

The Five Acres Farm Project: *Land Use & Environmental Planning Report*



Produced by the Mount Arrowsmith Biosphere Region Research Institute



Acknowledgements

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1.0 Introduction

The Five Acres Farm is located in Harewood, a district in Nanaimo, British Columbia (Figure 1). Harewood encompasses an area of approximately 535 hectares (1322 acres) and “is bordered to the south by the Nanaimo Parkway, to the east by the E&N Rail Line, to the north by the Western neighbourhood area, and to the west by Vancouver Island University” (City of Nanaimo, n.d.-d).

Historically used for agriculture, Harewood is becoming increasingly urbanized. In 2011 there was a total population of approximately 8,800 living within Harewood, as compared to just 6,065 in 1996 (City of Nanaimo, n.d.-d). Today, the area houses elementary schools, residential areas, multiple open spaces including the Colliery Dam Park, and service-based businesses.

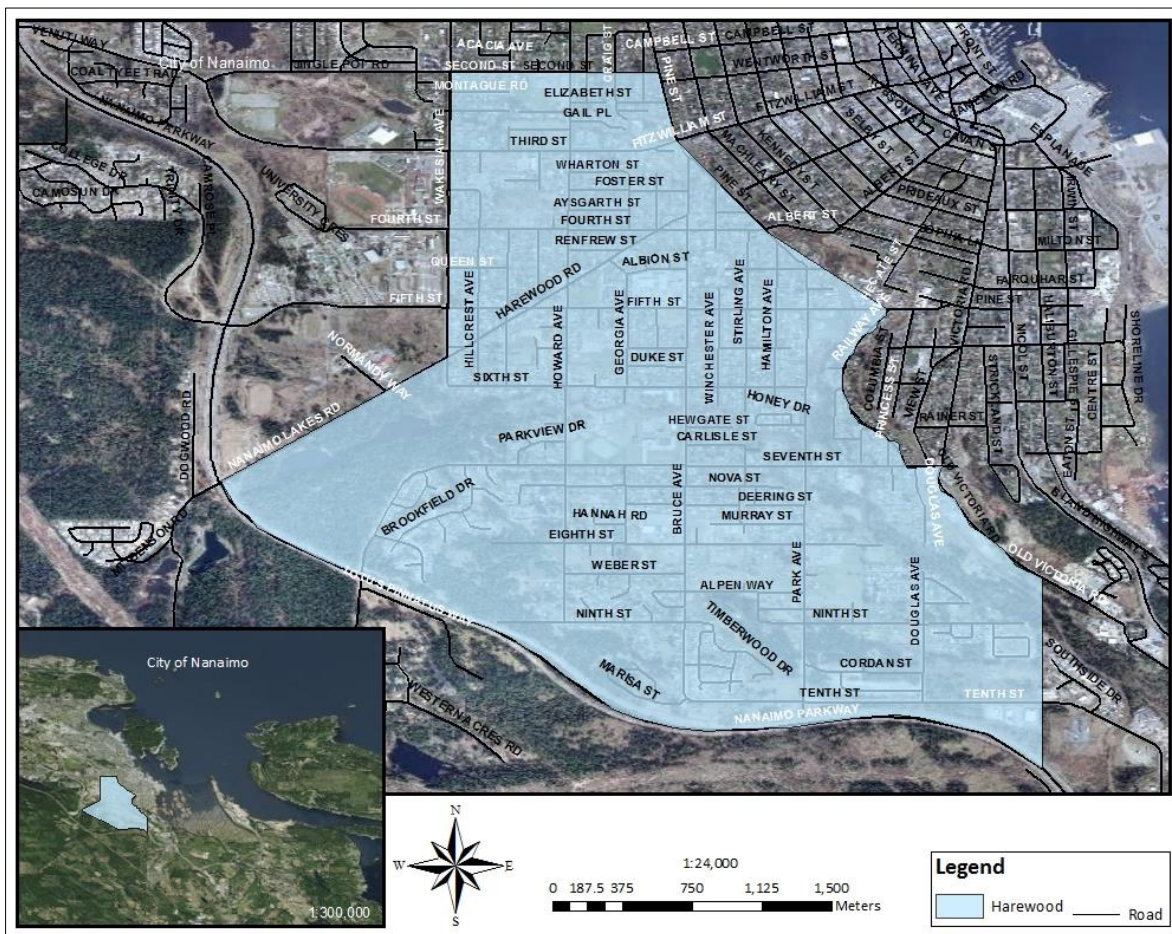


Figure 1: District of Harewood in Nanaimo, B.C.¹

The Five Acres Farm Project is a collaboration between Nanaimo Foodshare Society (NFS), Growing Opportunities Farm Community Co-op (GOFC), and the Mount Arrowsmith Biosphere Region Research Institute (MABRRI). The purpose of the project is for Nanaimo Foodshare to eventually purchase the property of 933 Park Avenue in order to protect it from impending urban development. The current landowners are interested in selling the property but intend to see the land preserved as a farm and open space. They have given the project partners time to analyze the many valuable attributes

¹ Source: Boundary data obtained from the Harewood Neighbourhood Plan (City of Nanaimo, 2013); Street names obtained from the Nanaimo Data Catalogue (City of Nanaimo, n.d.)

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of the property in order to increase public knowledge of the space and gain funding to purchase the lot, which happens to be one of Nanaimo's last historical five acre farms (see Section 3.0). The five acre lot currently houses the residence of the property owners, NFS's organic demonstration agricultural farm, as well as natural areas including grassy open fields, an ephemeral stream, and a wetland (Figure 2).

MABRRI's role in the Five Acres Farm Project involved the development of a Land Use & Environmental Planning Report, which describes the agricultural, ecological, and heritage values of 933 Park Avenue, as well as the current, and desired future, community uses of the property. Funding for the development of this report has been provided by Canada Summer Jobs. The historical and agricultural values of the property were determined through a literature review of Nanaimo's history, as well as a visit to Nanaimo Archives, and an analysis of historical aerial photographs of the area. The ecological values were determined through a vegetation survey and wetland analysis. Finally, the current and desired future uses were determined through community consultation, including a community engagement event and a resident survey. The values of the property are described in more detail in Section 5.0 below.

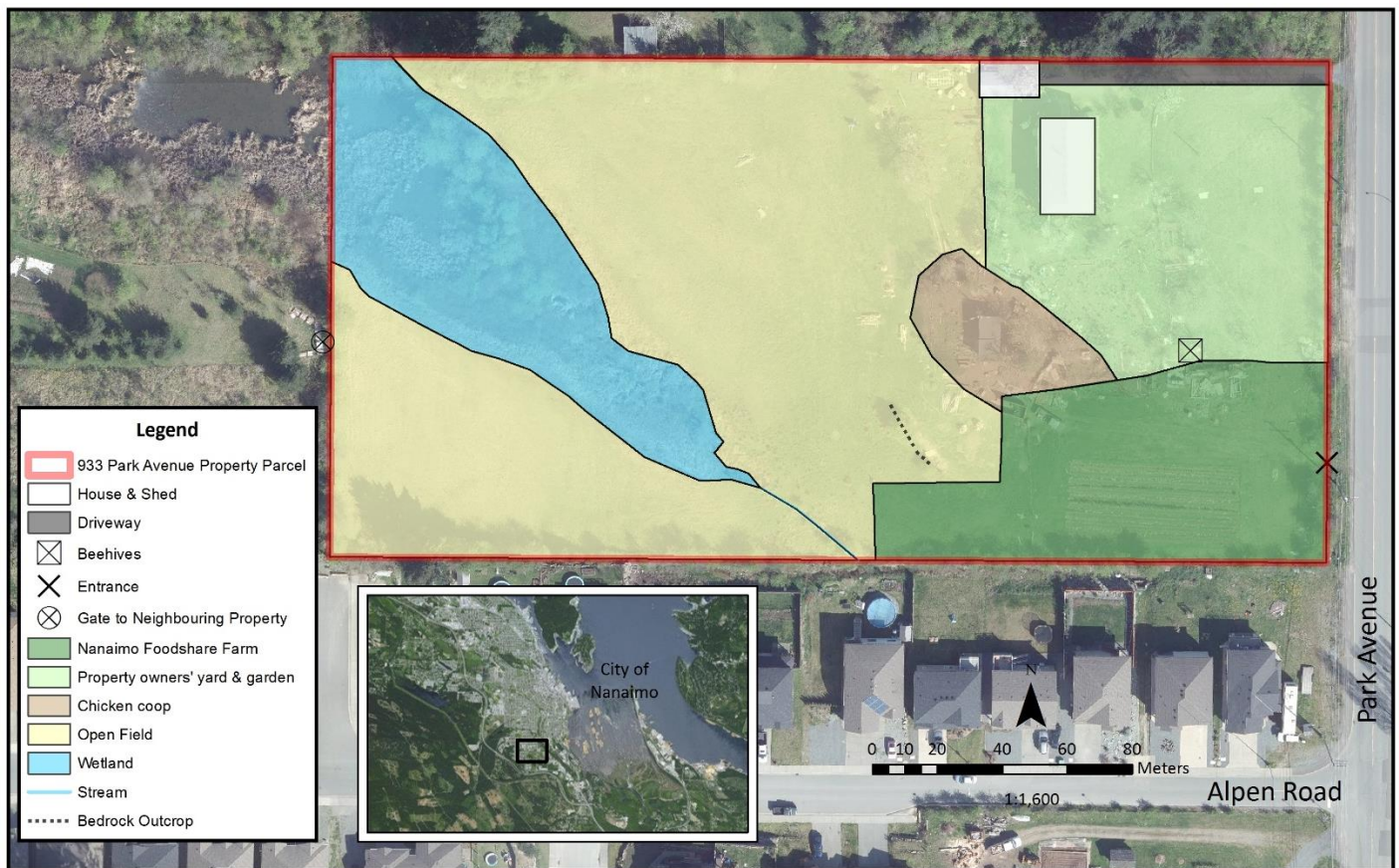


Figure 2: Map of Property Attributes²

² Source: Imagery for the main map obtained from the City of Nanaimo Engineering Department's GIS Orthophotos (#562 & #563); imagery for inset map obtained from Esri's online imagery database; parcel limit shapefile obtained from the City of Nanaimo Zoning CityMap (933 Park Avenue Parcel Graphic); attribute data collected by the Mount Arrowsmith Biosphere Region Research Institute.

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2.0 Zoning & Planning

The neighborhood that 933 Park Ave is located in has zoning regulations that fall under R1 Single Dwelling Residential (City of Nanaimo, n.d.-b) (Figure 3). The City defines this zone as areas suitable for “low density, single residential dwelling developments and also for two principal dwellings on certain corner lots” (City of Nanaimo, 2015, p. 69). The only area that has different zoning is the Park Avenue Elementary school which is zones as a Community Service Area (City of Nanaimo, n.d.-d).

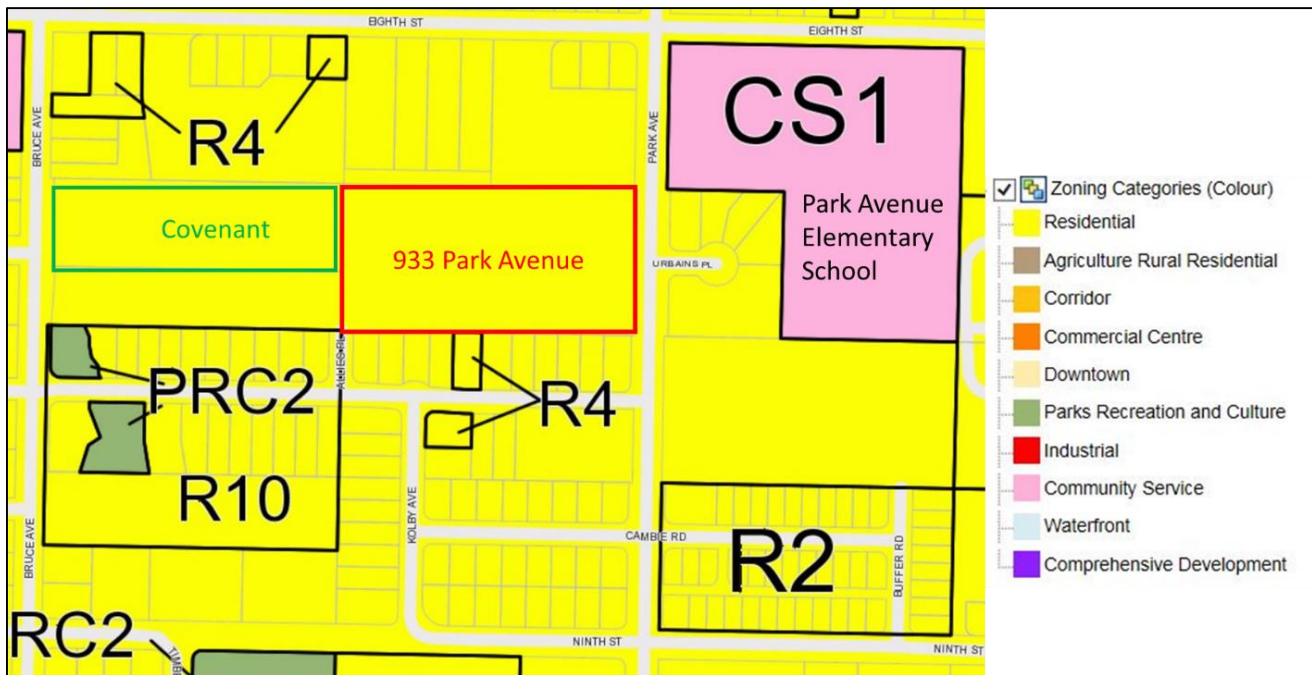


Figure 3: Zoning of 933 Park Avenue (City of Nanaimo, n.d.-c)³

In opposition to this zoning, the City’s Harewood Neighbourhood Plan, which “forms part of the City’s Official Community Plan,” (OCP) (City of Nanaimo, 2013, p. 2) has suggested that the location of the Five Acres Farm should be protected, and even purchased, for its potential to be used as public open space in Harewood and to protect the sensitive wetland (City of Nanaimo, 2013). The plan suggests that the ephemeral stream be “daylighted and redirected toward the existing wetland” on the property, as this would enhance the “area’s natural systems” (City of Nanaimo, 2013, p. 64). In terms of the wetland specifically, which sits partially on the property as well as on an adjacent property located to the west, the Plan suggests that a land reserve should be put in place to protect it (Figure 4) (City of Nanaimo, 2013).

³ Note: Parcel limit is outlined in red.

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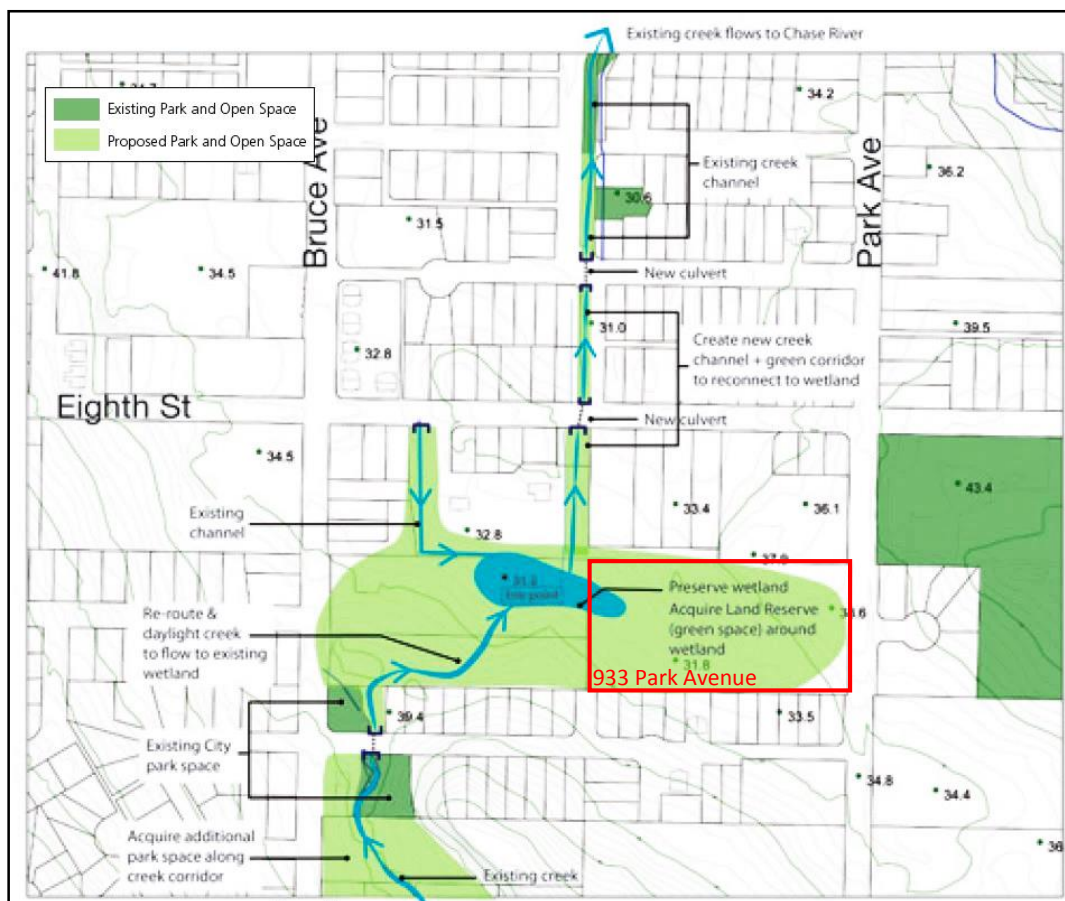


Figure 4: Watercourse Details (City of Nanaimo, 2013, p. 65)⁴

Interestingly, in 2003, a covenant was signed by the adjacent property owners that ensured the protection of the portion of the wetland that occurred on their property (pers. comm. with the City of Nanaimo Community Development department). The agreement ensures that the owners will not tamper with any natural areas within the designated areas of the covenant; this includes refraining from clearing or excavating the land and vegetation, as well as limiting any waste runoff into the wetland. Without a land title search, it is unclear whether the property owners that signed the covenant are the same as who live there today. Thus, it is unclear if the document is still in effect. Furthermore, without a land title search, it is unclear if 933 Park Avenue ever held a similar covenant – although, personal communication with the City of Nanaimo Community Development department suggests that it never has.

Finally, the Harewood Neighbourhood Plan emphasizes the importance of neighbourhood sustainability (City of Nanaimo, 2013, p. 14). This is in unison with the City's OCP, which is based around the concept of sustainability – the idea of meshing social, cultural, economic, and environmental goals (City of Nanaimo, 2008). In addition, two of the OCP's goals (Goal Four and Goal Five) state the importance of keeping development "within the capacity of the natural environment" while simultaneously working towards enhancing Nanaimo's natural beauty (City of Nanaimo, 2008, p. 27). Within the idea of sustainability, the Harewood Neighbourhood Plan specifically states the intent to reduce the area's carbon footprint, enhance biodiversity, manage water resources, and recognize and preserve the area's natural habitat (City of Nanaimo, 2013). The City uses twelve guiding principles to help achieve the goal of a sustainable Harewood (City of Nanaimo, 2013) and the Five Acres Farm Project aims to help meet ten of them (Appendix A).

⁴ Note: Parcel limit is outlined in red.

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In summary, the activities occurring on 933 Park Ave currently provides Harewood with open green space, including a wetland area that houses native plant and animal species, locally sourced foods, volunteer and employment opportunities, agricultural heritage, and picturesque views (Figure 5). In the future, the Five Acres Farm could provide public space for the residents of the neighbourhood to enjoy its natural beauty. These attributes will be explained in more detail in the sections that follow.



Figure 5: The picturesque Five Acres Farm against the backdrop of Mount Benson⁵

3.0 History

3.1 Harewood in the 1800s

Before acquiring its current name by European settlers, Harewood was known as Wakesiah by the local Snuneymuxw First Nation, which translates as “far away” (City of Nanaimo, 2013). It was given this name as it was considered a “place of peace and retreat” (City of Nanaimo, 2013, p. 7). In 1863, Captain Horace Douglas Lascelles, a relative of the third Earl of Harewood and an officer in the Royal Navy, bought 9000 acres with Dr. Alfred Robson Benson in the Wakesiah area (City of Nanaimo, 2013). The two men later collaborated to form the Harewood Coal Company, opening the Harewood mine located southwest of the current Harewood neighbourhood (City of Nanaimo, 2013). However, in 1869 the company folded following the death of Lascelles and the inability to compete with the Vancouver Coal Company and the Wellington Collieries, resulting in the closure of the Harewood mine in 1877 (City of Nanaimo, 2013).

In 1886, Samuel Robins, the superintendent of the Vancouver Coal and Mining Company, subdivided the region into five acre parcels, which he leased or sold to the company’s miners (Figure 6). This ensured that each mining family had enough land for a “home and garden, a few cows, and security for the future” (City of Nanaimo, 2013, p. 7). Robins’ progressive management and good relations with the miners was the foundation for settlement in Harewood, also historically known as Five Acres, where he “envisioned small-scale farming as an alternate means of sustaining mining families during coal market depressions (Figure 7)” (City of Nanaimo, 2014, p. 5).

⁵ Source: Photograph by Craig Evans

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Figure 6: Map of the City of Nanaimo with Five Acre Lots (Nanaimo Archives)^{6,7}

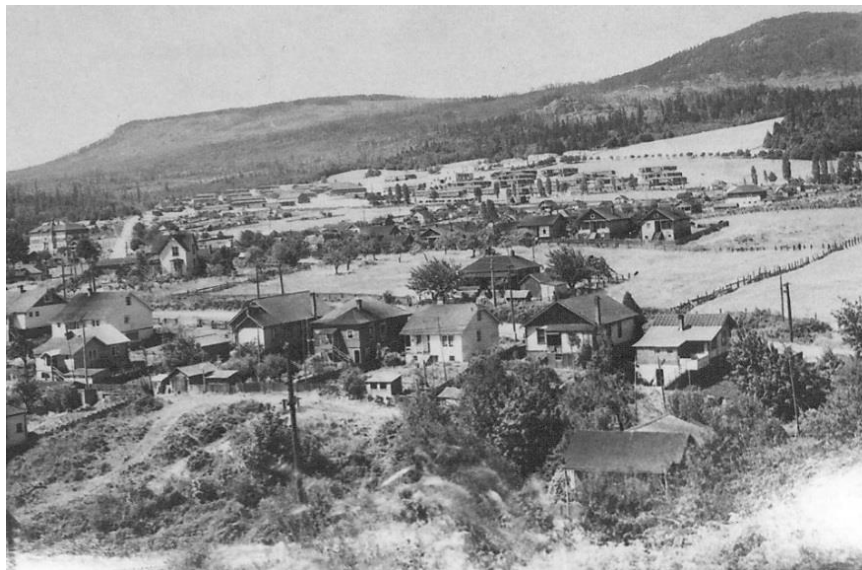


Figure 7: Early photograph of Harewood (Nanaimo Archives)

⁶ Note: The rectangle lots located above the downtown core represent the historical 5-acre lots

⁷ Source: Originally by J.J. Honeyman, Draughtsman EA. R. Heyland, C.E. Surveyor, 1881

3.2 Harewood from the 1900s to the Present Day

Through the years, Harewood has continued to develop and grow. At the beginning of the 1900s, and up until the middle of the century, the area consisted of rural agricultural land (see Appendix B). Development started slowly and by the late 1940s it became known as the Harewood Improvement District (City of Nanaimo, 2013). In the latter half of the century, development exploded and Harewood turned into a highly developed, urban/residential area with very little farm land remaining (see Appendix B). In 1975 it was amalgamated with the City of Nanaimo (City of Nanaimo, 2013), and has since continued to transition into a suburban residential neighbourhood from its rural farmland beginnings, with very few of those rural lands enduring into the present day (City of Nanaimo, 2013). The farm lands that do still exist are now highly fragmented and parceled into smaller lots surrounded by roads and neighborhoods.

3.3 The Five Acres Farm

Today, the Five Acres Farm is still used, in part, for agriculture. Not only do the land owners' farm produce on part of the land, but they have leased a large portion to NFS and GOFC for the past three years. These two local organizations have used the land for a demonstration organic farm. The current owners of 933 Park Avenue purchased the lot from the Kobe family in 1991 (pers. comm. with homeowner, Allan Torgerson). After an analysis of the aerial photos listed in Appendix B, it was determined that John Kobe (Nanaimo Archives) likely used the lot for farming purposes as well. Kobe was a miner (Nanaimo Archives), linking him to the historical purpose of the lots, and details from the photographs during the early-mid 1900's suggest he farmed the lot in some capacity. Furthermore, one of the owners before Kobe was Henry Weeks and his wife Ellen (Nanaimo Archives). It is not certain exactly when Weeks bought the land, and if Kobe bought it from him and at what time, but it is certain that Weeks' occupation at the time of land ownership of 933 Park Avenue was a farmer and teamster (Nanaimo Archives). This, and because the aerial photographs do not seem to suggest otherwise, lead us to believe that Weeks farmed the property in some capacity as well. In addition, the wetland, which appears to have started as a small tributary stream, has now expanded in size and filled in with a variety of species (see Appendix B), eliminating the open water characteristics it once had, but still remains an important environmental feature. Thus, it is clear that there is significant agricultural and ecological history at the location of the Five Acres Farm. The Five Acres Farm property at 933 Park Avenue remains undeveloped and offers an increasingly rare look at Harewood's history, demonstrating a sense of place that both longtime Harewood residents and newcomers can appreciate.

4.0 Demographics

In order to determine and evaluate the local community's interest in having an urban farm at 933 Park Avenue, a demographic analysis was conducted using the Harewood Neighbourhood Plan summary of the 2006 and 2011 Canada Census as well as the Census Profile of Nanaimo for 2016 (City of Nanaimo, 2013; Stats Canada, 2016). This data is important for understanding trends associated with supporting farmers markets and urban farms. A recent study done by the BC Association of Farmers' Markets and the Vancity Community Foundation found that markets attract a wide range of ages and income levels (Figure 8) (BC Association of Farmers' Markets, 2013). Moreover, a 2008 national farmers' market shopper profile showed that 70% of the principal shoppers at markets are ages 40 and over, while 30% are between the ages of 18 and 39 (Experience Renewal Solutions Inc., 2009). This statistic matches with the census done for the Nanaimo region, indicating that there would be a high potential of interest in supporting a local urban farm and access to fresh, local produce. Nanaimo's demographic profile, as well as the average household income of both Nanaimo and Harewood (Figure 9), are the main customers, and therefore likely supporters, of local farmers markets in the aforementioned study. The study found that 60% of market customers were between the ages of 36 and 66 (the largest demographic in Nanaimo), and an average income of \$25,000 - \$74,000 makes up nearly half (49%) of the

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customers. Nanaimo and Harewood's average household incomes correlates directly to this, offering more evidence that an urban farm would be supported in the region.

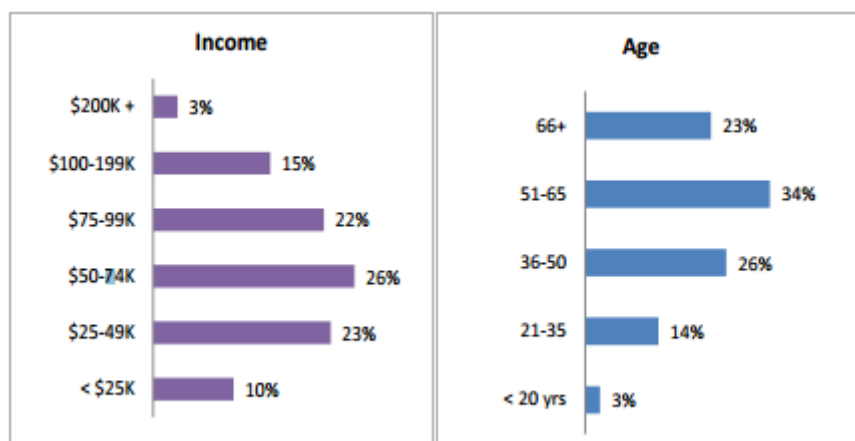


Figure 8: Household income and age of market customers in Vancouver (BC Association of Farmers' Markets, 2013).

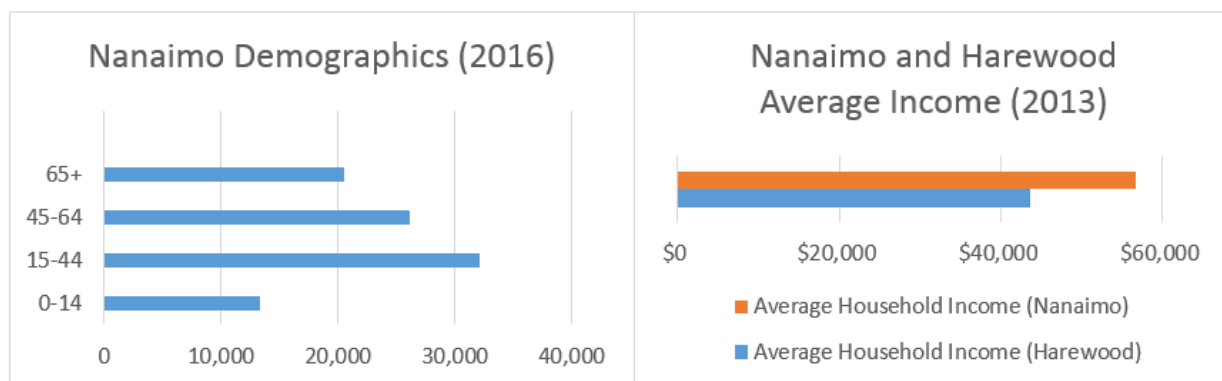


Figure 9: Nanaimo demographic profile (2016) and average household income for Nanaimo and Harewood (2013) (Experience Renewal Solutions Inc., 2009).

5.0 Community Perspective on the Five Acres Farm Project

5.1 Resident Survey

Of the 45 Nanaimo residents who completed the survey, 65% live within Harewood, in the direct vicinity of the Five Acres Farm. Most of these respondents conveyed that they would visit the property on any day at any time, and that they would travel there on foot, by personal vehicle, on bicycle, or through the public transit system. Convenience or accessibility, such as parking availability, were the primary concerns that might prevent respondents from visiting. The few safety concerns included encounters with bees on site and the use of hazardous tools.

In regards to residents' desired uses for the property, responses were fairly consistent. The survey indicated that residents most appreciate the parks and open space, community, and history of Harewood (Figure 10), but believe that farmers' markets, community gardens, and agricultural education are currently missing (Figure 11). Every respondent disclosed that they would be interested in visiting the property, most likely for: food purchase, agricultural activities,

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nature observation, or community gatherings (Figure 12). Finally, the residents' desires for future use of the property indicated the most prominent support was for producing food and preserving the wetland, and the least amount of interest was in hosting public events at the site (see Appendix C).

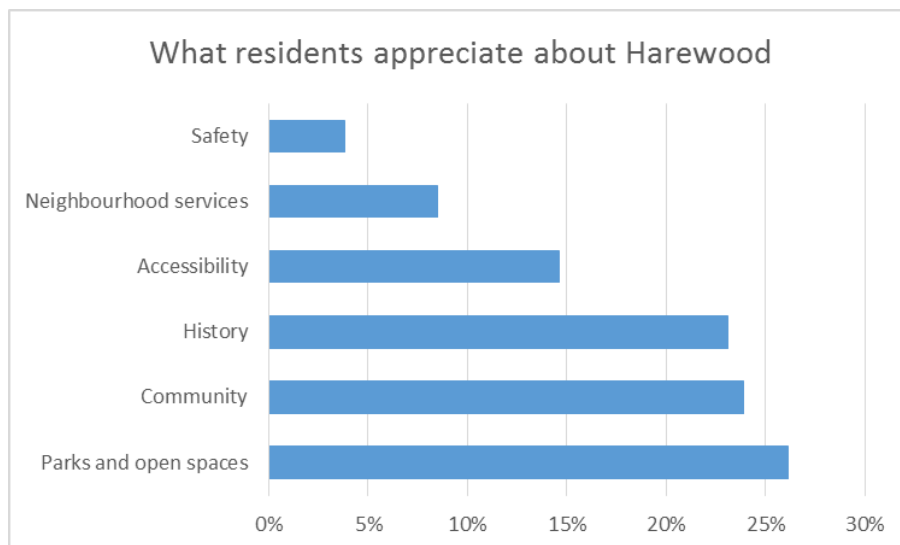


Figure 10: Percentage of Respondents that Indicated Appreciation of Different Aspects of Harewood

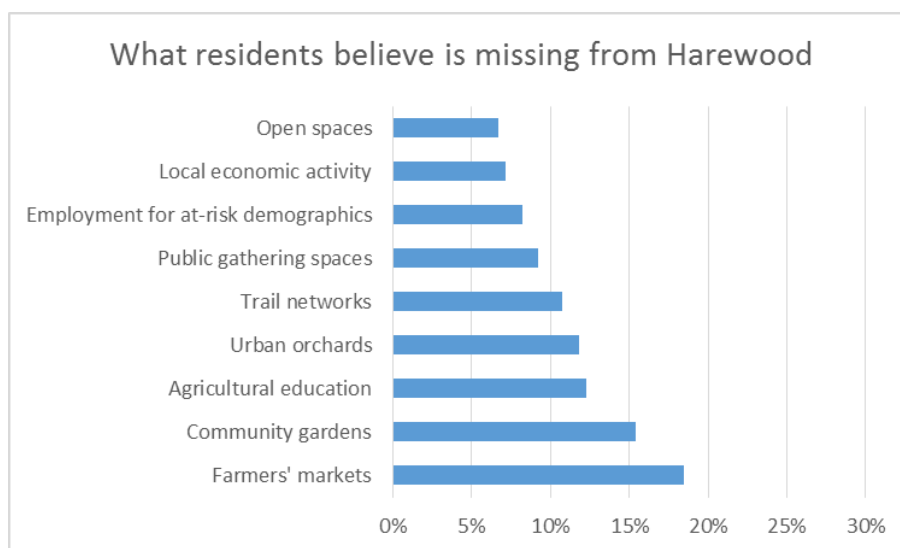


Figure 11: Percentage of Respondents that Indicated Absence of Features in Harewood

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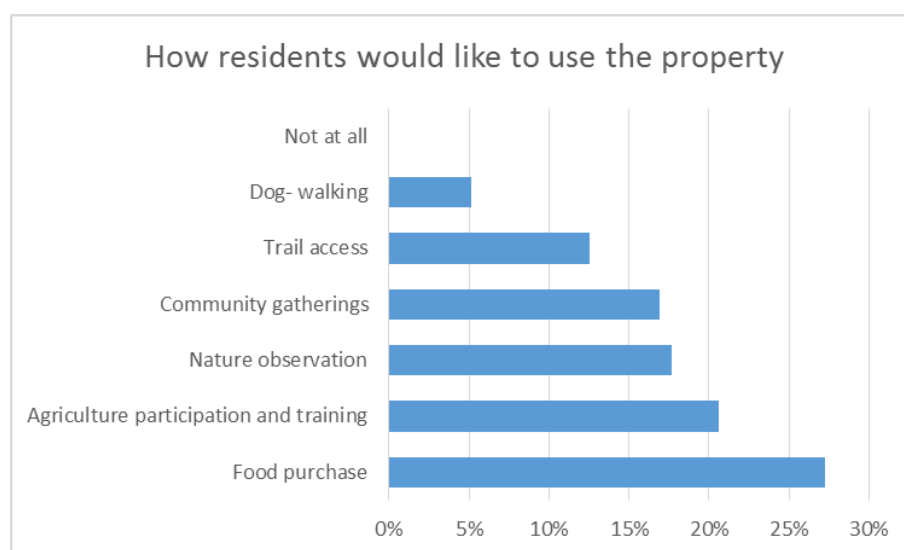


Figure 12: Percentage of Respondents that Indicated Interest in Using the Property for Activity

These statistics show that of the sample who volunteered to participate in the Five Acres Farm survey, support for the project is unanimous. Although residents vary on preferred uses of the property, all have indicated interest in participating in some type of property activity (see Appendix c). The majority of the community would choose to limit development and keep the land principally natural. As participants summarized in their general comments, most stakeholders “really love what the property is being used for,” and think that “any development should be closely related to the current focus and preservation of the area”. Respondents hold value for the present natural environment which is unique within an urban setting and the educational value of agricultural productivity. The majority of respondents appreciate the historical and ecological qualities of Harewood and would like to see more agricultural activity. This is consistent with the current goals of the Five Acres Farm project.

5.2 Neighbourhood Open House

On July 25th, 2017 MABRRI researchers hosted a neighbourhood open house alongside NFS and GOFC. Residents of the surrounding neighbourhood were invited to attend via information cards that were deposited in their mailboxes. The general Nanaimo community was also invited via paper posters that were distributed in town, an article in the Nanaimo News Bulletin, and a radio announcement on Coast FM News. The purpose of the event was to inform the public of the current uses of the property and to gain their feedback on what they would like to see at the farm. Guests were invited to partake in a farm tour led by Craig Evans (GOFC), to purchase NFS’s produce grown at the site, and to visit an information booth set up by the MABRRI team. At our booth, guests had the opportunity to fill out a paper copy of the survey (described above in Section 4.1), write ideas on large flip charts that asked “How would you like to see the property used?,” and jot down ideas on a poster-sized version of the Property Attributes map (Figure 2) that asked “What would you like to see on the property?”.

The results of the survey are included in section 4.1 above. The majority of residents opted to fill out the survey rather than add to the flip charts or map, however some valuable feedback was still gained from these methods. On the large flip charts, resident suggestions focused on educational programs, community events, and agriculture (Table 1). Education programs included workshops on site, increased research by Vancouver Island University, and a pollinator garden for young children where they could pick and plant flower species. For community events, residents wanted to have a space where they could host gatherings on site. Agricultural suggestions included a weekly farmers’ market. Interestingly, one resident believed that Nanaimo has too many farmers’ markets already and would not like to see

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another one start at the Five Acres Farm. Other suggestions included more employment opportunities and the possibility of creating art projects out of the space.

Table 1: Resident Suggestions on “How would you like to see the property used?”

	Suggestion
Education	Workshops on backyard food production ⁸
	Agricultural education
	Research by VIU (on seed and plants)
	Pollinator garden for children
Community	Public events
	Community gatherings
	Bird walks
Agriculture	Growing food
	Weekly farmers market ⁹
	No farmers market
Other	Employment
	Art possibilities

The large map provided the least amount of feedback, with just three suggestions. One resident was a bird enthusiast and voiced his desire to have access to the wetland to photograph the migratory bird species. A different guest suggested planting a chestnut tree farm on the north side of the wetland, while another suggested planting Garry oaks and creating a Garry oak meadow on the south side of the wetland.

The results of the survey and neighbourhood open house clearly showcase community support for keeping the Five Acres Farm in fairly the same state it is in currently, especially in terms of the farm and wetland. While it is clear that residents and the community do not wish to see the area developed like the surrounding neighbourhoods, there are things they would like to see changed. Many would like to see a farmers’ market or farm stand on the property, a space for the community to garden and to gather, and access to the wetland.

6.0 Five Acres Farm Values

6.1 Agricultural

The Five Acres Farm provides a variety of agricultural services, including raising chickens, bees, growing fresh produce, and providing skills to community members and students from Vancouver Island University’s WEST program through both volunteer and paid positions (Vancouver Island University, n.d.). The farm also offers research opportunities for seed production, such as the carrot seed project that is currently ongoing on the property. But most importantly, the Five Acres Farm enhances food security within Harewood.

Julie Drolet writes that “food security exists when all people, at all times, have physical, social and economic access to sufficient, safe, and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (2012). In British Columbia, 26.3% of people reported that their eating habits were fair to poor, while 53.3% were overweight or obese (Provincial Health Services Authority [PHSA], 2014). One reason why so many people are going

⁸ Note: This suggestion was written four times on the flipchart and suggests a stronger community desired use of the lot than the other suggestions listed.

⁹ Note: This suggestion was written twice on the flipchart and suggests the same as mentioned above.

without healthy foods is due to a lack of access. Lack of access includes economic, social, and environmental factors that can either hinder or facilitate one's ability to obtain healthy foods (PHSA, 2014). About 18% of British Columbians indicated that they had insufficient time to eat healthy foods, 10% said that there was a lack of availability, and 19% said they don't eat healthy because of affordability (PHSA, 2014). This is an important point, as the Harewood demographic is on average of lower income than the rest of the city, with an average household income of \$43,684 versus a city wide average of \$56,744 (City of Nanaimo, 2013). Furthermore, more than half (53%) of renters in Harewood pay 30% or more of their gross income on rent (City of Nanaimo, 2013). The Five Acres Farm property thus can provide an ideal means of meeting the Harewood Neighbourhood Plan goal of "promoting a healthy lifestyle", which requires Harewood to support "the continued provision of quality parks and recreational opportunities, and the development of a sustainable foods system that promotes food self-sufficiency" (City of Nanaimo, 2013, p. 19). By maintaining urban agricultural spaces such as the Five Acres Farm, NFS and GOFC can provide, and potentially expand, their sustainable farming and food production which provides fresh produce for the surrounding community. Additionally, NFS provides healthy lunches for a number of elementary schools and other organizations in the community (Nanaimo Foodshare, n.d.). This service is essential for providing healthy foods, such as vegetables and sandwiches, to children that may not have access otherwise (Nanaimo Foodshare, n.d.). Through providing a space to continue to grow fresh vegetables, NFS and GOFC can help provide food security and improve student nutrition for those most at risk within our community.

The property can also support meeting the third principle of "Encouraging Local Economic Activity" by providing local jobs and opportunities (City of Nanaimo, p. 19). For example, as of 2012, farmers markets in British Columbia have grown by 147 %, with nearly \$170 million annually being put both directly and indirectly into the local economy (Connell, 2012). This is even more impressive considering that the total farmland used for crops has shrunk in British Columbia between 2001 and 2012, from 617,545 to 599,674 hectares (Ministry of Agriculture, 2011). Specifically, for the Nanaimo region, total farmland has shrunk from 12,081 to 7,938 hectares during this same time period (Ministry of Agriculture, 2013). By having a space for the NFS and GOFC to grow and sell local produce, both a healthy lifestyle and local economic activity can be enhanced, meeting the goals outlined in the Harewood Neighbourhood Plan.

6.2 Ecological

The wetland at 933 Park Avenue provides habitat for a variety of flora and fauna. Migratory and wetland specific bird species, such as Virginia Rails, Red-winged Blackbirds, and a variety of warbler species occur on the property (see Appendix D). The wetland also offers a diverse community of plant species, including ladies' tresses, Nootka rose, hardhack, cattail and a variety of sedges, rushes, and grasses. Deer are also observed regularly browsing through the open fields of the property and Pacific tree frogs are abundant surrounding the wetland (see Appendix D).

Wetlands also provide a variety of essential ecosystem services, such as absorbing and filtering sediments and pollutants, controlling runoff, recharging groundwater, and storing flood waters (Ministry of Environment, n.d.). With the expanding development in Harewood, wetlands like the one on the Five Acres Farm property are vital in receiving the excess runoff and storm waters that were once absorbed by the natural surfaces to avoid flooding and increased erosion.

A vegetation survey was completed on the wetland in order to understand the dominant species that occur there. Two MABRRI researchers ran a 20 meter transect into the wetland and completed a review of vegetation within two 5 x 5 meter quadrats. One quadrat was stationed within the wetland, while the other was stationed on the surrounding vegetation; this was so that researchers could identify the difference in species between those that were found within the standing water and those found along the edge. Table 2 outlines all vegetation surveyed throughout this process. After analyzing these species, it was determined that the wetland found on 933 Park Avenue is a marsh in the center

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where the open water is found, and is surrounded by a swamp (BC Wildlife Federation, 1996); these definitions are determined by the BC Wildlife Federation.

Table 2: Vegetation Survey Results

Classification on map	Species	Scientific Name	Native	Introduced
Marsh Species	Cattail	<i>Typha latifolia</i>	✓	
	Common mare's-tail	<i>Hippuris vulgaris</i>	✓	
	Pacific willow	<i>Salix lucida</i> ssp. <i>lasiandra</i>	✓	
	Purple-leaved willowherb	<i>Epilobium ciliatum</i>	✓	
	Water smartweed	<i>Polygonum amphibium</i>	✓	
Swamp Species	American bulrush	<i>Scirpus americanus</i>	✓	
	American vetch	<i>Vicia Americana</i>		✓
	Beaked sedge	<i>Carex rostrata</i>	✓	
	Common horsetail	<i>Equisetum arvense</i>	✓	
	Creeping buttercup	<i>Ranunculus repens</i>	✓	
	Hardhack	<i>Spiraea douglasii</i> ssp. <i>douglasii</i>	✓	
	Ladies' tresses	<i>Spiranthes romanzoffiana</i>	✓	
	Nootka rose	<i>Rosa nutkana</i>	✓	
	Purple-leaved willowherb	<i>Epilobium ciliatum</i>	✓	
	Reed canary grass	<i>Phalaris arundinacea</i>	✓	
	Small-flowered bulrush	<i>Scirpus microcarpus</i>	✓	
	Water-plantain	<i>Alisma plantago-aquatica</i>	✓	
Water smartweed	<i>Polygonum amphibium</i>	✓		

In addition to the vegetation survey, researchers observed other notable species found within the marsh and swamp, as well as the dominant species found within the open field areas and along the perimeter of the lot (Table 3). These were noted during many visits to the property. Finally, a map was made showcasing the general location of species (Figure 13) and should be used in collaboration with the two species tables (Table 2 & 3).

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Table 3: General Observation Species

Classification on map	Species	Scientific Name	Native	Introduced
Marsh Species	Small-flowered bulrush	<i>Scirpus microcarpus</i>	✓	
	Tule	<i>Scirpus lacustris</i>	✓	
	Water-plantain	<i>Alisma plantago-aquatica</i>	✓	
	Yellow-flag iris	<i>Iris pseudocorus</i>		✓
Swamp Species	Common forget-me-not	<i>Myosotis discolor</i>		✓
	Common rush	<i>Juncus effesus</i>	✓	
	Curled dock	<i>Rumex crispus</i>		✓
	Green Sedge	<i>Carex viridula</i>	✓	
	Pacific water-parsley	<i>Oenanthe sarmentosa</i>	✓	
	Slough sedge	<i>Carex obnupta</i>	✓	
	Wild carrot or Queen Anne's lace	<i>Daucus carota</i>		✓
Open Field Species	American vetch	<i>Vicia americana</i>		✓
	Ocean Spray	<i>Holodiscus discolor</i>	✓	
	Oxeye daisy	<i>Leucanthemum vulgare</i>		✓
	Self-heal or Heal-all	<i>Prunella vulgaris</i>		✓
	Tufted vetch or Bird vetch	<i>Vicia cracca</i>		✓
	Western buttercup	<i>Ranunculus occidentalis</i>	✓	
	Yellow rattle	<i>Rhinanthus minor</i>	✓	
	Purple-leaved willowherb	<i>Epilobium cilatum</i>	✓	
South & Southwest Perimeter Species	Common lilac	<i>Syringa vulgaris</i>		✓
	Common snowberry	<i>Symphoricarpos albus</i>	✓	
	Douglas Fir	<i>Pseudotsuga menziessi</i>	✓	
	Saskatoon	<i>Amelanchier alnifolia</i>	✓	
	Thimbleberry	<i>Rubus parviflorus</i>	✓	

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Figure 13: Map of Dominant Vegetation Species at the Five Acres Farm¹⁰

6.3 Heritage

The Five Acres Farm property, and the sustainable land use that occurs there, represents a disappearing cultural landscape in the region. As outlined in Section 3.0, Harewood was originally a sprawling agricultural land base and bread basket for the Nanaimo region, but it has shifted through time to become a heavily urbanized and expanding residential area. However, the agricultural heritage, and the sense of place it invokes, while declining quickly, is still intact, through the hard efforts of community minded peoples, such as the team at the Five Acres Farm, who continue the tradition of small scale farming.

The Five Acres Farm property, being one of Nanaimo's last historical five-acre lots still hangs on to its mining heritage as well (Section 3.0). Harewood's mining history did not occur that long ago. In fact, the property has only seen two new owners since a mining family used it for its original purpose. The Five Acres Farm is an integral part of Harewood's coal mining history, and provides a rare opportunity to preserve the community's character, as outlined in the Harewood Neighbourhood Plan (City of Nanaimo, 2013) (see Appendix A). In addition, the natural wetland and open space speaks to the ecological heritage of Harewood as a natural "place of peace and retreat" valued by Snuneymuxw First Nation (City of Nanaimo, 2013, p. 7).

¹⁰ Source: Imagery for the main map obtained from the City of Nanaimo Engineering Department's GIS Orthophotos (#562 & #563); imagery for inset map obtained from Esri's online imagery database; parcel limit shapefile obtained from the City of Nanaimo Zoning CityMap (933 Park Avenue Parcel Graphic); vegetation data collected by the Mount Arrowsmith Biosphere Region Research Institute through both a vegetation survey and general observations.

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In summary, the Five Acres Farm holds many agricultural, ecological, and heritage values that make the property valuable in its current state, and that speak to many of the guiding principles of the Harewood Neighbourhood Plan.

7.0 Discussion & Recommendations

Through fieldwork, resident surveys (Appendix C) and a neighbourhood open house (Section 4.2), MABRRI researchers were able to gain valuable feedback from the community. If Nanaimo Foodshare Society and Growing Opportunities Farm Community Co-op are interested in gaining increased community support to help with purchasing the Five Acres Farm in the future, we suggest the following recommendations to help them do so.

7.1 Agriculture and Food Sustainability

Firstly, the public generally admires the current uses of the farm portion of the property, so much so that they would like to become more involved. The development of a farm stand or farmers' market is at the forefront of this, as residents are very interested in being able to buy fresh, locally-sourced produce right in their neighborhood. The public would also like to become involved with educational programs at the farm. Although NFS already runs volunteer-based programs on the property that residents could become involved with, many were not aware that this was possible. MABRRI suggests that NFS increase awareness of their programs at the farm as well as considers creating a new program that is less intensive for seniors and children.

7.2 Environmental

The public also suggested that they would like to see the wetland preserved. This may involve having a complete environmental site assessment of the wetland done to determine its current status, health, and function. Once the state of the wetland is determined, an appropriate management plan can be created and implemented to aid in maintaining the health and functionality of the wetland, and to avoid the degradation of it. This should be done in a reasonable timeframe, as the conversion of natural forest lands to urbanized neighbourhoods around the Five Acres Farm property has likely changed the hydrology of the tributary stream leading into the wetland, thus changing the characteristics and functions of it. This can be seen in the historical air photos (Appendix B), where the wetland was once open water, but has been altered significantly to become densely vegetated. By conducting an environmental assessment, the wetland can be properly classified and restoration or remediation actions can be taken (if needed) to make sure that surrounding land use changes have not negatively impacted it. Therefore, MABRRI recommends, in accordance with the public's suggestions, that the wetland be preserved in its current state to ensure that the diverse ecological community, including the variety of bird, amphibian, mammal, and plant species that were observed during site visits, is not threatened or extirpated from the property. This suggestion may be supported by extending the existing covenant to all of the properties situated on the wetland, including the 933 Park Avenue, to ensure development does not encroach or disturb the sensitive ecosystem.

7.3 Public Access

In response to the feedback from residents regarding interest in public access to the property, the Mount Arrowsmith Biosphere Region Research Institute suggests a low-impact trail network through the southwest quadrant of 933 Park Avenue (Figure 14). The proposed trail would begin at the southwest corner of the lot, and would require the installation of a gate to allow residents along Alpen Way, and the surrounding neighbourhood, to access the property by way of Allies Place. We suggest that the trail stay along the fence line, and a small picnic area be situated not far from this trail, so as to limit any compaction of soils and vegetation in the open fields. MABRRI also proposes the installation of a small (3 x 2 m) observation platform on the edge of the wetland, to allow bird-enthusiasts the opportunity to photograph the

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many interesting bird species of the wetland. The observation platform should be elevated above the ground so as to protect it from potential flood events, to limit the impact on the soil and vegetation, and to allow small animals, such as rodents, frogs, and birds, to go under the platform. We also propose the continuation of the trail from the observation platform along the wetland and across a small portion of the open field, so that visitors can gain access to NFS's agricultural farm and the potential future farm stand. This trail would require the installation of a bridge over the stream in case the stream were to be daylighted in the future, as suggested in the Harewood Neighbourhood Plan.



Figure 14: Suggested Trail Network for 933 Park Avenue¹¹

7.4 General Recommendations

The public who participated in the neighbourhood open house and/or the resident survey favored keeping the Five Acres Farm as an agricultural space for the community to gather, buy food, participate in farming, and to observe nature. The community values the open spaces, local agriculture, and the historical characteristics, such as the Five Acres Farm, that creates Harewood's unique sense of place, differentiating it from the surrounding neighbourhoods. These values, in addition to the ecological values of the wetland, suggests that the Five Acres Farm property should be preserved as it is and should see as little development as possible.

As a result of MABRRI's research and community feedback, we suggest that Nanaimo Foodshare and Growing Opportunities Farm Community Co-op continue their efforts, through a clear vision for the future of the site and a strong

¹¹ Imagery for the main map obtained from the City of Nanaimo Engineering Department's GIS Orthophotos (#562 & #563); imagery for inset map obtained from Esri's online imagery database; parcel limit shapefile obtained from the City of Nanaimo Zoning CityMap (933 Park Avenue Parcel Graphic); proposed trail network created by the Mount Arrowsmith Biosphere Region

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strategy that will help attain the goal of purchasing the property. Through the resident survey and open house, it became apparent that the community support is strong, thus having further public outreach events and greater community awareness will only strengthen support for protecting and securing the property from development. Therefore, having different community stakeholders, such as school groups, including children from Park Avenue Elementary School and John Barsby Secondary School, visit the farm to learn about local agriculture and food security will help with gaining support from the wider community.

The Five Acre Farm has a unique opportunity to provide an urban farm centered in a neighbourhood that has seen dramatic changes over the last century. From its agricultural past to the expanding residential suburbs, Harewood's five acre parcels are disappearing quickly through development, and now is the chance to protect and save one of the few remaining. MABRRI's research has concluded that the community support for the farm and the importance of the sensitive wetland ecosystem are worth protecting. Furthermore, many of the guiding principles in the Harewood Neighbourhood Plan compliment what Nanaimo Foodshare Society and Growing Opportunities Farm Community Co-op are currently doing at the property.

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Appendix A

Guiding Principles of the Harewood Neighbourhood Plan

Table 4: The Ten Guiding Principles of the Harewood Neighbourhood Plan that the Five Acres Farm Meets

Guiding Principle	Description of Principle	How the Five Acres Farm meets this principle
1) Work Toward a Sustainable Community	“An older, well established neighbourhood, Harewood residents are committed to building a vibrant community that balances social, economic and environmental factors. Sustainability will be achieved through best practices in transportation choices, building design and energy conservation techniques, densification, green infrastructure and open space” (City of Nanaimo, 2013, p. 18)	As an urban farm, the Five Acres Farm provides an open space that could eventually house public pathways for residents of the area to enjoy the natural beauty.
2) Develop a Strong Sense of Community	“The Harewood neighbourhood is one of strong community ties, and is committed to preserving and enhancing its distinct sense of place. Development and activities are encouraged that improve neighbourhood vitality, promote a sense of community pride and of feeling at home, embrace multiculturalism, and encourage public enjoyment of local amenities and events” (City of Nanaimo, 2013, p. 18)	The Five Acres Farm provides a space for community members to farm and learn together. In the future, it could house a public gathering space as well.
3) Preserve Community Character	“Harewood will strive to build upon its unique sense of place as one of Nanaimo’s oldest neighbourhoods, with its distinctive topography, proximity to downtown and nearby public institutions, and its historically rural and agricultural character, and contribution toward the community’s coal mining history. Character should be reflected through quality building design, scale of built form, and community improvements” (City of Nanaimo, 2013, p. 18)	An urban farm located on one of the last remaining historical five acre lots that were initially developed during Harewood’s coal mining days guarantees the preservation of Harewood’s historical character.
4) Foster a Complete, Mixed Use Community	“Harewood is a vibrant neighbourhood that encourages a mix of uses for living, working, shopping and playing within the area. It strives for self reliance while providing support and amenities to its residents, the University, and the greater community. Mixed use developments are particularly encouraged within the Corridor area of the neighbourhood” (City of Nanaimo, 2013, p. 18)	The Five Acres Farm, with its agricultural activity, volunteer and paid work opportunities, and collaboration with the University’s WEST program, meets this guiding principle perfectly.
7) Encourage Local Economic Activity	“A vibrant economy that supports and enhances the neighbourhood is highly encouraged. Local business and employment opportunities should contribute to products and services satisfying the needs of the neighbourhood, while encouraging innovation and adaptability. Commercial activity and community services are encouraged to locate within Corridor areas and local service centres to better serve the community” (City of Nanaimo, 2013, p. 19)	The Five Acres Farm provides residents of Harewood and the surrounding area with fresh, locally-grown produce and eggs as well as volunteer opportunities and paid student work opportunities.

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8) Promote a Healthy Lifestyle	“A healthy lifestyle is an integral part of a successful community. The Harewood neighbourhood supports the continued provision of quality parks and recreational opportunities, and the development of a sustainable food system that promotes food self-sufficiency through education, engagement and land use activities” (City of Nanaimo, 2013, p. 19)	By having food grown and sold within the limits of Harewood, as well as providing residents with the opportunity to learn how to farm, the Five Acres Farm directly promotes healthy lifestyles and food self-sufficiency.
9) Protect Views and Vistas	“The Harewood neighbourhood strongly supports maintaining key views found within the area, and particularly those views to Mount Benson and the waterfront” (City of Nanaimo, 2013, p. 20)	The Five Acres Farm sits against the backdrop of Mount Benson. If other residential buildings, especially apartment buildings were to be constructed in that space, the surrounding residence may no longer have a clear view of Mount Benson. Furthermore, we suggest that the natural beauty of the Farm creates a picturesque view of its own (Figure 5).
10) Preserve and Enhance the Natural Environment and Open Spaces	“Harewood is a unique neighbourhood with watercourses, open spaces, hillsides and valleys. The neighbourhood is committed to improving its open space and environmental quality through expansion and connectivity of its parks and trails network, enhanced biodiversity and ecological improvements, and development of a green street program that enhances the ecological function of the streetscape” (City of Nanaimo, 2013, p. 20)	Development on the Five Acres Farm would directly contradict this guiding principle; the ecological value of the wetland and surrounding meadow found on the property should be protected through this guiding principle alone. In addition, the Five Acres Farm provides an exceptional opportunity to create more trails within Harewood in the future.
11) Provide Quality Meeting Places	“The Harewood neighbourhood supports additional meeting places throughout the neighbourhood that encourage community gathering and enrich the lives of local residents and visitors. Meeting places are identified as both outdoor and indoor venues that can be used for community meetings and activities, or as public places found along the streets for informal neighbourhood gatherings” (City of Nanaimo, 2013, p. 20)	The Five Acres Farm could eventually house picnic tables in the southwest corner of the property and a gate could be incorporated into the southwest fence line, which would provide direct access to Allies Place and the residents that live along Alpen Way (Figure 9).
12) Ensure a Safe Community	“The Harewood neighbourhood places great importance on crime prevention, public safety, and decreasing undesirable activities. Intensified efforts to create a safer community through neighbourhood involvement, crime prevention, maintenance and cleanup activities, and enhanced public spaces, are encouraged” (City of Nanaimo, 2013, p. 20)	In the future, the Five Acres Farm could provide the open, safe public space that this guiding principle outlines.

Appendix B

Aerial Photographs of Harewood and the Five Acres Farm

The land use changes can be starkly seen in the figures below, as large parcels of farm land and open spaces occupied much of the southern section of Harewood. These parcels have since been largely developed for housing, changing the agricultural character that once defined Harewood. However, the Five Acres Farm property at 933 Park Avenue (circled in yellow) remains undeveloped and offers an increasingly rare look at Harewood's historical agricultural past, demonstrating a sense of place that both longtime Harewood residents and newcomers can appreciate.

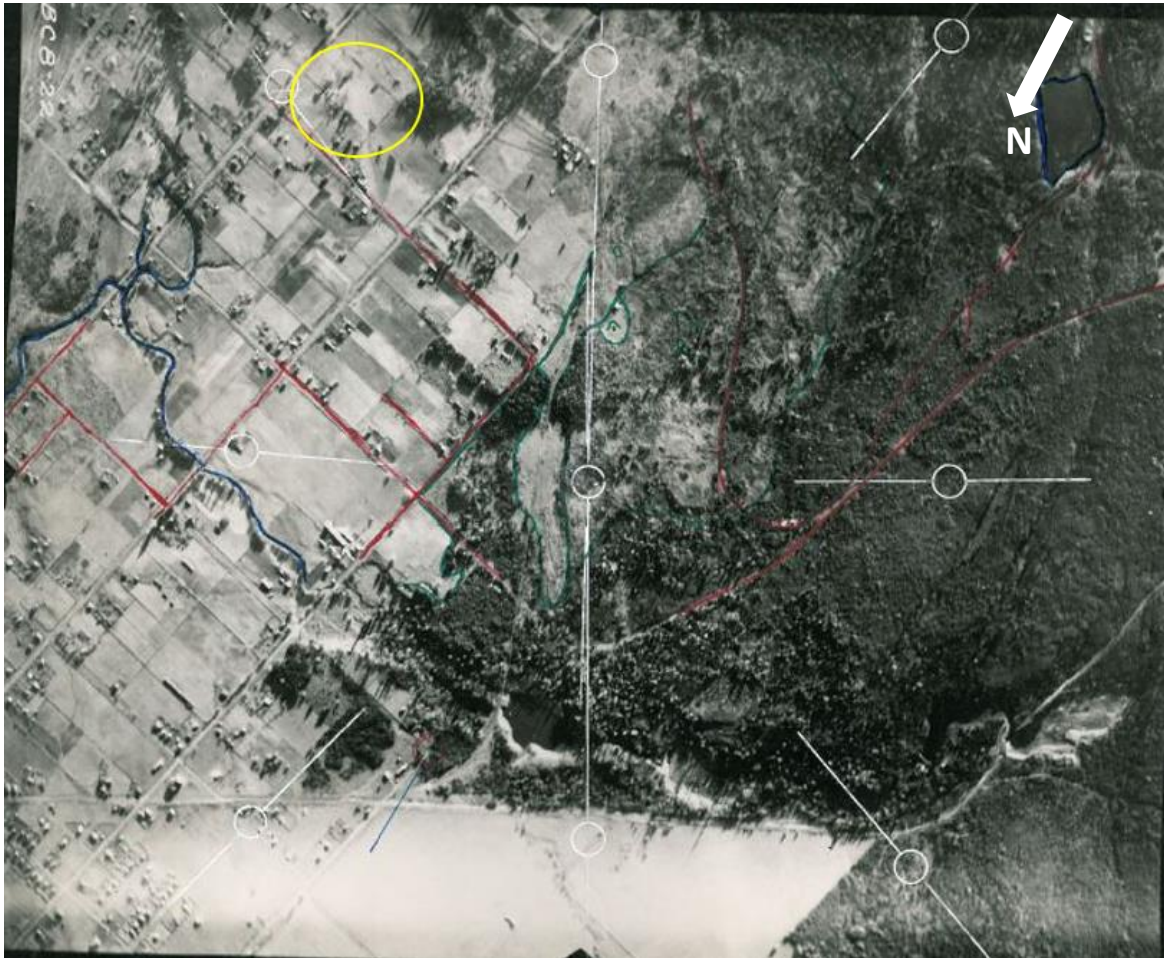


Figure 15: Five Acres Farm Property, 1936 (Geographic Information Center)¹²

¹² Note: The primary land use appears to be agriculture. The population density is still low, with most homes being on large land parcels. The wetland on the property appears to be small, with open water characteristics.

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Figure 16: Five Acres Farm Property, 1951 (Geographic Information Center)¹³

¹³ Note: Urbanization appears to be encroaching from the north into Harewood, however there is still large parcels of land being used for agriculture purposes throughout the region

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Figure 17: Five Acres Farm Property, 1976. (Geographic Information Center)¹⁴

¹⁴ Note: Urbanization and the loss of agricultural lands in Harewood continues, with new neighbourhoods appearing throughout the surrounding area. The wetland does not appear to have changed significantly.

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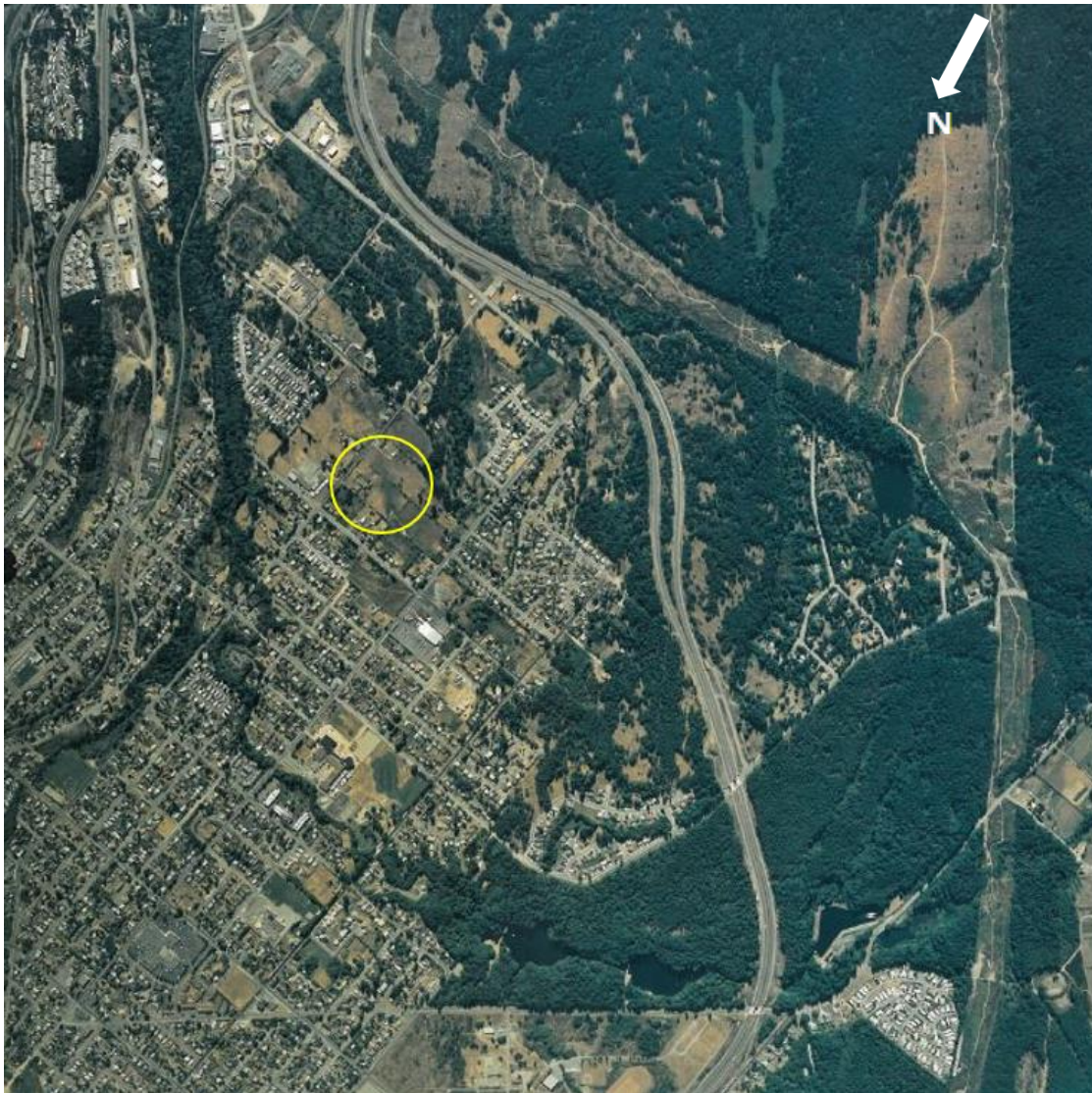


Figure 18: Five Acres Farm Property, 1998. (Geographic Information Center)¹⁵

¹⁵ Note: Development of properties surrounding the Five Acres Farm continues, mainly for residential uses.

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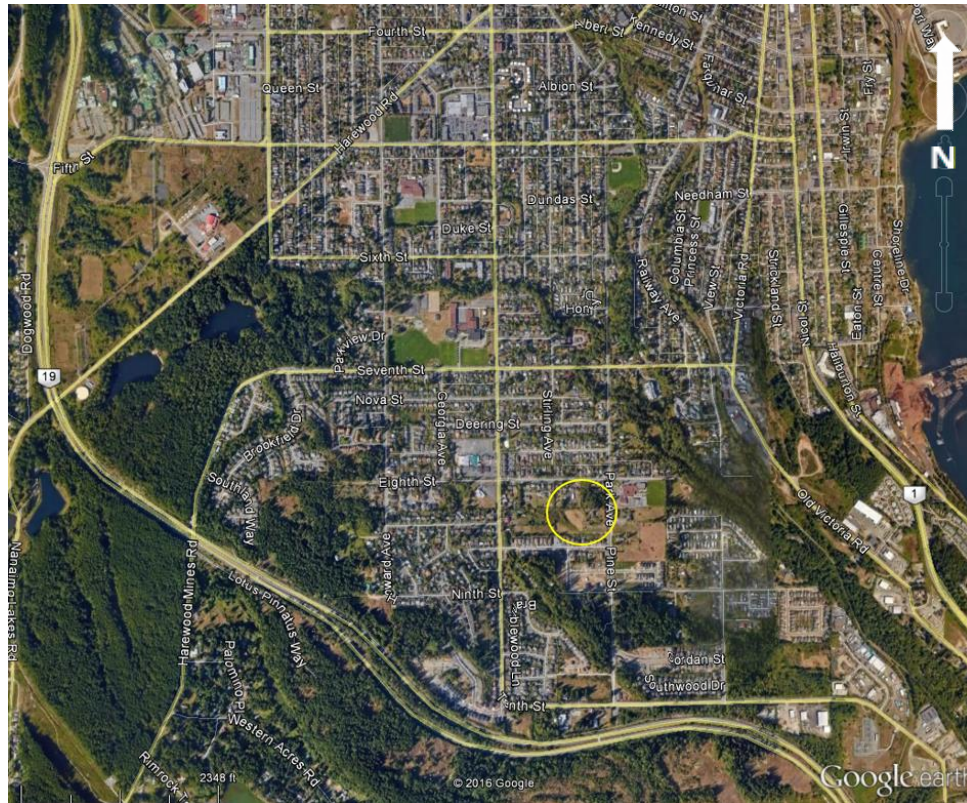


Figure 19: Five Acres Farm Property, 2016 (Google Earth)¹⁶



Figure 20: Five Acres Farm Property (outlined in red), 2016 (Google Earth)¹⁷

¹⁶ Note: Most recently, urbanization continues to take place around the Five Acres Farm, including the neighbouring property (not seen in the photo), with new neighbourhoods emerging.

¹⁷ Note: The property parcel is outlined in red. The wetland (outlined in blue) has filled in significantly with willow, cattail and other wetland species.

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Appendix C

Survey Results¹⁸Question 1: Do you live in Harewood?¹⁹

Answer Choices	Responses (%)
Yes	65.00
No	14.00

Question 2: How long have you lived in Harewood?²⁰

Answer Choices	Responses (%)
Less than 2 years	12.50
2 to 5 years	10.00
6 to 10 years	17.50
Over 10 years	32.50
I do not live in Harewood	27.50

Question 3: How old are you?

Answer Choices	Responses (%)
18 years old or younger	0.00
19 to 35 years old	24.44
36 to 59 years old	35.56
60 years or older	40.00

Question 4: How many people currently live in your household?

Answer Choices	Responses (%)
Just myself	22.22
2, including myself	31.11
3 to 5, including myself	44.44
More than 5, including myself	2.22

Question 5: What agricultural activities do you participate in?²¹

Answer Choices	# of times it was chosen (out of 99)	% of Total
Backyard gardening	38	38.38
Community gardening	9	9.09
Farmers' markets	30	30.30
Food boxes	1	1.01
I do not participate in agricultural activities, but I am interested in starting	2	2.02
I do not participate in agricultural activities, and I am not interested in starting	1	1.01

¹⁸ Note: There was a total of 45 respondents that filled out this survey¹⁹ Note: 5 respondents skipped this question²⁰ Note: 5 respondents skipped this question²¹ Note: Respondents were asked to choose all that applied; of the 45 respondents, 99 choices were chosen

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Question 6: What aspects of Harewood do you appreciate?²²

Answer Choices	# of times it was chosen (out of 130)	% of Total
The history	30	23.08
The parks and open spaces	34	26.15
The community	31	23.85
The neighbourhood services	11	8.46
The accessibility	19	14.62
The safety	5	3.85

Question 7: What do you believe is currently missing from Harewood?²³

Answer Choices	# of times it was chosen (out of 195)	% of Total
Open spaces	13	6.67
Local economic activity	14	7.18
Employment for at-risk demographics	16	8.21
Public gathering spaces	18	9.23
Trail networks	21	10.77
Urban orchards	23	11.79
Agricultural education	24	12.31
Community gardens	30	15.38
Farmers' markets	36	18.46

Question 8: Have you ever accessed the property? (933 Park Avenue)²⁴

Answer Choices	Responses (%)
Yes	47.62
No	52.38

Question 9: When you visited, what did you use the property for?²⁵

Answer Choices	# of times it was chosen (out of 33)	% of Total
Volunteer farming	3	9.09
Paid farming	4	12.12
Visiting the residents	6	18.18
Nature observation	4	12.12
Dog-walking	1	3.03
I have never been to the property	15	45.45

²² Note: 3 respondents skipped this question; respondents were asked to choose all that applied; of the 42 respondents, 130 choices were chosen

²³ Note: 4 respondents skipped this question; respondents were asked to choose all that applied, of the 41 respondents, 195 choices were chosen

²⁴ Note: 3 respondents skipped this question

²⁵ Note: 15 respondents skipped this question; respondents were asked to choose all that applied, of the 30 respondents, 33 choices were chosen

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Question 10: If you were to visit, what would you like to use the property for?²⁶

Answer Choices	# of times it was chosen (out of 136)	% of Total
Trail access	17	12.50
Food purchase	37	27.21
Nature observation	24	17.65
Agriculture participation and training	28	20.59
Community gatherings	23	16.91
Dog-walking	7	5.15
I would not like to use the property	0	0.00

Question 11: If you were to visit the property, how would you get there?²⁷

Answer Choices	# of times it was chosen (out of 43)	% of Total
Personal vehicle	17	39.53
City bus	4	9.30
Taxi	0	0.00
Bicycle	6	13.95
Walk	16	37.21
I would not like to visit the property	0	0.00

Question 12: What day and time of day would you most likely visit the property?²⁸

Answer Choices		# of times it was chosen (out of 95)	% of Total
Weekends	Morning	22	23.16
	Afternoon	15	15.79
	Evening	8	8.42
Week days	Morning	7	7.37
	Afternoon	12	12.63
	Evening	10	10.53
Any day and time		21	22.11
I would not like to visit the property		0	0.00

²⁶ Note: 5 respondents skipped this question; respondents were asked to choose all that applied, of the 40 respondents, 136 choices were chosen

²⁷ Note: 2 respondents skipped this question; respondents were asked to choose all that applied, of the 43 respondents, 43 choices were chosen

²⁸ Note: 2 respondents skipped this question; respondents were asked to choose all that applied; of the 43 respondents, 95 choices were chosen

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Question 13: What would prevent you from visiting the property?²⁹

Answer Choices	# of times it was chosen (out of 47)	% of Total
Accessibility	5	10.64
Transportation	1	2.13
Facilities (e.g. washrooms)	4	8.51
Cleanliness	1	2.13
Proximity to my residence	6	12.77
Animals (e.g. chickens, deer)	0	0.00
Interest	1	2.13
Safety concerns	1	2.13
Nothing is preventing me from visiting the property	28	59.57

Question 14: If you have safety concerns about visiting the property, what are they?³⁰

Answer Choices	# of times it was chosen (out of 34)	% of Total
Animals (e.g. chickens, deer)	0	0.00
Allergies	0	0.00
Trail maintenance	1	2.94
Hazardous tools	2	5.88
Interacting with the outdoors	0	0.00
I do not have any safety concerns	31	91.18

Question 15: How much development would you like to see at the property?³¹

Answer Choices	Responses (%)
None: 0%	72.50
Some: less than 49%	17.50
A lot: 50% to 99%	2.50
All: 100%	7.50

²⁹ Note: 3 respondents skipped this question; respondents were asked to choose all that applied; of the 42 respondents, 47 choices were chosen

³⁰ Note: 11 respondents skipped this question; respondents were asked to choose all that applied; of the 34 respondents, 34 choices were chosen

³¹ Note: 5 respondents skipped this question

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Question 16: On a scale of importance, what do you think should be the priorities for the Nanaimo Foodshare regarding the property over the next 5 years?³²

	Not at all important: I do not think this should be a priority (%)	Slightly important: I do not think this is a very important priority (%)	Moderately important: I think this is an important priority but should not be addressed first (%)	Very important: I think this is a main priority and should be addressed first (%)	I do not know (%)	# of answers per row
Preserving the wetland	0.00	0.00	22.50	72.50	5.00	40
Restoring the tributary that once connected to the Chase River	4.88	7.32	36.59	46.34	4.88	41
Hosting public events	2.50	27.50	42.50	25.00	2.50	40
Creating a community gathering space	5.00	25.00	37.50	30.00	2.50	40
Producing food	0.00	0.00	21.43	78.57	0.00	42
Selling food	2.50	5.00	37.50	52.50	2.50	40
Providing employment services for people at risk	5.00	10.00	40.00	40.00	5.00	40
Improving the trail network	7.32	34.15	26.83	29.27	2.44	41
Honoring First Nation heritage	14.63	21.95	21.95	36.59	4.88	41
Honoring mining and agricultural heritage	9.76	29.27	21.95	31.71	7.32	41

Question 17: Do you have any skills that you would like to use in a volunteer-capacity at the property?³³

Answer Choices	Responses (%)
Yes, I have experience with agricultural farming	17.24
Yes, I have experience with keeping bees	3.45
No, but I would like to volunteer to learn new skills	27.59
No, I would not like to volunteer at the farm	51.72

Question 18: Do you have any historical knowledge of this site or of Harewood, regarding land use that you would be willing to share?³⁴

Answer Choices	Responses (%)
Yes	7.32
No	90.24
If yes, please leave your email or phone number ³⁵	N/A

³² Note: 3 respondents skipped this question altogether; respondents were asked to choose one option for each row, however some skipped a row (the total number of respondents that answered each row is listed in the last column)

³³ Note: 16 respondents skipped this question

³⁴ Note: 4 respondents skipped this question

³⁵ Note: These responses are not included in the report to keep the confidentiality of the respondent. This information was passed on to Nanaimo Foodshare and Growing Opportunities Farm Community Co-op.

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Question 19: Please leave any general comments or question here. If you are asking a question, please provide us with contact information so that we can get back to you.³⁶

- “This is a great idea & a good idea to have an open farm tour for the community (open access)”
- “Most interested in buying food/next walking trail”
- “Find a way to get city council to recognize and IMPORTANTLY actively plan for and support food security and all its aspects”
- “Be nice to be kept as a working farm so children can see where + how food is grown that they eat. Maybe including animals from which we get food (eggs, etc.)”
- “Q8: What do you mean by ‘development’; this covers a broad range of activities”
- “A community garden with plots for rent would generate revenue for other projects on the property and sell out quickly! There is a demand – the developments here have no soil for a garden”
- “No more cutting down trees”
- “I love bees! More bees. Market would be great!”
- “The most important thing is preservation of the wetland”
- “Wish there were more properties like this instead of the cluster homes being built”
- “I really love what the property is being used for, love having access for the neighbourhood kids to learn about growing their own food”
- “I’m thrilled that you people are taking such effort and time to preserve this green space for so many (educational) opportunities and community connections with all of the development currently happening – it is becoming more important to save spaces such as these. Thank you so much! (Q8: I think the property needs to stay as it)”
- “I do not think the land should be developed. Only a barn/community space. It would be wonderful to continue to grow food, and expand the farm. A community building for events would be awesome, too.”
- “I didn’t quite understand the development question, but I do not think there should be any (or at least, substantial) residential sub-development, unless it’s purely for agricultural purposes or simply a living area for farmers. This area is over-developed residentially.”
- “Keep up the great work! Let’s save this property from just becoming another subdivision.”
- “I’m impressed with the activities on the property and very hopeful that the group will continue their work. I think any development should be closely related to the current focus and preservation of the area”
- “Thanks for all your help this summer!”
- “I was unclear of what you mean by ‘development’ in q#15. But, yes, build a bathroom or tool sheds or a classroom/kitchen as needed. I think there is enough other land space in Harewood for development for residences and retail.”
- “I love that you are doing community gardens in this location, sorry I was unable to attend the open house.”

³⁶ Note: 26 respondents skipped this question

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Appendix D

Observed Fauna Species

Table 5: Fauna Species Observed at the Five Acres Farm

	Species	Scientific name	Native	Introduced
Bird species	American Robin	<i>Turdus migratorius</i>	✓	
	Barn Swallow	<i>Hirundo rustica</i>	✓	
	Bewick's Wren	<i>Thryomanes bewickii</i>	✓	
	Chestnut-backed Chickadee	<i>Poecile rufescens</i>	✓	
	Common Yellowthroat	<i>Geothlypis trichas</i>	✓	
	Flycatcher spp.	<i>Empidonax spp.</i>	✓	
	House Sparrow	<i>Passer domesticus</i>		✓
	Red-winged blackbird	<i>Agelaius phoeniceus</i>	✓	
	Red-breasted Nuthatch	<i>Sitta canadensis</i>	✓	
	Rufous Hummingbird	<i>Selasphorus rufus</i>	✓	
	Song Sparrow	<i>Melospiza melodia</i>	✓	
	Spotted Towhee	<i>Pipilo maculatus</i>	✓	
	Tree Swallow	<i>Tachycineta bicolor</i>	✓	
Virginia Rail	<i>Rallus limicola</i>	✓		
Other	Black-Tailed Deer	<i>Odocoileus hemionus columbianus</i>	✓	
	Pacific Chorus Frog	<i>Pseudacris regilla</i>	✓	

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Appendix E

Vegetation Survey Notes

Table 6: Preliminary Notes

Preliminary Information	Date	August 9, 2017
	Observers	Curtis Rispin & Larissa Thelin
	Site Location	933 Park Avenue
Climate & Weather	Biogeoclimate Zone	Coastal Douglas Fir
	Weather	Smoky; approximately 20°C
Hydrology	Surface water temperature	21°C
	Surface pH	6.9

Table 7: Transect Notes

Reference Point	Object	Broken fence post
	Location	49° 8'32.83"N, 123° 56'48.31"W
Transect Description	Zone 1	Reference point to Edge of Marsh; Distance = 5m
	Zone 2	Edge of Marsh to End of Transect; Distance = 20 m
Quadrat Descriptions	Quadrat 1	Located in Zone 1; Size = 5 x 5 m
	Quadrat 2	Located in Zone 2 at 10 m mark; Size = 5 x 5 m

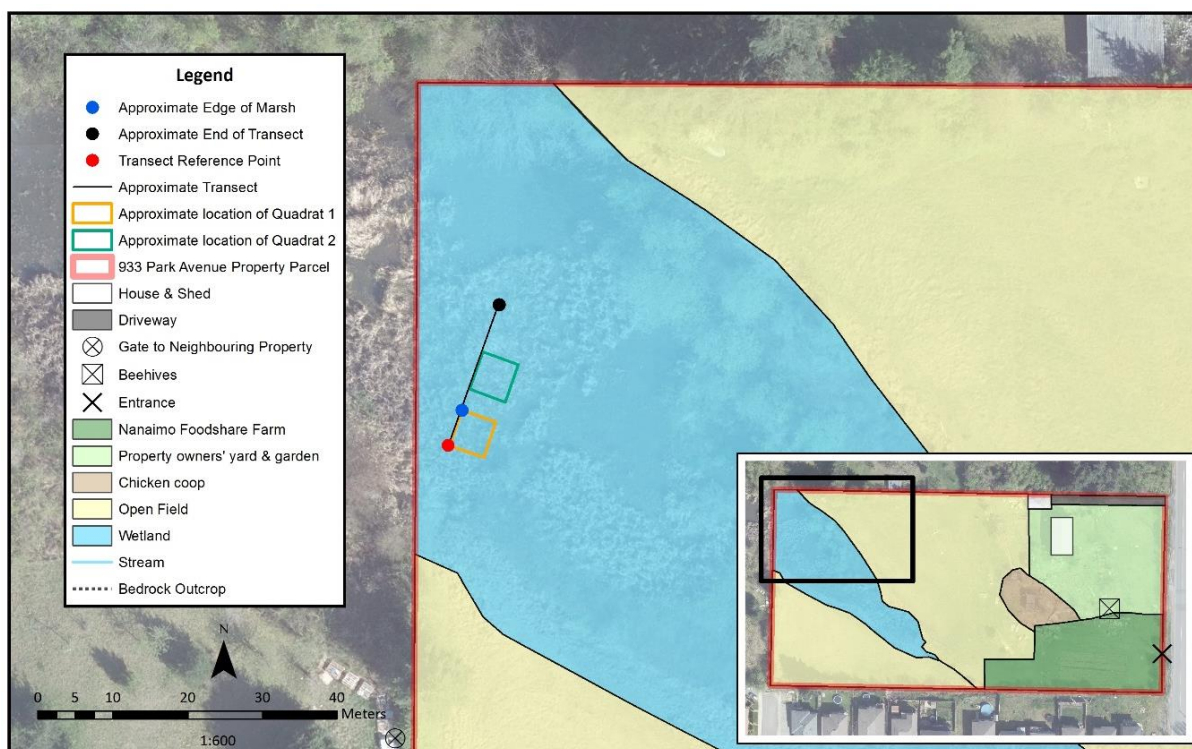


Figure 21: Location of Transect and Quadrats used in Vegetation Survey

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Table 8: Detailed Vegetation Survey Results

Classification on map	Species	Scientific Name	% Cover	Native	Introduced
Marsh Species (Zone 1)	Cattail	<i>Typha latifolia</i>	100	✓	
	Common mare's-tail	<i>Hippuris vulgaris</i>	10	✓	
	Pacific willow	<i>Salix lucida</i> <i>ssp. lasiandra</i>	15	✓	
	Purple-leaved willowherb	<i>Epilobium ciliatum</i>	5	✓	
	Water smartweed	<i>Polygonum amphibium</i>	10	✓	
Swamp Species (Zone 2)	American bulrush	<i>Scirpus americanus</i>	70	✓	
	American vetch	<i>Vicia Americana</i>	5		✓
	Beaked sedge	<i>Carex rostrata</i>	5	✓	
	Common horsetail	<i>Equisetum arvense</i>	10	✓	
	Creeping buttercup	<i>Ranunculus repens</i>	5	✓	
	Hardhack	<i>Spiraea douglasii</i> <i>ssp. douglasii</i>	40	✓	
	Ladies' tresses	<i>Spiranthes romanzoffiana</i>	1	✓	
	Nootka rose	<i>Rosa nutkana</i>	20	✓	
	Purple-leaved willowherb	<i>Epilobium ciliatum</i>	1	✓	
	Reed canary grass	<i>Phalaris arundinacea</i>	5	✓	
	Small-flowered bulrush	<i>Scirpus microcarpus</i>	30	✓	
	Water-plantain	<i>Alisma plantago-aquatica</i>	1	✓	
	Water smartweed	<i>Polygonum amphibium</i>	5	✓	