foundation, installing sump pumps, one-way sewer valves (back-flow valves), and eavestroughs.   Some feel that because they are in a new home there is a lower risk as they assume the builder has taken the necessary steps to protect against flooding.

Respondents were asked who is responsible for managing stormwater in their community. About half said the City of Waterloo, 41% said the Region of Waterloo, and two respondents said the Grand River Conservation Authority.

When asked to provide a rating (from 1 to 10) on how important it is for the City of Waterloo to take steps to protect against flooding and property damage resulting from major rainfall events, respondents provided a very high average rating of 8.5 out of ten. The primary reason for the high rating given by respondents is that preventative measures can prevent flooding and flood damage from happening in the first place.   About one-quarter of these homeowners feel that it is the City's responsibility while another one-quarter indicated that it is a shared responsibility between the City and homeowners.

Later in the research session, a supplementary question was asked regarding the importance of the City of Waterloo investing in stormwater infrastructure. The average rating was a very high 8.4 out of ten, because it is important to prevent flooding and property damage and reuse stormwater.

4.5   Ideal Front Yard Landscape and Naturescape

As previously discussed in section 3.0 (Methodology) of this report, participants were asked a number of open-ended questions in a specifically-designed order using the Socratic Method.[3] This process enables participants to learn as they are moving through the sequenced questions and it provides a depth of information regarding participant motivations, meaning and emotions.

Early in the questionnaire, participants were asked a number of 'meaning' questions, including what respondents' *home landscape means to them*. Respondents' answers to these questions were discussed in Section 4.2 (Home and Landscape) and Table 4.8 (Meaning of Home's Landscape). In order to make a

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[3]The Socratic method searches for general, commonly held truths that shape beliefs and scrutinizes them to determine their consistency with other beliefs. The basic form is a series of questions formulated as tests of logic and fact intended to help a person or group discover their beliefs about some topic, exploring definitions or *logoi* (singular *logos*) and seeking to characterize general characteristics shared by various particular instances.   https://en.wikipedia.org/wiki/Socratic_method

comparison between the meaning of respondents' home landscape with their responses to the meaning of a "Naturescape" landscape, Table 4.7 is provided again below.

Table 4.7: Meaning of Home's Landscape
(Question 24)

Meaning Description	%
Curb appeal	**35%**
Important	24%
Not much	15%
Pride	15%
Well maintained	12%
Welcoming	9%
Gardens	9%

Table 4.19: Meaning of Naturescape Residential Landscape (Question 64)

Meaning Description	%
Natural, wild	**35%**
Green plants	24%
Unkept	18%
Environment friendly	12%
Water feature	12%
Beauty	9%
Tress	9%
Low maintenance	9%
Stones, rock	6%
Variety	6%
No idea	6%

"Curb appeal" (aesthetics) is the most frequent response of homeowners to the question of what their **homes' landscapes** mean to them (Table 4.7). Aesthetics, or attaining and sustaining curb appeal is the motivation behind respondents high rating of the importance of landscape maintenance which, in one respondent's words shows **"pride of ownership"**.

"Naturescape" (Table 4.19) holds a very different meaning for respondents, specifically: it is a more "natural" area (35%) with green plants (24%) and a water feature (12%) that is friendly for the environment (12%). "Appearance or beauty" rates much lower for Naturescape at only nine percent, versus thirty-five percent for conventional residential landscapes. Respondents also identified some negative aspects associated with Naturescape landscapes such as being "unkept" and "overgrown" (6/34).

About two-thirds of the way through the questionnaire (immediately after question # 58), homeowners were asked to draw a picture of an **ideal front yard landscape** for their home, followed by several questions about their drawing, its meaning and the emotions it evoked for them. When they completed the questions regarding their ideal landscape, respondents were then asked, "What does a Naturescape residential landscape mean to you?" (question 64), and following this, they drew their **ideal Naturescape** picture.

The drawings on the pages to follow represent four categories of **ideal landscape** and four categories of **Naturescape** for their homes' front yards. The drawings of the ideal front yard landscapes (on the left) and the corresponding Naturescape front yards (on the right) were drawn by the same homeowners (with the exception of the most frequent Naturescape drawing, Group 1 that shows a water feature). The drawings reflect the intrinsically held perspective homeowner respondents have of both types of landscapes.

IDEAL LANDSCAPES

NATURESCAPES
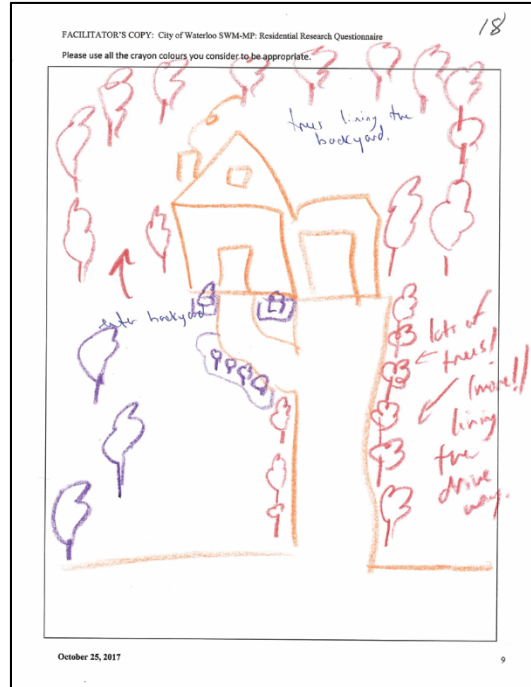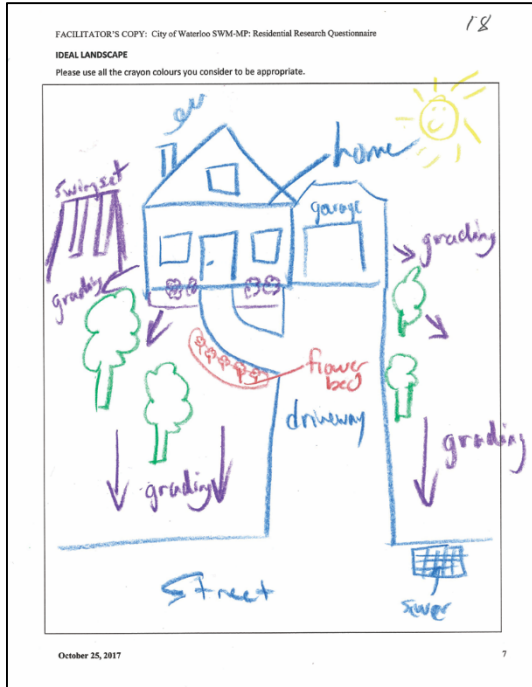
Group 1: Conventional Landscape
(15 out of 34 respondents' drawings, or 44%)

Group 2: More Trees and Shrubs
(10 out of 34 respondents' drawings, or 29%)
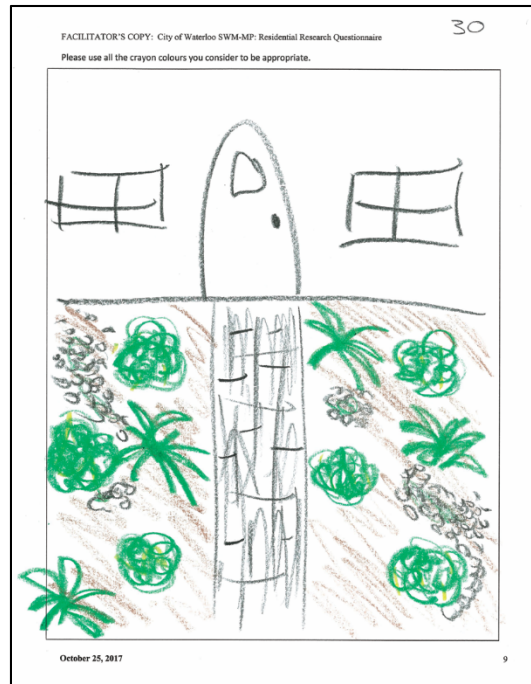
Group 2: Conventional – Curb Appeal
(8 out of 34 respondents' drawings, or 24%)

Group 3: No Grass/Lawn with Mulch Instead
(8 out of 34 respondents' drawings, or 24%)

IDEAL LANDSCAPES
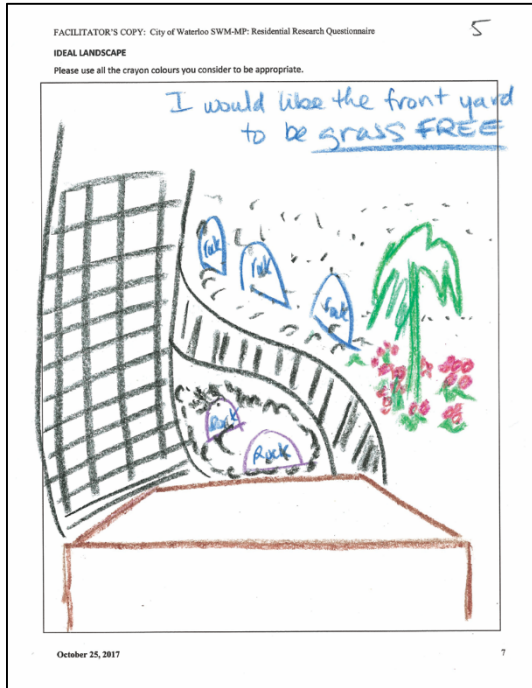
Group 3: Conventional Hybrid
(6 out of 34 respondents' drawings, or 18%)

NATURESCAPES

Group 1: Nature Oriented Features
(11 out of 34 respondents' drawings, or 32%)

Group 4: Conventional Hybrid – Approach to House
(5 out of 34 respondents' drawings, or 15%)
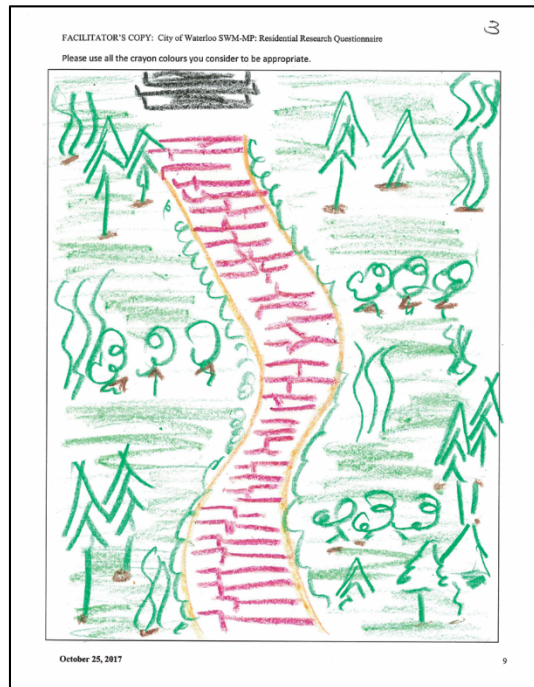
Group 4: More Natural without Flower Gardens
(5 out of 34 respondents' drawings, or 15%)

The *ideal front yard landscape* drawings of respondents fell into four categories and are listed in descending order from the most frequently represented drawing type to least frequently represented drawing type:

Group 1: Conventional landscape (15 out of 34 respondents' drawings, or 44%)

- Primary emphasis on the house, front yard and driveway (to an attached garage), with foundational plantings, large lawn area and a feature tree.

Group 2: Conventional - curb appeal (8 out of 34 respondents' drawings, or 24%)

- Primary emphasis on the house and front yard as seen from the road, neat and tidy, common elements to "Group 1: Conventional landscape" are foundational plantings, a large lawn area.

Group 3: Conventional hybrid (6 out of 34 respondents' drawings, or 18%)

- Primary emphasis on integrated design, with less grass/lawn and more rocks, trees, and flowers.

Group 4: Conventional hybrid - approach to house (5 out of 34 respondents' drawings, or 15%)

- Primary focus on the approach to the home with a stone or hardscaped walkway the main feature of the drawing and with less lawn and more trees, shrubs, and flowers.

Two-thirds of the ideal front yard landscape drawings (Groups 1 and 2 above) express solely conventional aesthetics for front yards with a typical mixture of hard and vegetative elements, specifically, foundation-focused use of gardens (flowers and small shrubs), a large lawn area and a feature tree. The "Conventional hybrid" drawings in groups 3 and 4, although still conventional in several aspects, show a move away from lawn-dominant landscapes to more design-oriented landscapes with less grass, and more shrubs, trees and gardens. Hardscape portions, such as walkways, in the hybrid landscape drawings are more integrated with the surrounding landscape.

The ideal "Naturescape" front yard landscape drawings of respondents also fell into four categories, listed below in descending order of frequency of type represented.

Group 1: Nature-oriented features (11 out of 34 respondents' drawings, or 32%)

- Features such as a pond or other natural or constructed water feature, rocks and stone, trees, native plants, and ornamental grasses are consistent elements in these drawings.

Group 2: More Trees and shrubs (10 out of 34 respondents' drawings, or 29%)

- Primary emphasis is on more trees and shrubs, with flowers or flower gardens and less lawn area.

Group 3: No Grass/Lawn and use of mulch (8 out of 34 respondents' drawings, or 24%)

- Similar to Group 2, but with a primary focus on replacing grass/lawn with mulch, and a combination of rocks, shrubs, plants and flowers

Group 4: More Natural without flower gardens (5 out of 34 respondents' drawings, or 15%)

- Primary emphasis is on more natural growth, with more shrubs, trees, and less lawn areas and no use of flowers or flower gardens

The major elements of respondents' drawing of an ideal front yard Naturescape are as follows:

1. A water or natural feature
2. More trees and shrubs
3. Less grass, with mulch and plants in its place
4. Fewer flower gardens
5. Lower maintenance

The homeowners were asked a number of questions regarding their ideal landscape and Naturescape drawings. Figure 4.4 below shows **the most important elements or aspects** of respondents' ideal front yard landscape and their ideal front yard Naturescape landscape.
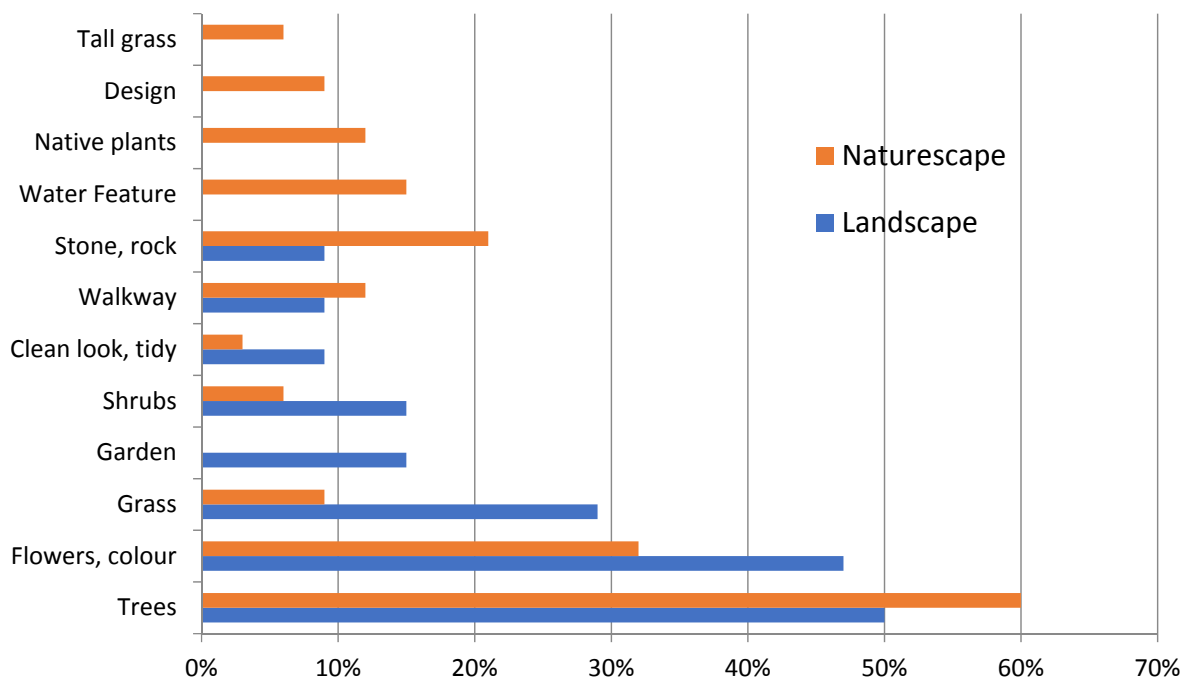
Figure 4.4: Comparison of Ideal Landscape with Naturescape Front Yard

Trees and flowers are included in both types of landscapes drawn by respondents; however, trees are more important element for Naturescapes; while grass, flowers, gardens, and shrubs are much more important for the ideal home landscape. Water features, native plants, design and tall grass are the only "aspects or features" mentioned by respondents in their descriptions of their Naturescape drawings. A *neat and tidy* appearance is a significantly more important aspect for respondents' ideal home landscape versus the Naturescape landscape.

Respondents were subsequently asked why they rated the "aspects or features", identified above, as important for the ideal home landscape and the ideal Naturescape landscape. Figure 4.5 summarizes **the homeowners' reasons for why they consider the elements or aspects** they identified as important. **Curb appeal, beauty or appearance** was the most important reason given by homeowners for their ideal landscape.   Shade and health were identified by homeowners as important for both types of landscapes. Nature, trees, and natural features such as water were seen by homeowners as important aspects or features of Naturescape landscapes as they create calming, lower maintenance landscapes providing privacy. Only three homeowners held negative views of a Naturescape landscape; considering them as messy, unkempt and unattractive.
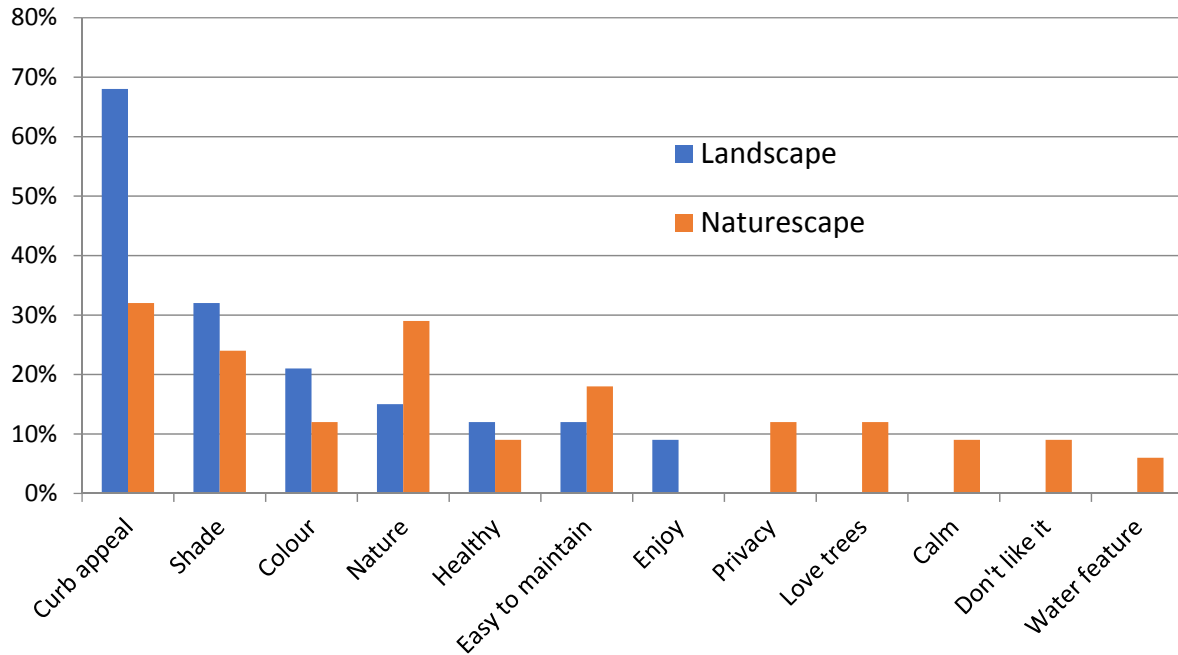
Figure 4.5: Reason Why Landscape Aspects are Important

Respondents were asked to, "Use up to three words to describe the feelings and emotions evoked by their drawing?" Although the emotions evoked by the ideal home landscape and the Naturescape home landscape drawings have some overlap, significant differences are noted in Table 4.20. Respondents identified much higher feelings of happiness and beauty for the drawing of their ideal landscape. "Calm" (76% versus 38%) is by far the most frequently mentioned emotion for Naturescapes. "Neat and tidy, comfort, colour and satisfied" are all words related to the ideal front yard landscape but not for the Naturescape. Nature and healthy are important qualities for the Naturescape landscapes (44%). Eight respondents find Naturescape landscapes to be "ugly, plain and crowded", judging homeowners with such landscapes as "lazy ".

Table 4.20: Emotions Evoked by Landscape Drawings
Questions 53 and 59

62, 68. Emotions	Landscape	Naturescape
Calm	38%	76%
Happy	35%	18%
Beautiful	21%	9%
Pride	18%	
Neat & tidy	18%	
Comfort	15%	
Colour	12%	
Satisfied	12%	
Cool	6%	
Welcoming	6%	9%
Low maintenance	6%	9%
Nature, healthy		44%
Ugly, busy, lazy		24%

Homeowners were also asked "what constraints or reasons might prevent you from having an ideal front yard landscape (or front yard Naturescape)". Money was identified by respondents as the primary constraint for having both types of landscapes. Lack of time and design knowledge and yard size limitations were also identified as constraints preventing respondents from having either front yard landscape, as indicated in Table 4.21 below. While drought was seen as a potential threat to the ideal landscape, the neighbours not liking the untidy Naturescape landscape was identified by some respondents as a reason for not having one.

Table 4.21: Constraints/Reasons for Not Having Ideal Landscape/Naturescape (Questions 63 and 69)

63, 69. Constraints	Landscape	Naturescape
Money	**65%**	**56%**
Time/work	32%	29%
Size	18%	24%
Design/knowledge	15%	18%
Drought	9%	
Shade	6%	
Not tidy		12%
Not liked by neighbours		12%

4.6 Ratings of Front Yard Landscapes

Homeowners were directed to look at the front yard landscapes depicted in the four pictures below and to "rate the appeal of each of the front yard landscapes" (where 1 is low and 10 is high). It was emphasized to the homeowners that they were to look at the landscapes only and not the homes themselves and to rate the appeal of the landscape exclusively.

PICTURE 1

PICTURE 2

PICTURE 3

PICTURE 4

As indicated in Table 4.22, Picture 2 was the front yard landscape receiving a significantly higher rating (8.9 out of ten) than the next highest rated front yard landscape image (Picture 1 – 7.1 out of 10). The reasons given by respondents for the rating the Picture 2 landscape highly were; it's clean and tidy (47%), it looks good (21%), and it has nice trees (18%), grass (9%) and flowers (12%).

Table 4.22: Concept Appeal Rating: Front Yard Landscapes

Front yard picture	Mean	Mode	Range
Picture 1	7.1	8	2 to 10
Picture 2	8.9	10	5 to 10
Picture 3	6.6	7	3 to 9
Picture 4	5.5	5	1 to 10

A significant number of negative responses were given by respondents for their ratings of the other images of front yard landscapes, specifically: Picture 4, Looks messy and wild, too busy, unkempt, too crowded, cluttered, ugly, and no grass; Picture 1, too many trees, crowded, boring, not much curb appeal, too much lawn, and feels stark; Picture 3, ugly, boring, chaotic, with not much curb appeal, and too much lawn.

4.7   Rating of Gardens

Homeowners were also directed to look at four images of gardens, as shown below, and to "rate the appeal of each of the garden" on a scale of 1 to 10 (where 1 is low and 10 is high).

PICTURE 1

PICTURE 2

PICTURE 3

PICTURE 4

As indicated in Table 4.23, the garden depicted in picture 4 received significantly higher ratings than the other garden photos. The reasons for the higher ratings given by respondents were; balance of design elements, looks good, clean and tidy, colour and easy to maintain. The negative responses of the homeowners to the remaining pictures may be summarized as follows: Picture 1, ugly, crowded, not enough variety or colour, too busy; Picture 2, no colour, no grass, looks like a desert, boring, too much rock and shrubs; Picture 3, too many flowers, no trees and grass, crowded and cluttered. Picture 1 received the lowest rating by respondents with a mean average of 5.3 out of 10. The garden depicted in Picture 1 was taken from the web sites of the REEP Green Solutions where it is used to promote rain gardens.

Table 4.23: Concept Appeal Rating: Gardens

Garden picture	Mean	Mode	Range
Picture 1	5.3	4, 6	1 to 9
Picture 2	6.5	7	1 to 10
Picture 3	6.9	8	2 to 10
Picture 4	8.5	10	5 to 10

4.8   Ratings of Downspouts and Drainage Options

Four pictures of downspouts and drainage, as shown below, were shared with the homeowners and they were asked to rate them.

PICTURE 1

PICTURE 2
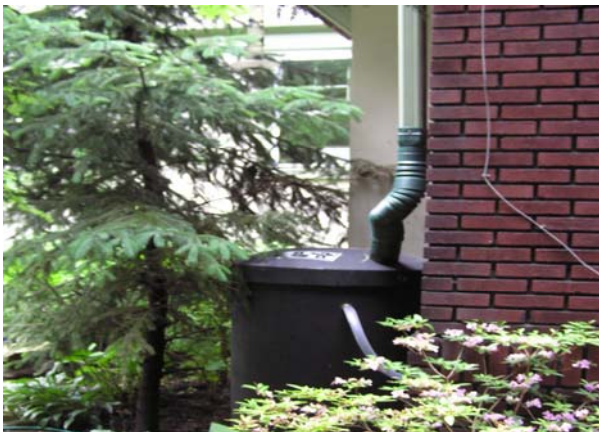
PICTURE 3

PICTURE 4

Table 4.24 provides a summary of the ratings respondents gave to the four images depicting downspout and drainage options.   For the drainage and downspouts photographs, none of them rated highly (Picture 3 had the highest rating of 7.0 out of ten).   The slightly higher rating assigned by respondents to Picture 3 was because of reuse of rainwater and the barrel is partly concealed. Negative comments about Picture 3

Table 4.24: Concept Appeal Rating: Downspouts & Drainage

Drainage Picture	Mean	Mode	Range
Picture 1	6.5	8	1 to 10
Picture 2	6.7	8	1 to 10
Picture 3	7.0	10	1 to 10
Picture 4	5.8	4	1 to 10

were; [the rain barrel] is an "eye sore", provides no benefit to the grass or garden, and the water will have to be used.   Positive comments from some respondents about Picture 1 included its appearance, the pond, and the good use of water. Other respondents indicated that Picture 2 has a clean look that is eye pleasing and moves water away from property. The few positive comments about Picture 4 were that it is the easiest to install and maintain and looks inviting. The negatives for Pictures 1, 2 and 4 include: possibly causing flooding, ugly, too much maintenance; it's a waste of rain water and too close to the foundation; looks unkept and ugly, too much rain will wreck the lawn, and it's too close to the house.

Eighty percent of the respondents indicated they have downspouts that go "onto their landscape" and 7 out of 34 homeowners stated they have rain barrels.

Table 4.25 summarizes the reasons provided by homeowner respondents for the highest ratings they gave for the front yard (#2) and garden (#4) pictures.

Table 4.25: Reasons Given for Ratings of Pictures

Reason why ratings given	76. Front Yard: Highest Rating (Picture #2)	82. Garden: Highest Rating (Picture #4)	89. Drainage Option (Picture #3)
1	Clean & tidy (47%)	Balance (29%)	Reuse of rain water (29%)
2	Looks good (21%)	Beautiful (21%)	Hidden (9%)
3	Trees (18%)	Clean & tidy (18%)	Tidy (6%)
4	Colour (12%)	Colour (15%)	
5	Easy (12%)	Easy (12%)	
6	Green grass (9%)	Trees (6%)	

The pattern in the homeowner responses to the images of front yards and gardens indicates that the highest rated were considered "clean and tidy, beautiful, colourful and easy to maintain while the lower rated images of front yard landscapes and gardens were considered "messy, ugly, dull and boring." In terms the pictures of drainage options, none stood out as the preferred choice amongst respondents, therefore the highest rated image of drainage options was more equally distributed across the sample.

Homeowner respondents' view of an appealing landscape is founded on an entrenched perception of what defines a beautiful, clean, well designed landscape that offers curb appeal and reflects a positive image. Defined and bordered design with a balance of largely lawn and primarily foundation flower gardens with a feature is the basis of an ideal landscape to most homeowner respondents.

4.9   Understanding Terminology

Respondents were asked several questions to gage understanding of some basic terms and concepts associated with stormwater and used educational and informational resources provided to residents by the City.

Homeowners were asked the meaning of the term "watershed". At 38%, the most common answer was "collect and store water" for future use. This is seen as an activity controlled by people, not a natural process. The next highest frequency answer was collect and store rain water, again a process controlled by people.

The Canadian Oxford Dictionary defines a watershed as "the area drained by a single lake or river and its tributaries; a drainage basin." Four (12%) homeowners had an answer that was close to this definition. The remaining homeowner respondents lack an understanding of the meaning of the term "watershed" as indicated in Table 4.26.

Table 4.26: What is a Watershed? (Question 91)

Meaning Description	%
Collect & store water	38%
Collect & store rain water	21%
Natural system, land & water basin	12%
Underground water/aquifer	9%
No idea	9%

On half of the respondents had "no idea" what the term "Waterloo Stormwater Utility" meant. Four (12%) responses felt that it had something to do with sewers, three responses (9%) said "ponds" and three said the "amount we pay for stormwater management". Based on the results, as indicated in Table 4.27, there is little recognition or understanding of the City stormwater utility and its programs

Table 4.27: What is the City of Waterloo Stormwater Utility? (Question 92)	
Meaning Description	**%**
No answer, no idea	47%
Sewers	12%
Ponds	9%
Pay them for water	9%

Two-thirds of homeowner respondents have no understanding of the City of Waterloo's Stormwater Credit. Five respondents think it's a rebate for diverting water from sewers or reusing water and three say it is money back for using rain barrels

Table 4.28: What is a City of Waterloo "Stormwater Credit"? (Question 93)	**%**
No answer	62%
Rebate	15%
$ for rain barrel use	9%

As indicated in Table 4.29, thirty-eight percent of the respondents say the utility's purpose is to manage stormwater through public education and incentives, provide funding for flood damage, and control surface water. Twenty-one percent did not know the purpose, 15% say it is to collect and reuse rainwater, and 15% to pay for stormwater infrastructure

Table 4.29: What is the purpose of the Stormwater Utility? (Question 94)	**%**
Manage stormwater	38%
No answer	21%
Reuse water	15%
Pay for water infrastructure	15%

A rain garden is a planted depression in the ground usually underlain with layers of screening media that absorbs stormwater from impervious surfaces such as roofs, driveways and walkways. As indicated in Table 4.30, none of the respondents provided a meaning close to the true definition. Only 9% of respondents who stated that it dissipates rain demonstrated any understanding of the relationship between drainage and a rain garden.

Table 4.30: What is a rain garden? (Question 95)	**%**
Garden that uses rain water	53%
No answer	24%
Dissipates rain	9%
Pond that collects rain water	6%

5.0   SUMMARY

The findings from the research with single-family homeowners who live in the City of Waterloo will be further analysed in conjunction with research findings from key informant interviews to be conducted with industrial and commercial property owners in the City. A market-based approach to increasing uptake of lot-level stormwater management practices and measures by homeowners requires a full understanding of the opportunities and constraints within the entire marketplace. In order to determine the most cost-effective approach or approaches to generating desired change amongst property owners, it is necessary to identify synergies and interrelationships in the market as a whole. Ultimately, the findings from the residential industrial and commercial sector research will inform the development of a market-based strategy to enhance uptake of at-source stormwater management practices amongst property owners in all sectors and improve messaging and communications from the City to property owners.

FACILITATOR'S COPY: City of Waterloo SWM-MP: Residential Research Questionnaire

Facilitator: (Read each statement aloud)
- Thank you for coming to our research session tonight.
- All answers made during this workshop are confidential; *please do not put your name on the form.*
- **Every answer is correct.** Your honest feelings, perceptions, needs and opinions are important to us.
- Keep your answers as short as possible, just a few words or a short phrase on the line provided.
- ***Please write or print legibly. We have to be able to read your answers.***
- If no answer comes to mind, place a line in the space provided. This is also a correct answer.
- Please keep your answers to yourself. Do not speak them out loud.
- Please shut off your phone if you have one.
- At the end of the session, we will provide your $100 cash payment.

DEMOGRAPHICS

1. In which city do you live?

    Waterloo [   ]
    Other _____

2. In which community or neighbourhood do you live?

    _____

3. Are you. . . Female [   ]   Male [   ]

4. Please check the most appropriate box:

    I live in a single-family detached home that I own [   ]

    I live in a single-family semi-detached home that I own [   ]

5. What is the age of your home?

    Under 5 years   [   ]   16 to 30 years   [   ]
    5 to 15 years   [   ]   31 or more years   [   ]

6. What is your age?

    25 to 34 [   ]   35 to 54 [   ]   55+ [   ]

7. What was the last year of education you completed?

    High School Graduate (or less)   [   ]
    College or Trade Certificate   [   ]
    University Degree or Certificate [   ]

8. What is your marital status?

    Married/cohabitation [   ]   Single [   ]   Divorced/Separated/Widowed [   ]

9. How many children live in your home? _____

10. Which of the following best represents your total household income per annum?

    Under $30,000   [   ] $80,000 to $149,999 [   ]

$30,000 to $79,999   [   ] $150,000 or more   [   ]

11. In which country were you born? _____

12. What language is most often spoken in your home? _____

13. What does the City of Waterloo mean to you?

_____

14. List two things you like about living in Waterloo.

(1) _____

(2) _____

15. List two things you dislike about living in Waterloo.

(1) _____

(2) _____

16. What does your community mean to you?

_____

17. What does your neighbourhood mean to you?

_____

18. On a scale from 1 to 10, rate how important your neighbourhood is to you.
     _____ (where 1 is low and 10 is high)

19. Why did you give this rating?

_____

20. By assigning a number of 1 through 5, identify in order of priority the areas where the City of Waterloo should focus resources (**Select only the top five with the number 1 being the most important**)

☐ Encourage economic development

☐ Improve programs for adults over 55 years old

☐ Control Tax Increases

☐ Effectively manage growth and intensification

☐ Protect the Environment

☐ Increase investment in neighbourhood groups

☐ Improve library facilities

☐ Improve active lifestyle resources such as walking/bike paths/trails

☐ Increase investment in municipal infrastructure to reduce risks posed by major storms or events

☐ Better maintain and improve transportation such as roads

☐ Improve student engagement and community participation

☐ Improve existing recreational facilities

☐ Increase investment in the arts, heritage and culture

☐ Improve, maintain and preserve green space/parks

21. What does your home mean to you?

_____

22. On a scale from 1 to 10, rate the importance of your home.
 _____ (where 1 is low and 10 is high)

23. Why did you give this rating?

_____

24. What does your home's landscape mean to you?

_____

25. On a scale from 1 to 10, rate the importance of your home's landscape _____ (where 1 is low and 10 is high)

26. Why did you give this rating?

_____

In the table below, please write the two most important aspects or features of your home's landscape in the first column, and the corresponding reasons why in the second column.

27. Most important aspects of your home's landscape	28. Why?
1.	1.
2.	2.

29. On a scale from 1 to 10, rate the importance of the design of your home's landscape.
 _____ (where 1 is low and 10 is high)

30. Why did you give this rating?

_____

31. Who designed your home's landscape?

_____

32. On a scale from 1 to 10, rate the importance of maintaining your home's landscape _____ (where 1 is low and 10 is high)

33. Why did you give this rating?

_____

In the table below, please write the two most important tasks to maintain your home's landscape in the first column, and the corresponding reasons why in the second column.

34. Most important tasks to maintain your home's landscape	35. Why?
1.	1.
2.	2.

36. Who maintains your home's landscape?

_____

37. From where or whom would you seek advice about landscape or garden design?

_____

38. Do you have gardens?

      Yes [ ]   No [ ]

39. If "Yes", briefly explain why you have gardens?

_____

40. If "No", briefly explain why you do not have gardens?

_____

41. About how much of your property is comprised of lawn? **(Please check one).**

    ¼ or less of the property [ ]

    About ½ of the property [ ]

  About ¾ of the property   [ ]

42. On a scale of 1 to 10, rate the importance of lawn for your home's landscape. _____(where 1 is low and 10 is high)

43. Why did you give this rating?

_____

44. On a scale from 1 to 10, rate the importance of trees on your home's landscape. _____(where 1 is low and 10 is high)

45. Why did you give this rating?

_____

46. Where do you purchase flowers, trees and shrubs?

_____

47. Please identify **up to** three home or landscape improvement projects costing **under** $5,000 you have completed in the past 5 years. (This could be a home or landscape project from hundreds of dollars up to $5000).

(1) _____

   _

(2) _____

   _

(3) _____

   _

48. For the home or landscape improvement project or projects **under** $5,000 you identified above, please check the most appropriate box from the following statements:

   Hired a contractor to complete the project ☐

   I or a family member did the project (do-it-yourself or DIY)) ☐

   A combination of contractor and do-it-yourself or DIY) ☐

49. Please identify up to three home or landscape improvement projects costing **over** $5,000 you have completed in the past five years.

(1)

   _____

   _

(2)

   _____

   _

(3)

   _____

   _

50. For the home or landscape improvement project or projects **over** $5,000 you identified above, please check the most appropriate box from the following statements:

   Hired a contractor to complete the project [   ]

   I or a family member did the project (do-it-yourself or DIY) [   ]

   A combination of contractor and do-it-yourself or DIY) [   ]

Facilitator: Please listen to all options before checking the most appropriate box or boxes (you may have more than one answer).

51. In your current home is your basement (please listen to all options before checking the most appropriate box):

   Fully finished [   ]   Partially finished [   ]

Unfinished [   ]   No basement [   ]
Crawl space [   ]

52. In the time that you have lived in your current home have you experienced basement flooding?
Yes [   ]   No [   ]

53. On a scale of 1 to 10, rate how likely it is that your home's basement will be flooded by stormwater or experience water damage during the next major rainstorm _____(where 1 is low and 10 is high)

54. Why did you give this rating?

_____

Facilitator: Please read all responses before checking the most appropriate box or boxes (you may have more than one answer).

55. Who is responsible for managing stormwater in your community (please listen to all options before checking the most appropriate box):

    Region of Waterloo [   ]   Ontario Provincial Government [   ]
    Grand River Conservation Authority [   ]   Other [   ] _____ (please specify)
    City of Waterloo [   ]

56. On a scale of 1 to 10, rate how important it is for the City of Waterloo to take steps to protect against flooding and property damage resulting from major rainfall events _____ (where 1 is low and 10 is high).

57. Why did you give this rating?

_____

Facilitator: Please read all responses before checking the most appropriate box or boxes (you may have more than one answer).

58. Where do the downspouts from your home's eves troughs go to?

Onto my landscape [   ]
Onto my driveway [   ]
Into the municipal sewer [   ]
Into rain barrels [   ]
Other (please specify) _____

IDEAL LANDSCAPE

Please use all the crayon colours you consider to be appropriate.

Take a few moments to think about the various landscapes (lawns, gardens, walkways and driveways) you have seen, including your own. Please draw a picture of your ideal front yard landscape for your home.

59. Describe the picture you drew.

_____

In the table below, please write the two most important elements or aspects of your home's ideal front yard landscape in the first column, and the corresponding reasons why in the second column.

60. Most important aspects of your home's ideal front yard landscape?	61. Why?
1.	1.
2.	2.

62. Use up to three words to describe the feelings and emotions evoked by your drawing.

_____

63. What constraints or reasons might prevent you from achieving your ideal landscape?

_____

64. What does a "Naturescape" residential landscape mean to you?

_____

Please use all the crayon colours you consider to be appropriate.

Please draw a picture of a "Naturescape" front yard for your home.

65. Describe the picture you drew.

_____

In the table below, please write the two most important elements or aspects of your home's front yard Naturescape in the first column, and the corresponding reasons why in the second column.

66. Most important aspects of your home's front yard naturescape?	67. Why?
1.	1.
2.	2.

68. Use up to three words to describe the feelings and emotions evoked by your drawing.

_____

69. What constraints or reasons might prevent you from having a front yard naturescape?

_____

OPPORTUNITIES/CONSTRAINTS

Facilitator: Please turn over the top sheet of the handouts. Turn over only the top sheet. It should read "HANDOUT 1" in the upper left corner. Please raise your hand if you don't have handout 1.

70. On a scale of 1 to 10, rate the importance of the City of Waterloo investing in stormwater infrastructure
    _____ (where 1 is low and high)

71. Briefly explain why you gave this rating?

_____

_____

Please take a moment to look at the numbered pictures 1, 2, 3 and 4.

On a scale of 1 to 10, rate the appeal of each of the front yard landscapes in the four pictures.

72. Picture 1_____
73. Picture 2 _____
74. Picture 3 _____
75. Picture 4 _____

76. For the picture of the front yard landscape you gave the highest rating, briefly explain why?

_____

77. For the picture of the front yard landscape you gave the lowest rating, briefly explain why?

_____

Facilitator: Please turn over the next sheet – the top sheet only – of the handout. It should read "HANDOUT 2" in the upper left corner. Please raise your hand if you do not have handout 2.

Please take a look at the gardens in the four pictures – focus solely on the gardens.

On a scale of 1 to 10, rate the appeal of the gardens in the four pictures (where 1 is low and 10 is high).

78. Picture 1 _____

79. Picture 2 _____

80. Picture 3 _____

81. Picture 4 _____

82. For the picture of the garden you gave the highest rating, briefly explain why?

_____

83. For the picture of the garden you gave the lowest rating, briefly explain why?

_____

84. Where do the downspouts from your home's eves troughs go to?

Into the ground [   ]   Onto my property [   ]   Other (please specify)_____

Facilitator: Please turn over the next sheet – the top sheet only – of the handout. It should read "HANDOUT 3" in the upper left corner. Please raise your hand if you do not have handout 3.

Facilitator: Please take a moment to look at the four photos. These pictures are of different options for downspouts for your home.

On a scale of 1 to 10, please rate the appeal of the options shown for downspouts and drainage (where 1 is low and 10 is high).

85. Picture 1 _____

86. Picture 2 _____

87. Picture 3 _____

88. Picture 4 _____

89. For the drainage option or options you gave the highest rating, briefly explain why?

_____

90. For the drainage option or options you gave the lowest rating, briefly explain why?

_____

UNDERSTANDING

91. What is a watershed?

_____

92. What is the City of Waterloo "Stormwater Utility"?

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93. What is a City of Waterloo "Stormwater Credit"?

94. What is the purpose of the Stormwater Utility?

95. What is a rain garden?

EVALUATION

96. On a scale from 1 to 10, rate your level of satisfaction with this session _____ (where 1 is low and 10 is high)

97. Why did you give this rating?