Langley Urban Agriculture Demonstration Project

Final Project Report and Site Plan

February, 2018

(Revised April, 2018)

Report Prepared By:

KPU | Institute for Sustainable Food Systems

Project Partners::

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Acknowledgments

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The Langley Urban Agriculture Demonstration Project (LUADP) is a planning and design collaboration between the City of Langley, Metro Vancouver and the Institute for Sustainable Food Systems (ISFS) at Kwantlen Polytechnic University. The project aims to bring urban agriculture, and related elements to a 23 acre (9 ha) BC Hydro transmission right-of-way (ROW) in the City of Langley. The detailed planning phase has been funded by Metro Vancouver, through the Sustainability Innovation Fund.

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KPU Institute for Sustainable Food Systems

The Institute for Sustainable Food Systems (ISFS) is an applied research and extension unit at Kwantlen Polytechnic University that investigates and supports regional food systems as key elements of sustainable communities. ISFS focuses predominantly on British Columbia but also works with research partners in other parts of Canada. ISFS provided technical expertise and led development of this plan.

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Metro Vancouver is a federation of 21 municipalities, one Electoral Area and one Treaty First Nation that collaboratively plans for and delivers regional-scale services. Its core services are drinking water, wastewater treatment and solid waste management. Metro Vancouver also regulates air quality, plans for urban growth, manages a regional parks system and provides affordable housing. The regional district is governed by a Board of Directors of elected officials from each local authority. Metro Vancouver provided funding for the detailed planning phase, through the Sustainability Innovation Fund.

Langley City
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The City of Langley is located within Metro Vancouver, and is designated as a Regional City Centres. It is situated on the southwest mainland coast of British Columbia, Canada. The City of Langley is neighboured in the north, east and south, by the Township of Langley and the City of Surrey in the west.
The City of Langley is the municipal partner on this project, as well as the owner of the land where the LUADP is being proposed. The city recognizes the potential for urban agriculture to contribute to goals in the City's sustainability framework, and be a show piece for the community.

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Executive Summary

The Langley Urban Agriculture Demonstration Project (LUADP) is the detailed planning process and design for a municipally supported urban agriculture on a site within a BC Hydro transmission right-of-way (hydro ROW) in the City of Langley. The planning process was completed between January 2017 and February 2018. This report documents the planning process, outlines the integration of ecological, educational and agricultural amenities, and makes recommendations for implementation and long-term management.

The proposed site plan features small scale food production, and significant areas dedicated to ecological restoration, including native plantings, habitat areas, and a pollinator corridor. Education is supported by an outdoor classroom, micro-production plots, and a demonstration orchard.

The site plan aims to create a community space that maintains passive recreation functions, connects to the City's existing network of parks and open space, and successfully integrates urban agriculture.

Traditional, community-driven urban agriculture projects have experienced success and failure worldwide. Growing interest and support from municipal partners will play a vital role in supporting these initiatives moving forward.

This report outlines considerations for a successful, municipally supported urban agriculture project in the City of Langley. The findings may also be a guide for other communities in Metro Vancouver undertaking similar projects.

A. Background

This report documents work to date on the Langley Urban Agriculture Demonstration Project (LUADP). The idea of urban agriculture was first proposed in 2010. The City of Langley, and academic partners recognized the potential of the project to achieve goals in the City's Sustainability Framework to create more opportunities for urban farming in the City.

At that time an initial concept plan for the site was developed, and partners moved forward to seek funding to support further planning and development phases. The remainder of this report documents the detailed planning phase.

1. Introduction

Urban agriculture is the activity of producing, processing and distributing food and other agricultural products on land in urban areas. The concept is often employed to address social and environmental sustainability in cities.

Despite the growing popularity of urban agriculture, and the local food movement, there are fundamental challenges, such as access to land, that must be addressed to move urban agriculture projects forward.

The LUADP can help address these barriers by developing a model for the urban agriculture on publicly owned land. The land is also located within a BC Hydro transmission right-of-way which means that the project could become a model for similar projects in other Metro Vancouver municipalities.

2. Site Assessment

Site assessment focuses on three main areas, gathering information that will help determine if the site is suitable for urban agriculture.

- Soil Analysis
- Context Analysis
- Site Analysis

Soil testing revealed no significant pollutants or heavy metal contamination, and it was recommended that the project team proceed with developing a concept plan.

Context and site analysis revealed potential opportunities and challenges for developing urban agriculture in this location.

There are also opportunities for urban agriculture to align with goals in the City's Sustainability Framework, as well as contributing to ongoing park enhancements, and social connectivity. There is also a commitments at the local government level to exploring new opportunities for urban agriculture in the City.

The project also aligns with the Metro 2040 Regional growth plan and with the Regional food System Strategy drafted by Metro Vancouver in 2011.

The site is well used for passive recreation, and valued by surrounding residents for the natural character, and wildlife habitat. Current use patterns will have a significant impact on how the site can be programmed for urban agriculture.

Assessment revealed challenges that could impact planning and implementation such as community buy in, soil quality and possible conflict with existing uses.

3. Urban Agriculture in Hydro Right-of-ways

Agriculture is considered a compatible us in hydro transmission right-of-ways. However, there are few examples of urban agriculture projects in these areas which means there is further investigation required to understand how urban

agriculture amenities can be designed and managed successfully within hydro ROWs.

Exposure to electric and magnetic fields (EMF) is often a concern when developing community amenities in, or near hydro transmission lines. Humans are exposed to EMF everywhere there is electrical current flowing. Research, conducted around the world, has not found significant cause and effect relationships between exposure to EMF. In most jurisdictions community amenity development in hydro ROWs proceeds, and the precautionary principle is employed.

This section summarizes the ongoing health related research into electric and magnetic field exposure and connects specifically to recommendations for public amenity design which include locating features away from overhead wires, and public education.

4. Planning and Design Process

Urban agriculture projects can involve lengthy consultation and public outreach processes, which are important in order to gain community support c and identify strategic project partners.

Participants from local and regional agencies, with possible interests in an urban agriculture project were engaged by the project team. Participants recognized community buy-in would be a significant factor in project success. Additional issues that could face this type of project including regulatory challenges, funding, servicing and evaluation.

The City of Langley then hosted community open houses to reach out to the public, and specifically to those living in the surrounding neighbourhood. At the first of two open houses the focus was to introduce the project, provide background information about urban agriculture, and get initial feedback.

The majority of those who attended the open houses did not support the development of urban agriculture on this site. Concerns expressed by the public included:

- Why was this site chosen for urban agriculture?
- Use serves those not living in neighbourhood
- Increased traffic and non-resident parking in neighbourhood
- Disruption to neighbourhood peace and quiet
- Loss of privacy
- Increased potential for crime and homelessness
- Safety concerns around powerlines (particularly for children)
- Pest infestation, particularly rats
- Poor aesthetics (shabby structures and garden plots)
- Nuisance from agricultural operations – dust, odours, pesticide use
- Loss of wildlife habitat

Those who did provide feedback generally favoured:

- Limiting the scale of urban agriculture
- Education focused amenities
- Maintaining and enhancing the trail network
- Maintain emphasis on passive recreation
- Protecting and enhancing wildlife habitat
- Restoring riparian and other environmentally sensitive areas

5. Site Plan

The plan for the LUADP site takes a balanced approach to urban agriculture, education, environmental restoration, and passive recreation.

The plan outlines the details of the site design highlighting three primary components: servicing and infrastructure, non-production amenities and production amenities.

Non-Production Amenities:

- Buffer Planting Areas
- Habitat Areas
- Pollinator Corridor

Production Amenities:

- The Farm
- The Classroom
- The Orchard

6. Management

Managing programming and production on the site will involve a coordination between stakeholders including and newly created Non-Profit Society, the City of Langley (as land owner), and BC Hydro. Engagement with community partners, the public will also be necessary to support programming, and site activities.

Operations of the site primarily consider how the production amenities will function, successfully meeting project goals and the needs of the community. Food production will be small scale and encouraging the public to participate as much as possible. Fruits and vegetables grown on the site can be distributed into the community in a variety of ways. The following methods can be explored:

- Community cultivation
- Food banks and gleaning programs
- Institutional procurement
- Farm gate sales
- Farmer's Markets

Both paid staff, and community volunteers will be required to support operations and programming on the site.

Coordination between stakeholders will be facilitated through the development of a site use agreement. The agreement will cover a number of topic and help to ensure that the expectations of all stakeholders are clear, and met.

Based on the type and scale of amenities, preliminary budgets have also been presented:

Total Capital Costs for LUADP:
$ 981,225.00

Total Annual Operating Costs for the LUADP:
$ 95,500.00

Operational expenses should be covered by a combination of grants, donations, and farm product sales.

7. Implementation

Developing a site for urban agriculture involves capital investments to develop the features and the infrastructure that supports urban agriculture. A phased approach is recommended that can be flexible to the availability of funding and resources. Beginning with a pre-development phase which involves establishing the management framework for the project and raising funds to begin development of the site. This is followed by four site development phases:

- **Phase 1:** Infrastructure and Site Servicing
- **Phase 2:** Amenity Development
- **Phase 3:** Habitat Restoration
- **Phase 4:** Naturalization

8. Conclusion

Urban agriculture is being embraced for the potential to address local level sustainability, and help build a more resilient food system. As land prices escalate, and available land for these project is increasingly scarce there is a need for creative and collaborative solutions for food production within urban boundaries.

The concept plan for the LUADP demonstrates a strategy for implementing urban agriculture on publicly owned land. It also provides an adaptable model for practicing urban agriculture in land located within hydro ROWs in other communities.

With the prepared concept plan, the next important steps include identifying community partners, and determining the level of volunteer support and community engagement. The concept plan will be presented to potential partners during recruitment.

Fundraising is also an important next step and a number of potential funding sources have been identified, including:

- Organizational grants
- Government grants
- Municipally supported grants
- Private sector partnerships
- Institutional partnerships

Both local and regional level partners recognized the potential for food production on currently unprogrammed public land. Hydro ROWs represent a type of available land where the potential for food production should be further explored through the LUADP. The plan represents a tangible plan for implementing urban agriculture in hydro transmission right-of-ways, and other publicly owned utility corridors.

Additionally, the learnings from this process can be applied to development of similar projects in other municipalities across Metro Vancouver.

Image Source: Adobe Stock Images, arinahabich

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A. Project Background

a. Early Concept Development–2010

In 2010, the City of Langley (the City) initiated an exploratory project with academic partners to develop a detailed plan and cost structure of a Municipally Supported Urban Agriculture (MSUA) demonstration project. This project was supported by municipal leaders because of the potential to contribute to goals in the City's Sustainability Framework. These contributions could include:

Energy, Climate Change and Air Quality

- Decrease greenhouse gas emissions by reducing transportation demands through providing local food provisions

Health, Safety and Well-Being

- Development of local food systems and support for local farmers and local food distribution
- Partnership opportunities for developing urban farms within the City

Local Economy

- Strengthening and diversifying the local economy and creating local jobs

Natural Areas, Parks and Recreation

- Establishing more community gardens
- Creating stewardship programs for parks and natural areas
- Developing and maintaining green ways

Solid Waste

- Developing composting programs

Water

- Reduce load on the storm water system through demonstration gardens, rain barrel programs, and education

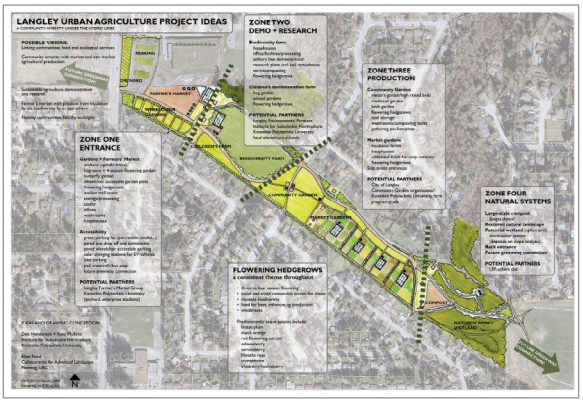

Figure 1: Langley Municipally Supported Urban Agriculture Early Concept Plan-2010. Prepared by the Institute for Sustainable Horticulture (KPU) and the Centre for Advanced Landscape Planning (UBC).

With sustainability in mind the project moved forward with the Institute for Sustainable Horticulture, sustainable food systems working group (now the Institute for Sustainable Food Systems) at Kwantlen Polytechnic University and the Collaborative Applied Landscape Planning (CALP) team at the University of British Columbia as partners.

In the initial concept for the site in 2010 the area divided into four distinct zones described below:

- **Zone 1:** The Entrance, is an area for public interaction and to host a farmers market, as well as for demonstration of sustainable accessibility features such as permeable parking areas, and bike parking.
- **Zone 2:** Demo and Research, will be an area dedicated to plots for research and demonstrations of organic gardening.
- **Zone 3:** Production, is where community gardens and market gardens will be located and incubator farm space made available.
- **Zone 4:** Natural Systems, will be an area that will increase the biodiversity of the local area and provide ecosystem services.

b. LUADP Detailed Planning–2017

Early concept development recommended a 12 month detailed project planning phase to develop a feasible concept plan for urban agriculture on this publicly owned site located within a hydro transmission right-of-way (hydro ROW).

The **Langley Urban Agriculture Demonstration Project** (LUADP) Detailed Planning Phase was initiated in 2016 with planning work beginning in January 2017. This phase was funded through Metro Vancouver's Sustainability Innovation Fund. With support from both local and regional governments the LUADP aims to:

- Create a functional community space within and existing hydro ROW
- Be a pilot project for similar hydro ROW development project in the region
- Increase opportunities for urban food production
- Create educational opportunities for the community around agriculture
- Improve and enhance the utilization of publicly owned land

Principles

The project principles were developed collaboratively by project partners in consultation with key stakeholders. Guiding principles for this project include:

- Prioritize food production and education
- Ensure community fit and compatibility
- Educate the public about the integration of agriculture, energy, environment and community
- Develop a replicable process for planning and designing urban agriculture projects in hydro right-of-ways in the region.

Time Line

The original time line proposed 12 months for site assessment, consultation and outreach, planning and design, reporting on the projects findings.

The project time line was extended to accommodate additional consultation and a second Open House, held in September of 2017.

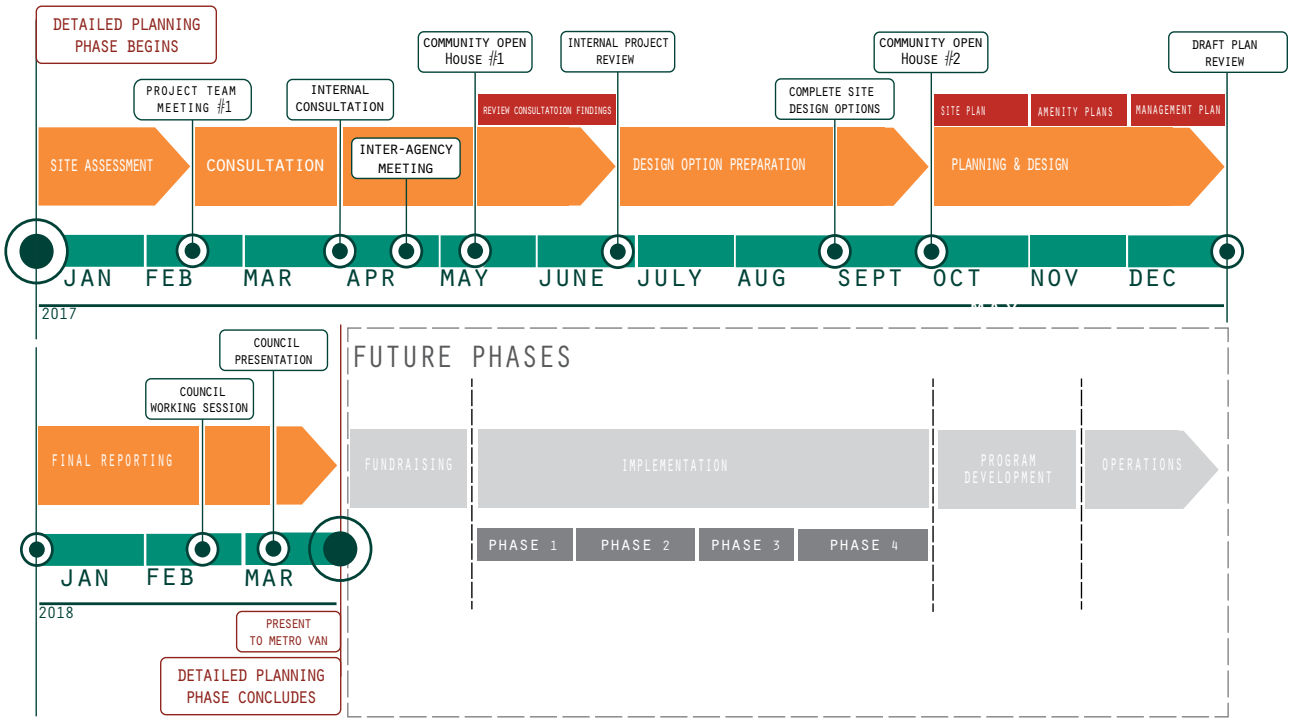

Figure 2: Time line for the LUADP Detailed Planning Phase, beginning in January 2017

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Image Source: Top Soil Urban Agriculture Project, Victoria BC

1. Introduction

1.1. Understanding Urban Agriculture

Urban agriculture (UA) is becoming a key strategy for addressing environmental and social sustainability in communities around the world. Producing food in urban communities is not a modern idea, however few cities have the necessary physical and social infrastructure to support agriculture, and other food system activities.

Urban agriculture requires access to biophysical resources (i.e. land, soil, water, nutrients) as well as socio-political resources (i.e. labour, financing, and community buy-in) some of which may not be readily available within

What is Urban Agriculture?

Urban agriculture is the activity of producing, processing and distributing food and other agricultural products on land in urban areas. These systems are often closely connected to social, economic and ecological systems in cities.

urban boundaries. New creative solutions are therefore required that can create UA projects that are meaningful, and sustainable.

A scan of projects from around the world demonstrated a variety of positive outcomes, in addition to providing access to healthy, fresh food. UA projects are often described as occupying space at the nexus of farming and community development, integrating social, educational and environmental goals into productive landscapes.[1]

Access to land is necessary for all UA projects, and can be a one of the most significant challenges for the development of community based and entrepreneurial farming initiatives in cities. In most jurisdictions, including Metro Vancouver, urban land is increasingly expensive meaning access to land for urban food production can be beyond the reach of those who are interested in initiating new projects.

Black Creek Community Farm, Toronto ON

Black Creek Community Farm is a community project that supports low income and immigrant populations in Toronto. Leveraging existing resources and knowledge the project was jointly founded by Everdale Environmental Learning Center, FoodShare and African Food Basket. They were able to access land through a lease agreement with the Toronto Region Conservation Authority (TRCA) for the 8 acre urban farm.[2]

Loutet Farm, North Vancouver BC

Loutet Farm is a ½ acre market garden and ⅓ acre school garden located on publicly owned land, in a residential community in North Vancouver. Planning for the farm took two years and involved public consultation and was supported by UBC's School of Architecture and Landscape Architecture's. Funding was granted to support equipment, infrastructure, and wages for our staff. Donations from local businesses helped with the installation of fencing and irrigation. The project is now managed by the North Vancouver Neighbourhood House and the Edible Garden Project. [3]

In addition to the challenge of affordability, the amount of land available for food production is also decreasing in urban areas due to rapid urbanization, and the contamination of urban soils.

Land access and affordability continue to complicate efforts to initiate and sustain urban agriculture. As a result, food system and social development advocates are working to support creative approaches to land access, new strategic partnerships through precedent setting pilot projects.

Those advocating for urban agriculture recognize that it is not realistic to rely on urban agriculture to support the full range of food system activities (i.e. production, processing, distribution, and waste management) in every

community. It is also not a realistic expectation to assume that urban farms can fully support the food needs of urban populations. However, under the right environmental and social conditions UA projects provide a variety of benefits to urban communities and regions.

Urban agriculture can create employment opportunities, stimulate the local economy, create a sense of community, increase urban biodiversity, contribute to community food security and promote healthy lifestyles. Exploring new models for urban agriculture may also contribute to the development of resilient, local and regional food systems by providing public education opportunities and increasing access to fresh local produce for growing urban populations.

1.2. Municipally Supported Urban Agriculture

Those initiating and supporting urban agriculture projects can include individuals, environmental organizations, neighbourhood groups, faith based organizations, non-profits and private sector corporations. It is also becoming increasingly important for local governments to become involved in project development and management because they can draw on existing resources and institutional capacity. This has been shown to contribute to project resilience and sustainability. [4]

Local governments can support UA projects by providing access to land, leveraging funding, creating enabling policy and zoning regulations, providing access to services (i.e. water and sewage), and identifying strategic locations for urban agriculture within communities. Involvement of local governments in UA projects can also help align project outcomes with the long and short term goals for municipalities around sustainability, economic development, and social development.

In recent North American history most urban agriculture initiatives have been started through community based, grassroots efforts to address issues at the neighbourhood scale. A deeper understanding of the factors that contribute to the success of UA projects shows that planning for food production in urban communities is most successful when incorporated into planning and policy making at the municipal scale.[5] While continuing to support the bottom up grassroots movements in urban agriculture it is recognized that institutionalization through local government support may improve coordination and lead to increased project resilience, and local level sustainability.

Image Source: The Hamilton Foundation

McQueston Urban Farm, Hamilton ON

The McQuestion Urban Farm was built primarily to address food insecurity in a low income community. The project was municipally supported and involved collaboration with the McQuesten Neighbourhood group, the City of Hamilton, Social Policy and Research Council, academic institutions and private sector design companies. The farm now provides volunteer opportunities, and fosters strong bonds amongst residents. The farm will be run with significant input from the public on how to manage farm operations and programming. The City has provided access to land, made adjustments to their Official Community Plan, and providing staff support through the planning and development phases.[6]

Despite the benefits for urban agriculture demonstrated when local government is supportive there may still be opposition from urban residents who think that municipal funding and capacity should not be directed towards supporting UA projects. Turning the tide of public perception will continue to be a significant challenges in moving these projects forward and could impact the availability of land, funding and other resources in the future.

Securing the necessary resources for urban agriculture in modern cities can be a challenge. Addressing this requires unique and creative approaches in planning, design and long term management. Identifying opportunities to access land within urban boundaries, and establishing frameworks of support that include local government are both necessary in order to increase the available for urban agriculture.

The critical work of reconnecting urban communities with their food system is a complex undertaking. Innovative UA projects have demonstrated the transformative power of connecting urban populations with agriculture, and the local food system.

1.3. The Langley Urban Agriculture Demonstration Project

The Langley Urban Agriculture Demonstration Project (LUADP) is a unique project which aims to advance of urban agriculture, through development of a concept plan for a site in the City of Langley. It is recognized that this project may be potential to advance goals in the City of Langley's Sustainability Framework, in addition to other positive outcomes. The LUADP may also help to advance urban agriculture and local food programming in the City by creating awareness and building local capacity.

As a municipal partner, the City of Langley has been supportive of the project. Working with BC Hydro to create a model of urban agriculture that can work within the unique context of hydro ROWs also presents opportunities to explore new models for urban food production, and could also make more land available for urban agriculture across Metro Vancouver.

2. Site Assessment

The site chosen for the Langley Urban Agriculture Demonstration Project is located within a BC Hydro transmission right-of-way (hydro ROW). This is a statutory hydro ROW which means the land is owned by the City of Langley, and regulated by BC Hydro.

This hydro ROW occupies 23 acres (9 ha) of land, and is embedded within an established residential neighbourhood in the City of Langley. The following section outlines the unique biophysical, social, and cultural characteristics of the site. This analysis will they help to determine if the site is suitable for urban agriculture, and what type of amenities would be best given the community context, and site characteristics. This site assessment includes three different areas of analysis:

Soil Analysis

Soil analysis and testing is a key first step in any UA project. This is necessary to determine if working on the site and consuming produce is safe. Soil tests can also provide baseline data about the physical and chemical properties of soil that impact food production, including pH levels and organic matter.

Context Analysis

Context analysis looks at the area surrounding a proposed project site considering how a project will fit into an existing neighbourhood. This also includes all relevant planning and policy contexts

Site Analysis

Site analysis looks at the specific characteristics of the site that may or may not support urban agriculture. This includes biophysical, social and ecological characteristics, as well as current uses.

View looking west from within the right-of-way.
Image Source: Emily Hansen

View of BC Hydro transmission towers within right-of-way.
Image Source: Emily Hansen

2.1. Soil Analysis

When UA projects are proposed there are frequent public concerns about health risks associated with consuming food produced in cities where there may be unknown contaminants in the soil.[7] Land use history, as well as adjacent land uses can have an impact on the quality of the soil and should be considered in assessing the suitability of the urban sites for food production. Although contamination can sometimes be detected by a visual inspection of the site, soil tests are needed to ensure safety, and determine soil quality.

Toronto Public Health has developed a resource to help community groups, and others, to conduct and analyze soil tests in an effort to make more land available for food production within the City. This resource helps groups to: (1) assess the level of risk of contamination of a proposed urban agriculture site, (2) test the soil, and (3) determine strategies and protocol for addressing any concerns indicated from site assessment and soil testing.[8]

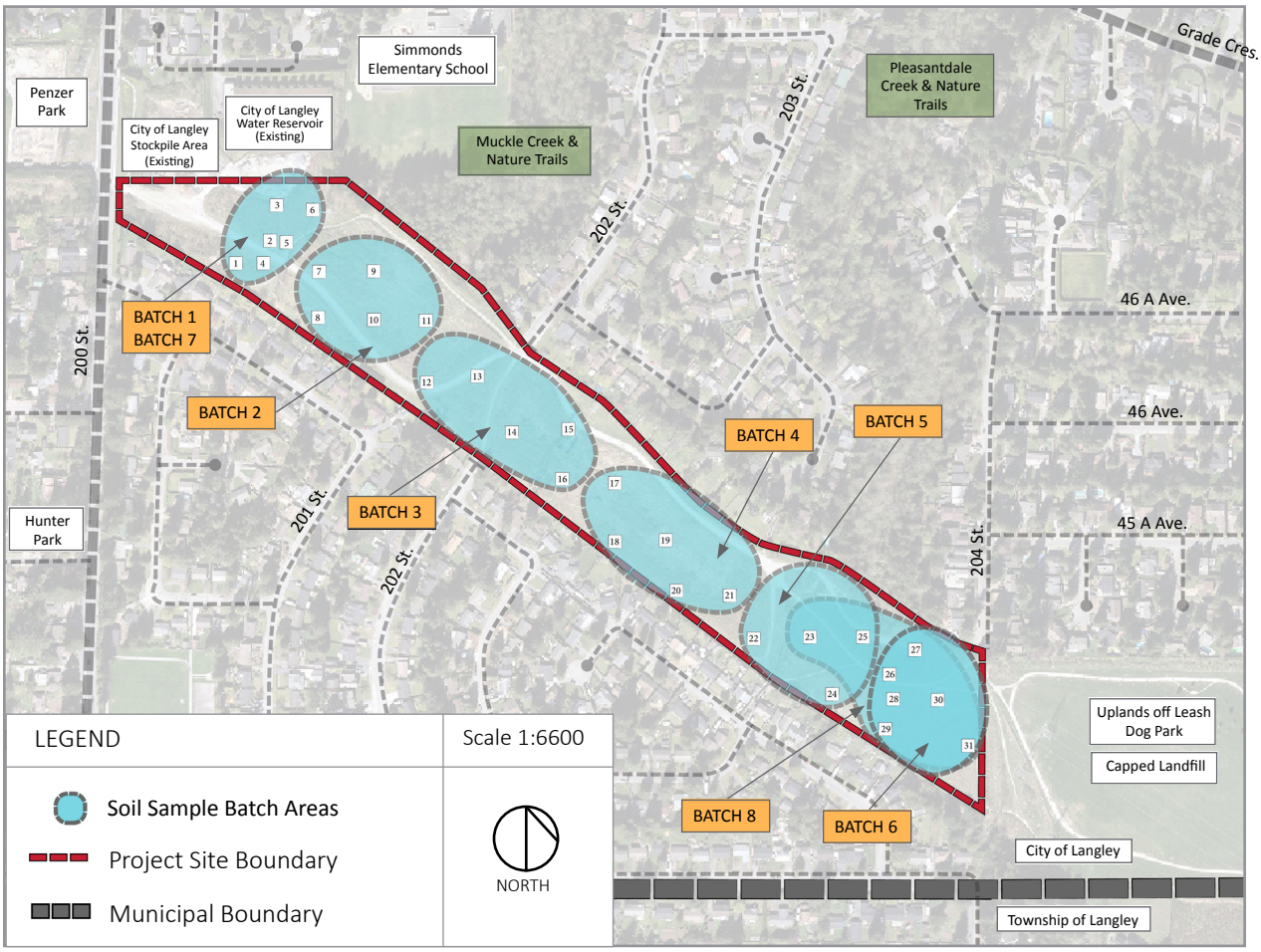
Table one shows that there is a medium level of concern for sites located within hydro ROWs. Heavy metal contamination on these sites could come from construction and maintenance of transmission towers, or other infrastructure. There is also the risk of pollutants from the use of herbicides that may be used to manage vegetation within the hydro ROW. Although the use of chemical herbicides for vegetation management is not a common practice in all jurisdictions, it is important to test for chemical contamination for all proposed sites within hydro ROWs.

RISK LEVEL	PAST OR ADJACENT USES
Low	• Residential • Parkland • Farmland • School or Childcare Centre
Medium	• Risk managed park • Conventional orchard • Infill Area (not natural soil) • Hydro corridor • Commercial area • Remediated industrial land • Former landfill • 30m from a rail line or major arterial road
High	• Gas station • Dry cleaner • Printing shop • Auto body shop • Industrial area • Rail line of rail yard

Table 1: Risk Assessment Tool for Urban Agriculture. Adapted From City of Toronto Public Health.

BATCH #	COMPOSITE BATCH SAMPLES						
1	LH 1 (20-30cm)	LH 2 (20-30cm)	LH 3 (20-30cm)	LH 4 (20-30cm)	LH 5 (20-30cm)	LH 6 (20-30cm)	
2	LH 7 (20-30cm)	LH 8 (20-30cm)	LH 9 (20-30cm)	LH 10 (20-30cm)	LH 11 (20-30cm)		
3	LH 12 (20-30cm)	LH 13 (20-30cm)	LH 14 (20-30cm)	LH 15 (20-30cm)	LH 16 (20-30cm)		
4	LH 17 (20-30cm)	LH 18 (20-30cm)	LH 19 (20-30cm)	LH 20 (20-30cm)	LH 21 (20-30cm)		
5	LH 22 (20-30cm)	LH 23 (20-30cm)	LH 24 (20-30cm)	LH 25 (20-30cm)			
6	LH 26 (20-30cm)	LH 27 (20-30cm)	LH 28 (20-30cm)	LH 29 (20-30cm)	LH 30 (20-30cm)	LH 31 (20-30cm)	
7	LH 1 (deep)	LH 2 (deep)	LH 3 (deep)	LH 4 (deep)	LH 5 (deep)	LH 6 (deep)	
8	LH 23 (deep)	LH 25 (deep)	LH 26 (deep)	LH 27 (deep)	LH 29 (deep)	LH 30 (deep)	LH 31 (deep)

Table 2: Composite Batches Submitted for Soil Testing.



Map 1: Soil Sample Sites and Composite Batch Areas.

2.1.1. Soil Sampling Protocol

A soil sampling protocol was developed by a soil scientist from Kwantlen Polytechnic University. In total, 31 sample sites were chosen within the ROW area. All sampling was conducted by Kwantlen Polytechnic University Sustainable Agriculture students under the supervision of staff at the Institute for Sustainable Food Systems and KPU Faculty.

Samples were taken between 20 and 30 centimeters below the surface at all of the 31 sites. Samples were also taken between 60 and 70 centimeters (deep) below the surface at sites where there was increased concern of possible contamination, such as areas adjacent to the capped land fill (now Uplands off Leash Dog Park) and in areas where dumping and excavation has occurred. 44 samples were collected and then grouped into composite batches to be submitted to a commercial laboratory for analysis. Table 2 shows how soil samples were grouped in order to create composite batches. Map 1 (above) shows the approximate location of each sample site and how samples were grouped into batches.

2.1.2. Soil Test Results

Soil tests will determine if there are any possible chemical or heavy metal contaminants on the site. They also provide information about the physical and chemical properties of the soil that impact food production.

Testing for soil properties including; soil carbon, organic matter, and pH levels will establish a baseline for amendments. However, these

properties are not a primary consideration in determining if the site can be used for urban agriculture.

Soil samples were analyzed by CARO Analytical Services in Richmond, British Columbia. An analysis of any possible chemical and heavy metal contamination was the focus of testing. Most labs testing is conducted based on a detectable threshold for both pollutants and heavy metal contaminants, which is directly related to impacts on human health.

The results of soil tests can then be compared to acceptable levels for agricultural production based on Canadian Environmental Quality Guidelines available from the Canadian Council of Ministers of the Environment (CCME).[9] The CCME also has guidelines for other land uses such as recreation or residential. These are both understandably higher than the limits for food production.

Pollutants

No detrimental pollutants were found in the soil samples from the site. This is promising because chemical contaminants can be more challenging to remove from the soil, which may limit the opportunities for food production.

Heavy Metal Contaminants

Heavy metals naturally occur in soils, however in urban environments heavy metals have the potential to reach elevated levels from increased urban and industrial activity. The Canadian Environmental Quality Guidelines from the CCME were consulted to determine if heavy metals in the soil exceeded the safe thresholds for agriculture. Table 3 compares heavy metals that are of concern for agricultural sites with the results from LUADP samples. The heavy metal levels are relatively consistent across the site and with the exception of Cobalt detected in Batch 4, do not exceed the allowable limits for agriculture. However, this slight elevation detected does not pose a significant concern.

Soil Properties

Soil properties such as organic matter and pH are variable across the site. Based on the development of the site as a hydro ROW it is also likely that there is significant compaction of soil from construction and maintenance

Metals of Concern for Agriculture	Acceptable for Agriculture mg/kg (Source:CCME)	Batch 1 (mg/kg)	Batch 2 (mg/kg)	Batch 3 (mg/kg)	Batch 4 (mg/kg)	Batch 5 (mg/kg)	Batch 6 (mg/kg)	Batch 7 (mg/kg)	Batch 8 (mg/kg)
Arsenic	12	4.6	4.6	4.7	6.9	5.2	6.3	4.1	5.5
Cadmium	14.	0.21	0.14	0.16	0.38	0.13	0.17	0.12	0.16
Cobalt	40	36	36.5	32.1	43.5	38.1	34.4	31.6	37.8
Chromium	64	9.2	9.4	8.9	10.8	9.7	8.7	8.2	9.4
Copper	63	23.4	25.3	23.6	41.6	27.3	27.4	22.3	28.5
Mercury	6.6	0.05	0.05	0.08	0.07	0.04	<0.04	<0.04	0.04
Molybdenum	5	1.1	1	0.7	2	1.3	1.3	0.8	1.2
Nickel	45	32.6	33.7	29.3	32.6	30.8	30.6	28.5	30.9
Lead	70	13.7	13.3	16.9	46.6	14.9	11.4	9.6	13.2
Selenium	1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Vanadium	130	56.2	55.6	50.3	58.6	50.4	50.4	49.6	53.6
Zinc	200	70	52	59	123	59	52	45	59

Table 3: Heavy metal contaminants and acceptable levels for agricultural sites compared to LUADP Results.

activities. For urban agriculture projects soil properties can be improved though a variety of practices, such as adding compost, mulch and incorporating cover crops.

2.1.3. Recommendations for Healthy Soils

Based on the findings from soil testing it was determined that there is no significant chemical or heavy metal contamination, and that site will support urban agriculture. These recommendations have been made to ensure that there are no risks to public safety and so that crop production can be successful.

- Conduct additional soil tests where in ground food production is planned, particularly in areas where annual vegetables will be cultivated
- Support ongoing soil testing (every 3 years) of soil to monitor soil quality and health
- Use organic farming methods to build soil fertility over time
- Rotate crops annually, and throughout the season
- Include nitrogen fixing legumes in crop rotations
- Compost crop residue on site and apply to production areas as required
- Incorporate compost from trusted organic sources on a regular basis (if not made)
- Choose plants and crop varieties suited to the climatic and soil conditions of the site
- Consult with a soil expert to determine what amendments may be required to improve the fertility in cropping areas
- Plant a diversity of crops in both annual and perennial production areas
- Protect and enhance wildlife habitat by including naturalized plantings both around and within production areas

Image Source: Adobe Stock Images, tanacha

2.2. Context Analysis

The City of Langley is a rapidly growing, urban municipality located in the Metro Vancouver Region. The community is divided into six established residential neighbourhoods based around existing elementary school catchment areas, including: Douglas, Nicomekl, Blacklock, Uplands, Simmonds, and Alice Brown.

As a member government of the Metro Vancouver Regional District, most of the City of Langley is designated as a Regional City Centre in Metro Vancouver 2040: Shaping Our Future (Metro 2040). The City is growing at around 16% per year, and forecasted to double its population by 2026.[10] With this growth on the horizon, the City's Sustainability Framework aims to create complete, compact communities that incorporate parks and green spaces, good transit and a walkable urban environment. In the City centre, development will focus on multi-family residential, commercial and industrial buildings to accommodate residential and business growth. This goal is balanced with an equal priority on maintaining quality of life, and managing improvements to parks, roads and infrastructure.[11]

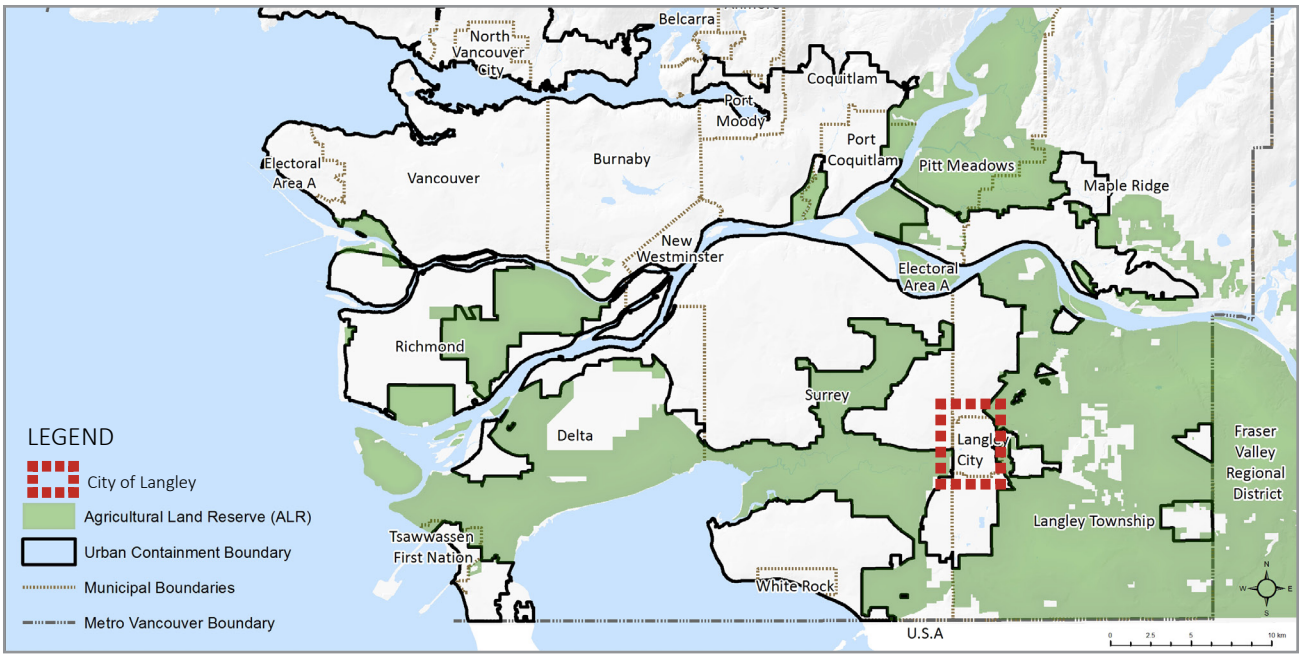
Given the proximity of the project site to the Township of Langley and the City of Surrey, it is anticipated there could be opportunities for potential municipal and community partnerships between these communities.

The project site is also located near several schools including; Alice Brown Elementary, Simmonds Elementary, Uplands Elementary, and H.D Stafford Middle School. This presents opportunities to create dedicated space within the project site to support education, and engagement with the different schools.

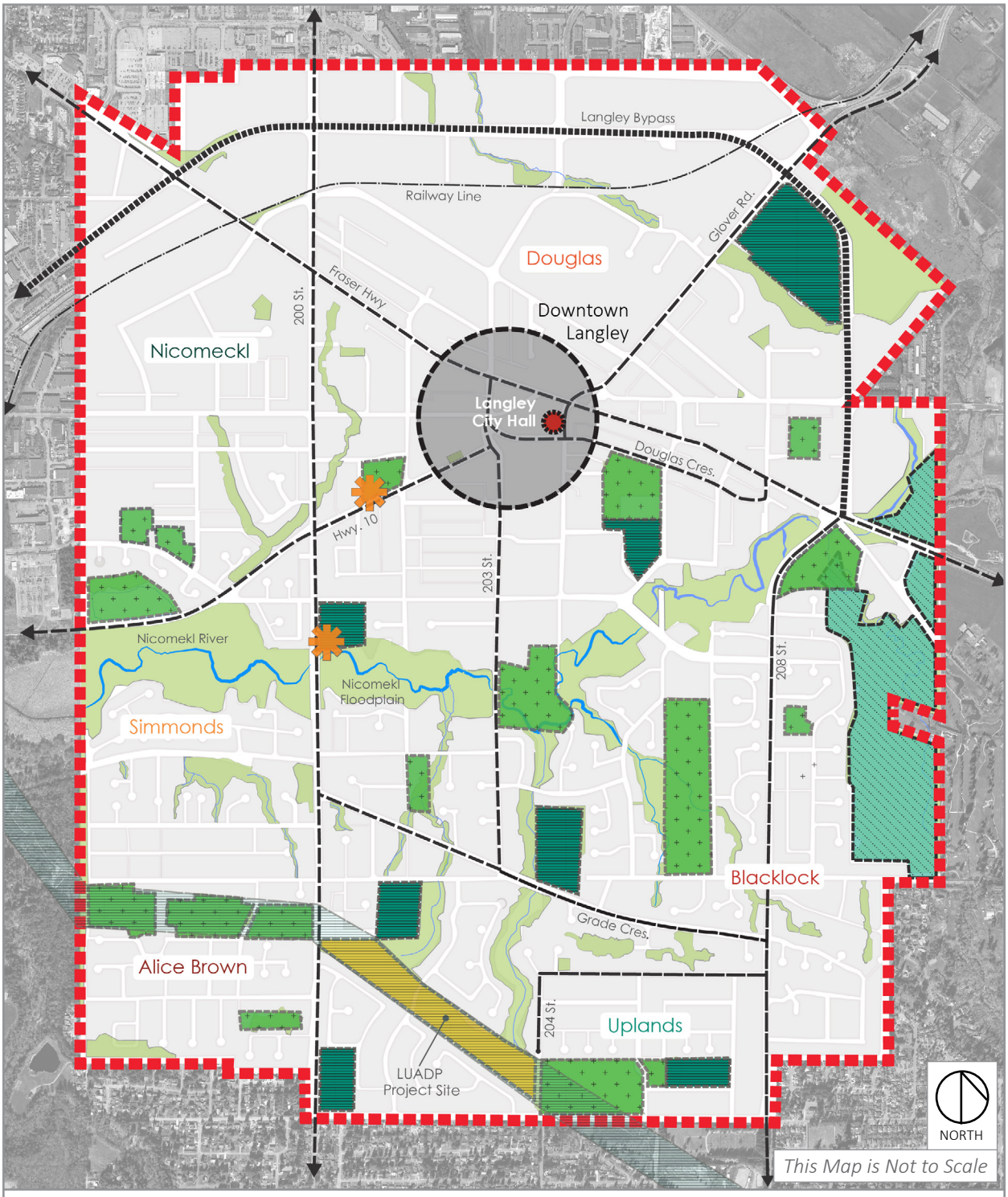
Metro Vancouver Context

Metro Vancouver contains a significant amount of land in the Agricultural Land Reserve (ALR), located outside the Metro 2040 Urban Containment Boundary. [12]

Although urban municipalities, like the City of Langley, have little ALR land they can be ideal locations to explore the opportunities of urban agriculture addressing urban food security, and contributing to building sustainable communities in the region.



Map 2: Metro Vancouver Context.



Map 3: City of Langley Context.

2.2.1. Policy Context

Compared to other municipalities in the Metro Vancouver region, as well as in the Fraser Valley, the City of Langley has limited land area within the Agricultural Land Reserve (ALR) (approx. 16 ha) with the majority of it used for recreation at the Newlands Golf and Country Club. [13]

The 10 year Parks, Recreation and Culture Master Plan for the City of Langley identifies a variety of strategies for increased accessibility, sustainability and usability for parks and recreational programming. The plan indicates goals of more urban agriculture projects as well as, planting more trees and native plants while supporting community groups and environmental education.[14] The Parks and Recreation Master Plan also recognizes the potential to support ongoing volunteerism by improving coordination systems through improved software. [15]

The City of Langley's Social Plan, prepared in 2007, recognized a number of priorities where the City should take action on social service issues in the community. The LUADP has the potential to address identified social service gaps related to green space, community based health services, and connecting diverse communities. The plan also contains specific recommendations for identifying sites for community gardens, better utilize existing parks, providing healthy meals in schools, and integration of diverse communities through volunteerism.[16]

Regionally, the LUADP is aligned with Metro Vancouver's regional growth strategy (Metro 2040) goals to develop complete communities.[17] The project could also concretely help advance some of the strategies and initiatives identified in Metro Vancouver's Regional Food System Strategy and Action Plan related to food literacy, helping new farmers gain access to land, direct marketing opportunities, supporting k-12 education and broad support for urban agriculture. [18]

2.2.2. Parks and Open Space

The City of Langley is a small municipality, but despite its size and urban character one that boast over 300 acres of parks and open space (a total of 12% of the municipalities land area). These parks support a wide range of recreational and cultural activities that contribute significantly to livability and quality of life for residents.

Recent upgrades to the City's downtown core demonstrate a priority to improve accessibility and social connection through public realm improvements. Recent proposals for park enhancements demonstrate the City's commitment to developing high quality parks with amenities to serve a variety of users. Penzer and Buckley Parks (located within the same hydro ROW area west of 200 St.) incorporate a dynamic range of program elements and aim to create a defining feature in the community. Currently these parks feature a bike park, newly installed "action park", and passive recreation areas. The approved plan would also add community gardens, sports fields, public art, trails and enhanced open space. Development of the LUADP site is an opportunity to connect with this existing community amenity space within the BC Hydro

Completed in the Summer of 2016 the Penzer Action Park has been developed in the BC Hydro Right-of-Way West of the LUADP site. The park has been successful and is well used by residents.
Image Source: City of Langley

ROW creating a public amenity corridor to serve a diverse community of users from across the City.

To the east of the site is the Uplands Off-Leash Dog Park which was established on the site of a capped landfill.

In partnership with the Langley Environmental Partners Society, the City of Langley currently supports two community gardens at Linwood Park and Nicomekl Elementary School. There is a waiting list for participation in community gardening at Linwood Park, which is located in close proximity to higher density residential developments including townhouses and condominiums.

The network of parks and open space in the City of Langley represents creates community wide connectivity through recreational trails and natural corridors. The LUADP is ideally situated to become part of this green corridor network and to enhance urban agriculture programming in the City. The site is connected to the Nicomekl River through natural corridors and walking trails along Pleasantdale and Muckle Creeks and to existing parkland to the east and west along the hydro ROW. Maintaining pedestrian connectivity while enhancing the natural corridors that support wildlife and biodiversity will be high priorities for the project.

2.3. Site Analysis

The hydro ROW at the proposed location contains two 500 kV transmission lines and one 230 kV line. These bulk transmission lines bring power from the Columbia and Peace generating stations to the main load centers in the Lower Mainland and Vancouver Island.

In addition to hydro transmission infrastructure, there are also City assets on and adjacent to the site, including a water reservoir, stockpile area and pump station for the capped landfill located to the east. As the site is developed it is important to maintain access to all infrastructure elements for maintenance crews.

Currently, vegetation on the site includes shrubs and turf areas with limited biodiversity. Himalayan Blackberry (*Rubus armeniacus*) and Scotch Broom (*Cytisus scoparius*), both invasive species in the region are spread throughout the site are also growing throughout the site. These species are commonly found in areas disturbed by development including; roadsides, right-of-ways, and pastures.[19] BC Hydro has worked with local conservation groups including the Langley Environmental Partners Society to manage invasive plant species in hydro ROWs in order to enhance habitat and wild biodiversity and reduce the use of herbicides for weed and invasive plant control. [20]

2.3.1. Current Uses

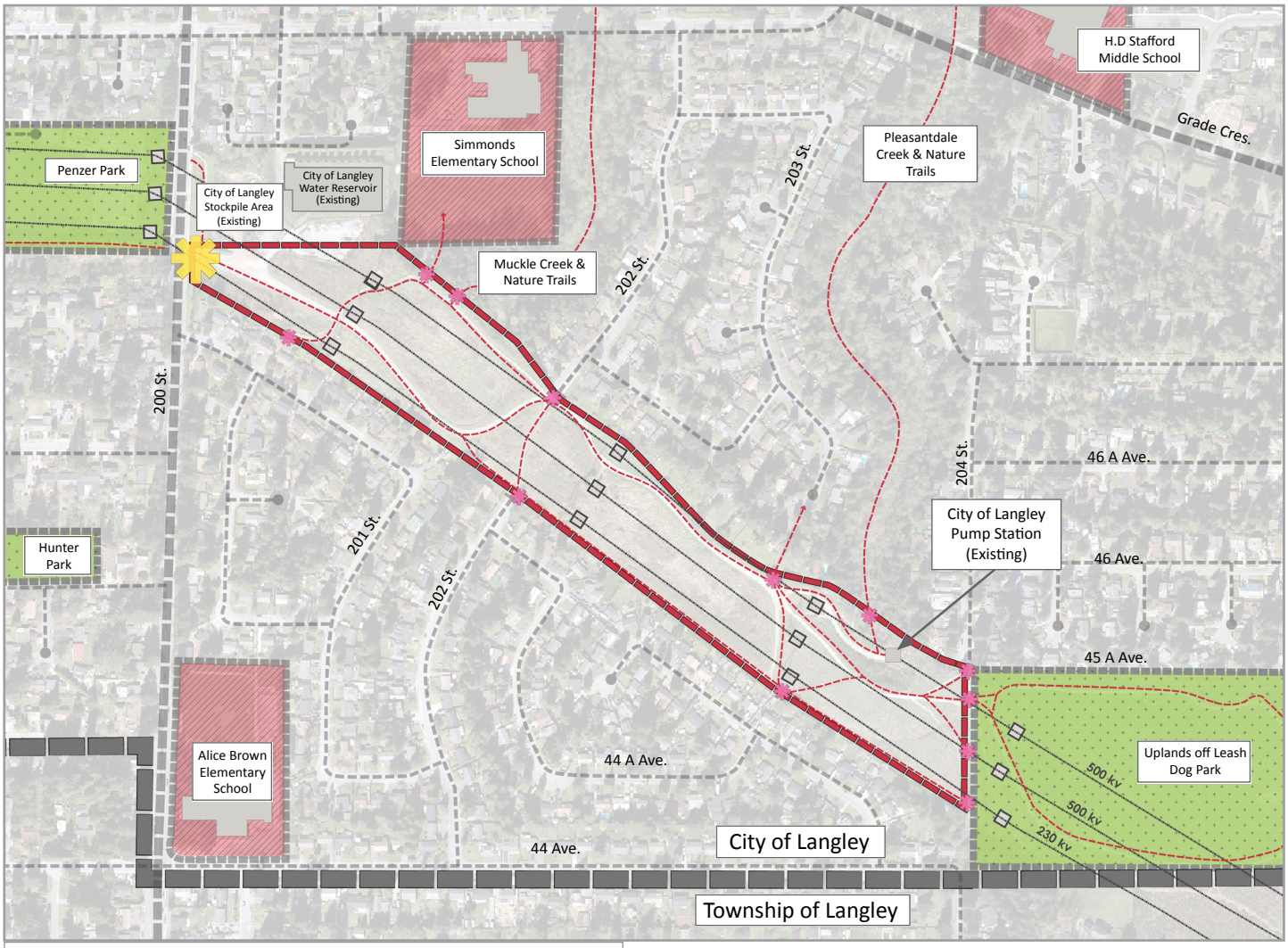
Community feedback received during Community Open Houses provided information about how the site is currently used. According to residents the site is well-used for passive recreation, and valued for its “undeveloped” and “natural” character.

Current uses include walking, dog walking, cycling, nature viewing, and some sledding in the winter. Residents indicated that they used the site regularly, even daily for these activities. They also value the site as a natural area providing local residents and surrounding property owners with a variety of benefits. These include peace and quiet, sense of privacy in backyards, habitat for wildlife, and a feeling of being close to nature. Some residents also forage for blackberries.

The site is accessible to pedestrians at many points in the surrounding neighbourhood and through the nature trails that run along Muckle and Pleasantdale Creeks North of the site. There are also direct pedestrian connection to the site from the grounds of Simmonds Elementary.

There is currently one vehicle access point off 200 St. used by maintenance vehicles only. An

Map 4: Langley Urban Agriculture Demonstration Project Site Context



LEGEND

- Existing Parks
- Educational Institutions
- LUADP Site Boundary
- Municipal Boundary
- Existing Pathways
- Current Pedestrian Access Points
- Current Vehicle Access Point
- 500 kv — Hydro Transmission Wires
- Hydro Transmission Towers

Map Detail Area

Scale 1:6600

NORTH

existing right-of-way for 202 St. crosses the site but is not currently open to through traffic. It was communicated strongly by neighbourhood residents that this ROW should remain a pedestrian access point only, and not be opened to vehicles.

A City of Langley stockpile area is located inside the gate off 200 St. A City owned reservoir is also located in this area and is accessed by Engineering crews when required. BC Hydro vehicles have access to the site for infrastructure maintenance when necessary.

2.4. Opportunities and Challenges

Based on assessment of the site and surrounding context in the City of Langley opportunities and challenges have been identified for the LUADP. The City is motivated by directives in their Sustainability Framework which called for further examination of the potential of urban farming in BC Hydro ROWs.

Opportunities:

- Urban agriculture aligns with City of Langley Sustainability Framework, and other municipal policies
- Local policy is supportive of urban agriculture and environmental restoration on public land
- Regional policies support local governments in the pursuit of urban agriculture initiatives
- Soil test revealed no significant concern of contamination on the site
- Soil quality is adequate for agricultural production, with the potential to improve
- Land is publicly owned
- Site is located near schools & could provide educational benefits to local students
- Site is a key link to the existing parks and open space network in the City
- Site is connected to other community amenities by walking trails
- BC Hydro support development of compatible uses in hydro ROW areas
- Plans for amenity development in Penzer and Buckley Parks have recently been approved
- The project could enhance the existing green corridor network

Challenges:

- Site is located in a residential neighbourhood, which may not be supportive of urban agriculture
- Soil may be compacted and degraded due to construction and utility maintenance
- Site is currently well used by the surrounding neighbours, and valued as an unprogrammed space
- Site is currently vegetated with aggressive varieties of invasive plant species

3. Urban Agriculture in Hydro Right-of-Ways

Accessing land within urban boundaries that is appropriate for food production and related activities is one of the most significant hurdles for urban agriculture.[21] Land in and around urban areas is becoming more expensive and food production is often seen as low value land use when compared to the economic returns from residential or commercial development. In response to this fundamental challenge facing urban agriculture, there is a need for creative solutions that can contribute to urban food security, education and community development.

Utility right-of-way (ROW) areas (including Hydro transmission ROW and road easements) represent an opportunity for food production that is yet to be fully explored in urban areas. More specifically hydro ROWs present a unique opportunity for urban farming. However, there is a need to more carefully consider the unique design and management strategies for creating effective UA projects that are compatible with existing hydro ROW uses.

In rural areas agriculture is routinely practiced within hydro ROWs. This includes livestock grazing and crop production, and most regular farming practices such as the use of heavy machinery and mechanical irrigation.[22] In an urban context farming in hydro ROWs is less common. However, these areas are increasingly supporting for community amenity development, which includes small scale food production. Urban hydro ROWs present opportunities for the development of amenities, including: community farms, community orchards, school farms, demonstration gardens, or incubator farms. Community gardens, and pollinator pastures have already shown to be successful in hydro ROWs in many communities.

Hydro ROW Urban Agriculture Examples

Urban agriculture is a compatible use in hydro ROWs, however there are few projects to draw inspiration from. Project precedents can offer some insight into how urban agriculture can be designed to be compatible with hydro ROWs.

Image Source: Los Angeles Times

Stanford Avalon Community Garden, Los Angeles CA

This garden occupies is a 30 km corridor in South LA and contains 206 garden plots. Opening in 2006, Stanford Avalon has provided community members with access to healthy food, and community development opportunities. In addition to being located within a hydro ROW the site is bisected by a freeway, and a railway line.[24] The project has made positive contributions to health and social connectivity. There have also been studies showing that the gardens have contributed positively to ecosystem health in the dense urban community.

Image Source: SHIFT Landscape Architecture

Flemingdon Park Market Garden, Toronto ON

The Flemingdon Park Market Garden is a proposed project on land within a Hydro One ROW. The City of Toronto Parks and Recreation Department is arranging to sign a lease with a community organization and will be permitting farming on the site. While the project is still per-construction, the space offers a lot of potential. The land is an open field where the soil has been tested and deemed healthy for agriculture.[25] The project will be co-managed by FoodShare, a reputable non-profit focused on promoting healthy food and social equity. The plans have been prepared through community consultation by SHIFT Landscape Architecture.

3.1. BC Hydro Compatible Use Guidelines

Compatible use guidelines are created by utility companies, including BC Hydro to guide the development and maintenance of projects within or adjacent to hydro ROWs. Determining how hydro ROWs can be developed requires review of these guidelines as well as the statutory right of way agreement registered against the specific property. [26] In British Columbia, all compatible uses in hydro ROWs are subject to final approval from BC Hydro Properties Division.

Based on available information and initial consultation with BC Hydro there are a number of physical and programmatic elements related to urban agriculture that could be restricted, or subject to alternative design based on safety requirements. These elements include:

- Construction of temporary structures
- Fencing
- Significant changes to grade and drainage
- Type and layout of irrigation systems
- Type of equipment and machinery used on site
- Height of vegetation
- Type of building materials used
- Type and location of electrical servicing
- Public access and programming

When planning for any community amenity development in a hydro ROW there are two primary considerations for site design and use. The first is clearance from utility works and infrastructure. This refers to the horizontal distance from utility infrastructure on a site such as towers or cables.

The second is line clearance which refers to the vertical distance from overhead wires of any infrastructure or vegetation within the ROW. Clearance from overhead wires must also consider the potential for wires to sag in hot weather, and any changes in grade across the site. It is recommended that all vegetation and structures adhere to specific height requirements, and additional clearance be given where wires may sag and a decrease of this clearance may occur.

3.2. Electric and Magnetic Fields and Human Health

Electric and magnetic fields (EMF) are invisible fields of energy that are present anywhere electricity flows. Since the 20th century there has been a steady increase in man-made

sources of EMF. They are emitted from a variety of sources, including hydro transmission lines, cell phones, telecommunications infrastructure, building wiring, and household appliances. [27]

Although often named together as EMF, electric and magnetic fields represent two distinct components of electricity. Most of the studies that examine the human health impacts focus on magnetic field exposure (measured in milligluass mG). The strength of magnetic fields can fluctuate throughout the day as energy demand shifts.[28] Table 4, adapted from a BC Hydro online publication *"Understanding Electromagnetic Fields"* gives the magnetic field strength of the two different transmission line types that are located on the LUADP site. This also demonstrate the rapid decrease in field strength when moving away from overhead wires.

Table 5 offers additional information about the magnetic field strengths from common household sources demonstrating the pervasiveness of EMF in the everyday environment.

Transmission Line Voltage	Under Transmission Lines	Edge of Right-of Way (~20m)	Outside Right-of-Way (30m)
230kv	38mG	28mG	8mG
500kv	81mG	51mG	33mG

Table 4: Transmission Tower Voltage and Associated EMF Levels.

Household Sources of EMF	At the Source (5-10cm)	~1m from Source
Hair Dryer	300mG	0.1-6mG
Dish Washer	20mG	1mG
Washing Machine	20mG	0.1-2mG
Power Saw	200mG	4mG
Vacuum	300mG	1-10mG

Table 5: EMF Levels of Common Household Appliances. Source: United States Environmental Protection Agency.

Scientific research about the health impacts of EMF exposure is ongoing and a variety of health outcomes have been examined. Health authorities such as the World Health Organization (WHO) and Health Canada review this research and have concluded that there is no cause – effect relationship between exposure to magnetic fields and impacts to human health.[29] The research into health effects from EMF exposure mostly surround long term and occupational exposure with a focus on studying the effects on people who work in environments where exposure is extremely high.

The World Health Organization is responsible for aggregating research on the health effects of EMF exposure and have concluded that there are no substantive health concerns related to EMF at levels generally encountered in the public domain. Additional conclusions of research to date has led to the classification of EMF by the International Agency for Research on Cancer (IARC) as a "possible carcinogen to humans" the weakest of three categories used to assess potential carcinogens.[30] This classification is due to a lack of concrete evidence about how EMF could cause cancer and the type of exposure that would be considered harmful.

BC Hydro also recognizes that despite conclusions made by these organizations, there are some member of the public who remain concerned about the health implications of EMF exposure. BC Hydro, along with other health authorities, continue to monitor and review the scientific developments related to EMF.[31]

3.2.1. EMF Exposure in Public Amenity Design

With an increasing scarcity of open space in urban areas there are a growing number of examples of the use of hydro ROW as community spaces, both formally and informally. These developments include: urban allotment gardens, playgrounds, sports fields, recreational trails and wildlife habitat. With these projects there are often additional measures taken to protect the health and safety

of the public due to the close proximity of hydro transmission lines and infrastructure, and concerns about exposure to EMF.

When hydro ROW areas are considered for community amenity development, utility companies work closely with municipalities and developers to protect public safety. This includes ensuring that designs adhere to compatible use guidelines, and that information is available to the public addressing EMF exposure and public safety.

Guidelines for mitigating exposure to EMF in public spaces are set and monitored nationally, however Health Canada does not consider any precautionary measures to be necessary with regard to daily EMF exposure.[32] In other countries, and some local Canadian jurisdictions prudent avoidance as a variation on the precautionary principle has been adopted to limit exposure to EMF when establishing community amenities in hydro ROWs.[33] This means taking low or no-cost actions to reduce exposure such as public education, EMF monitoring, and increasing ground clearance between amenities areas and overhead wires with the right-of-way. In the absence of national guidelines in Canada, local level policies may be developed, and adopted to help guide amenity development in hydro ROWs.

Health and public safety are a primary concern when working in and around hydro right-of-ways and is an important consideration when designing community amenities in these locations. Adhering to all safety guidelines developed by hydro companies, and supporting ongoing public education regarding the safety of working in and around hydro transmission infrastructure will be important in the development of urban agriculture project in hydro ROW sites.

3.3. Developing a Model for Urban Agriculture in Hydro Right-of-Ways

BC Hydro, and other utility companies, are supportive of compatible uses in hydro right-of-ways and have approved a variety of different community amenities in other areas. Agriculture is one of a variety of compatible uses for hydro transmission right-of-ways, but is subject to a variety of design and programmatic restrictions in order to protect public safety, and maintain access to utility infrastructure. Hydro ROWs occupy significant tracts of land in communities. In proposing the LUADP it was recognized that accessing this land for urban agriculture could help make significant contributions to advancing urban agriculture in the City of Langley, and across the Metro Vancouver region.

Urban agriculture can be more intensive than agriculture practiced in rural areas because of the integration of educational activities and other community programming. Creating a model that is compatible with hydro right-of-way restrictions is possible, but will require cooperation from a variety of stakeholders, including utility companies and local governments.

4. Planning & Design Process

4.1. Consultation & Public Outreach

Urban agriculture must be designed to be integrated into existing communities. If done effectively, there is significant potential for these projects to have a positive impact on a factors, such as: social cohesion, environmental sustainability, health and livability. However, when the concept is unfamiliar, projects may be perceived to negatively impact those who are living in close proximity to a proposed site, or because they appear to be costly or unsightly.

Ensuring that a project fits in well with the community, and that it provides the amenities needed in that community requires open dialogue with stakeholders and the public throughout the planning process.

The primary aim for consultation and public outreach during the LUADP was to share information with stakeholder, members of the public, and potential project partners.

4.1.1. Inter-agency Meeting

Prior to conducting public open houses, an inter-agency meeting was convened by Metro Vancouver. The purpose of this meeting was to engage with local and regional stakeholders to discuss potential synergies, and redundancies, as well as some anticipated challenges and opportunities for the LUADP. This meeting included participants from within the City of Langley, from neighbouring municipalities and from agencies with possible interests in urban agriculture.

The participants at this meeting reviewed the work done so far and made suggestions about what some of the key considerations may be going forward. One of the main takeaways from this meeting is that there is potential for the LUADP to act as a model, informing similar projects in the region. Many participants also agreed that community buy in would likely be a key factor for success, and that the response from the community should be carefully considered in planning for the LUADP.

Participants also shared experiences identifying additional challenges that could impact the success of the LUADP, and other similar projects in Metro Vancouver. These challenges are:

- Zoning, bylaws and local land use policies
- Agricultural land reserve policy
- Public safety
- Site aesthetics and cleanliness
- Access to funding for planning, implementation and management
- Access to water, and other servicing
- Project evaluation

Inter-agency Meeting Attendees:

Heather McNell	Metro Vancouver
Jaspal Marwah	Metro Vancouver
Roy Beddow	City of Langley
Kim Hilton	City of Langley
Kent Mullinix	Institute for Sustainable Food Systems
Emily Hansen	Institute for Sustainable Food Systems
Rasadi Cortes	BC Hydro
Carla Stewart	City of Surrey
Teresa Kaszony	Township of Langley
Michelle Truong	Fraser Health
Kamelli Mark	Agricultural Land Commission
Kelsey-Rae Russell	Agricultural Land Commission
Lenny Yun	Langley School District

4.1.2. Community Open Houses

Outreach with the public, especially resident living in close proximity to the project site was a priority. Community Open Houses were held to communicate the progress of the planning process with the public. These events focused on sharing information and collecting feedback from frequent users and those living in the neighbourhood.

Community Open House #1

The first Community Open House was held in Langley on May 10th, 2017 from 6-8pm at Alice Brown Elementary School. The majority of participants who attended were residents living nearby the proposed project site, who received notification by mail from the City. It is estimated that 80 people visited the open house and 54 solicited, written responses were collected at the event. Additional feedback was submitted to the City via email from those unable to attend the open house.

The initial public meeting had three primary objectives, which were to:

1. Introduce the project to the public
2. Explain urban agriculture and the wide variety of amenities and project types, and
3. Get feedback from the public about what type of urban agriculture would fit on this site.

A summary of this feedback was prepared and released after the open house. This feedback is summarized below:

- The site is well used as is by neighbours
- Existing values include community safety, natural space, privacy, and recreation
- Increased traffic in the neighbourhood and access to the site are major concerns
- Open and unprogrammed space is considered an asset in the neighbourhood
- Increased pest infestation, particular rats, in homes and private yards could be an outcome
- Activity on this site will disrupt rather than enhance the neighbourhood
- Urban Agriculture will primarily benefit those not living in the immediate area

Community Open House #2

A second community open house was added to the detailed planning phase after significant opposition to the project was expressed by those who attended the first open house. The event was held on September 19th, 2017, at Alice Brown Elementary School. Representatives from the City of Langley and the Institute for Sustainable Food Systems at KPU were in attendance.

The purpose was to present the public with three possible high level design options for implementing urban agriculture. Feedback collected from this event directly informed the development of a final site plan .It is estimated that 80 people attended the open house and 66 feedback forms were collected during the event. A summary of the responses below:

- **69% of respondents** were not in favour of development of the site for urban agriculture
- **12% of this group** would be in favour of environmental restoration or parkland development on this site, but not urban agriculture
- **29% of respondents** provided feedback on the three conceptual urban agriculture options. Amenities that focused on education and building supportive relationships with neighbourhood schools were preferred.
- **12% of respondents** indicated they would be in favour of urban agriculture in a different location.

4.1.3. Consultation & Public Outreach Summary

Planning for urban agriculture can be a lengthy process, involving consultation with stakeholders, special interest groups as well as members of the public. Engaging with potential stakeholders prior to the development of UA projects is a critical step because their success relies on community buy in, and capacity building at the local level.

Public outreach for the LUADP focused on sharing information with the public through community open houses, and direct email communications with members of the public. All supporting information and feedback summaries were made available on the City's website.

The LUADP faced a number of challenges in engaging with the public with two issues having significant impacts on the outcomes of the planning process. The first issue was around the general understanding of urban agriculture and what it would mean to bring it to this hydro ROW.

A second issue was the rationale behind choosing this particular site for the implementation of a UA project in the City of Langley. Much of the concern from the public appeared to stem from preconceptions about urban agriculture, with a focus on the potential negative impacts on residents in the surrounding neighbourhood.

Challenges around communicating how UA amenities could be designed to fit into an established residential neighbourhood, and the rationale for why a UA plan was being developed for this site both impacted the perceptions of the project in the public sphere. Although the project team held open houses and made efforts to keep the public up to date throughout the planning process it was difficult to collect feedback about an urban agriculture plan. The majority of residents who attended community open houses and provided feedback via email wished to see the site left in its current state, and did not support urban agriculture in this location.

Participants review project information and design options at Community Open House #2 held at Alice Brown Elementary School on September, 2017. Image Source: Roy Beddow, City of Langley

Members of the public who provided feedback about urban agriculture generally favoured:

- Limiting the scale of urban agriculture
- Education focused amenities
- Maintaining and enhancing the trail network
- Maintain emphasis on passive recreation
- Protecting and enhancing wildlife habitat
- Restoring riparian and other environmentally sensitive areas

4.2. Amenity Selection

Choosing appropriate amenities for the LUADP site involved assessment of site characteristics and current uses, listening to the community, and consultation with stakeholders. Ad hoc conversations with potential community partners also informed amenity selection.

The amenity selection process involved 3 steps, each of which employed a unique set of criteria in order to develop a list of appropriate amenities, from a large pool of possible site features. Figure 3 illustrates the three steps in the amenity selection process, the process, the criteria for each and the outcomes.

Step 1: Project Scan & Compatibility Assessment

The first step examined a list of UA amenities that was created by scanning existing projects from around the world, and looking at the different components. This included amenities that focused on food production, distribution, education, environmental restoration, and community development. This "amenity long list" was then assessed based on community fit and hydro right-of-way compatibility. The following guiding questions helped in this assessment:

- What amenities are not compatible with Hydro ROW compatibility restrictions?
- What amenities may not fit, considering: site accessibility, soil characteristics, natural features, existing infrastructure?
- What amenities may create conflicts with the surrounding community and current site uses, which can't be mitigated through amenity design?

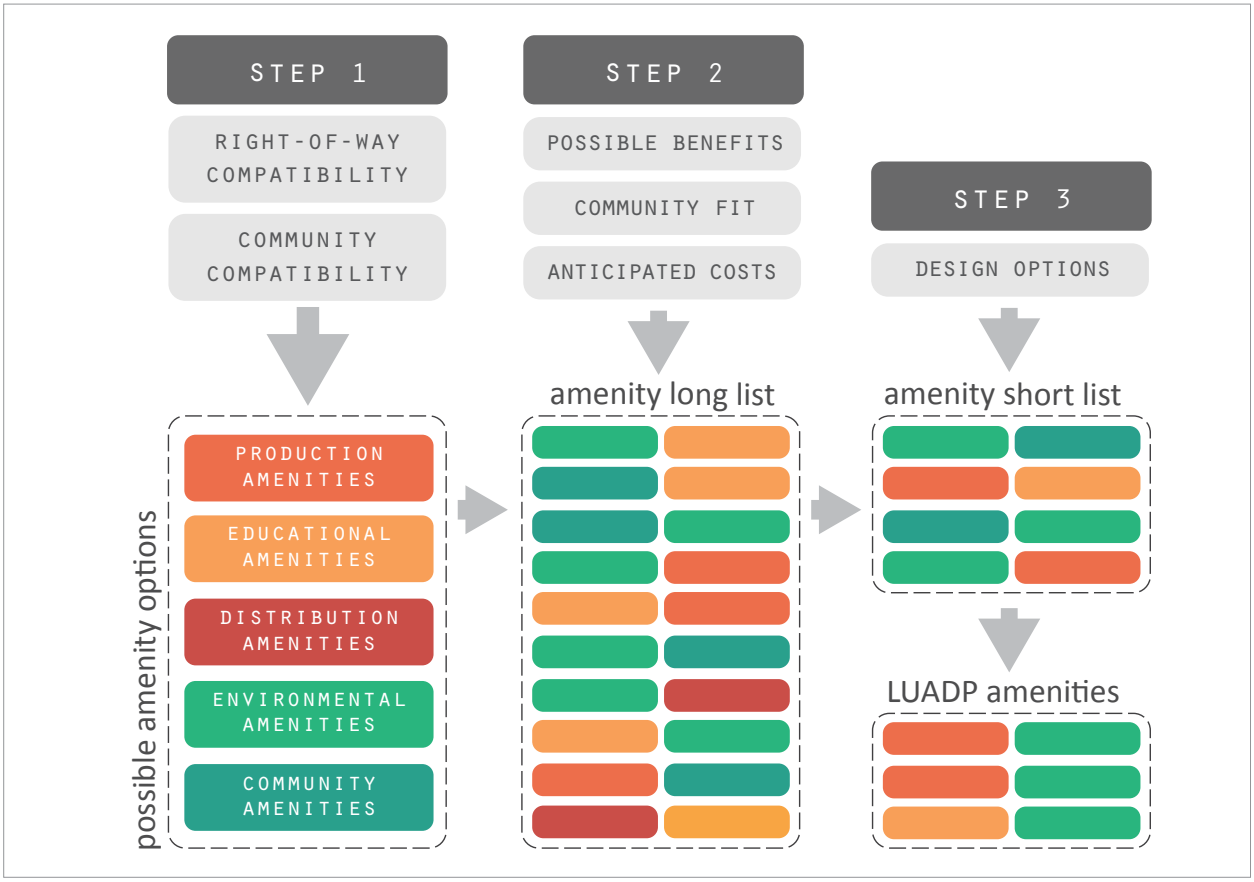


Figure 3: Amenity Selection Process Flow Chart.

AMENITY	RATIONALE FOR EXCLUSION
Accessibility Garden	• accessibility to the site for people with disabilities is limited • alternative location for accessible gardens should be considered
Community Composting	• municipal compost collection is available, community composting not a priority • odour, and rodent issues are a concern • could also attract unwanted wildlife • may attract too much traffic to the site
Container Farm	• may be unnecessary infrastructure with added cost in this location • increased maintenance costs and limit flexibility in production areas
Community Gathering Plaza	• BC Hydro does not encourage large gatherings in hydro corridors • large gatherings on the site have greater potential to conflict with surrounding community and private property
Farmer's Market	• BC Hydro does not encourage large gatherings of people in hydro corridors • Langley already has an established farmers' market • vehicular and pedestrian traffic would be an issue during market hours
Livestock	• current regulations do not allow urban livestock in the City of Langley • odour, noise, and attracting rodents are all potential issues • potential conflict from wildlife predation
Stormwater Management Features	• significant changes to site grade and drainage may be restricted by BC Hydro • stream daylighting and open water may conflict with hydro uses and is costly • there is existing underground storm water infrastructure on the site

Table 6: Amenities Eliminated from Consideration After Step 1 in the Amenity Selection Process

Step 2: Assessment & Amenity Short List

Step 2 in the amenity selection process involved assessment of the remaining amenities using the criteria considering the potential to fulfill project outcomes, with the anticipated costs and possible conflicts.

Perceived Benefits: These criteria consider the alignment of each amenity with the goals and desired outcomes for and urban agriculture project.

Community Conflicts: These criteria were derived from public feedback considering the undesirable outcomes of each amenity. The values of residents were also considered in the assessment of potential community conflicts.

Anticipated Costs: These criteria considered the capital costs, operational costs, and infrastructure requirements.

AMENITY	RATIONALE FOR EXCLUSION
Children's Garden	• Programming elements would be similar to School Garden, and Outdoor Classroom, possible redundancy • Amenities for children located nearby in Penzer and Buckley Parks
Community Garden	• People living in surrounding neighbourhood have access to private yards for gardening • Primary users may come from higher density neighbourhoods, which could increase traffic in the area
Incubator Farm/ Training Farm	• BC Hydro may restrict the type of infrastructure required to support small scale, farming businesses • Number of people and intensity of farming would increase, causing potential community conflict • Oversight of a number of independent users would add cost
Indigenous Garden	• This amenity cannot be developed without identifying a First Nations community partner

Table 7: Amenities Eliminated from Consideration after Step 2 in the Amenity Selection Process.

Step 3: Design Options

Design options were developed to show how amenities could be scaled to fit the site demonstrating alternative visions for urban agriculture. Design options were presented to the public at Community Open House #2.

Option #1: THE CLASSROOM

This design option focuses on education with a school garden and outdoor classroom as core amenities. This option would provide opportunities to link curriculum activities in local schools with the real life experiences in food production. There would also be an emphasis on community education with learning about the food system and related environmental issues. Close partnerships with local schools would be necessary to make this option successful.

Illustration 1: Sketch of flexible seating and raised beds in Outdoor Classroom.

Option #2: THE ORCHARD

This design option would develop a perennial food producing landscape that is seamlessly integrated with community use and habitat creation. The orchard would feature three distinct production areas including a tree fruit orchard, berry patch, and a food forest. These three areas are connected to naturalized areas on the site and intertwine with new and existing pathways. The perennial landscape would be designed to be productive while also enhancing the atmosphere and quality of the space as a community amenity.

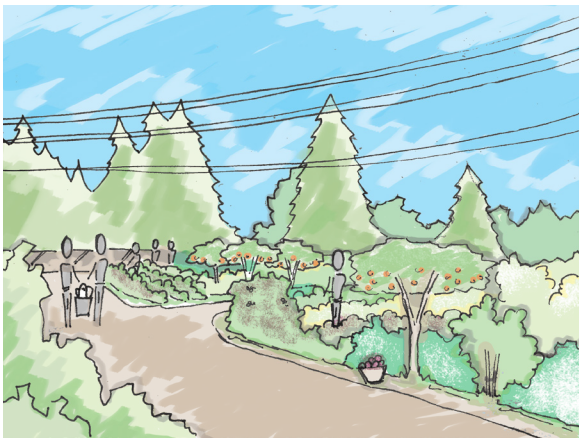


Illustration 2: Sketch of Food Forest with a variety of perennial crops for community cultivation.

Option #3: THE FARM

This design option would aim to maximize the potential for food production on the site while maintaining current uses and limiting impacts on the surrounding neighbourhood. Production areas would focus on human scale agriculture and feature both perennial and annual cropping systems. This design option would be modeled to mimic small scale, diversified farming systems and be managed through community cooperation, and an managing organization dedicated to urban agriculture.

Illustration 3: Sketch of the Farm Hub and surrounding annual production plots.

4.3. Designing the LUADP

After completing consultation, public outreach and the various amenity selection steps the project team was able to determine the amenities that would best fit the site and community context.

Based on community feedback and internal amenity selections steps priorities were identified that would guide final concept design for the LUADP.

Recreation & Access

The site is currently well used for passive recreation. It is a priority to allow these uses to continue as the site is developed to support urban agriculture. Maintaining all existing paths and access points creates a framework for building new urban agriculture amenities on the site.

Small Scale Organic Food Production

Limiting the scale of urban agriculture in order to limit disruption in the neighbourhood, and encourage engagement and participation from the public. This was considered the best option for exploring food production on the site because of the potential for community participation, and enhancing the environment as a byproduct of food production. There is potential for this model to better respond to, and grow with the community.

Education & Demonstration

The potential to provide community education and teach people about small scale agriculture and the food system will add significant value to the community. Since many people living nearby the site have private yard space that may be suitable for producing food supporting these efforts is a priority.

Wildlife Habitat

The site currently supports a variety of wildlife species and acts as a link to the City's green corridor network. It is a priority to maintain this function while also enhancing the quality of the habitat areas on site

Community Connections

The potential for supporting existing community programming and activities was also considered in preparation of the final plan. Drawing on existing resources, and addressing gaps in programming could lead to greater community integration and success of the project over the long term.

Developing a Model

Finally, it was important to create a plan that fully explored the potential for urban agriculture on this site, while working within the design constraints of hydro ROW compatibility and community fit. This plan may now serve as a model for other communities who are interested in moving urban agriculture forward in their communities in a meaningful way.

With these guiding principles in mind, and the outcomes from consultation and amenity selection, the final design was prepared for the LUADP site. The resulting plan aims to strike a balance between small scale food production and the protection and enhancement of environmental assets. This maintains the activities already enjoyed by residents such as walking, cycling, and wildlife viewing. It will also create new, unique opportunities for active participation with small scale food production in public space.

5. Site Plan

The site plan developed for the Langley Urban Agriculture Demonstration Project provides a design and management strategy that would brings agriculture to the City of Langley. The plan takes a balanced approach to urban agriculture, education, environmental restoration, and passive recreation.

LUADP Vision

The vision for the LUADP is to create a functional community amenity with a shared focus on **food production, education** and **environmental restoration**. The plan is motivated by a commitment to small scale, organic, community based food production and demonstration. The LUADP aims to integrate farming, community life and the environment, through an innovative approach to urban agriculture in an existing residential neighbourhood.

LUADP Goals

The goals of the LUADP represent specific outcomes of the project, and where possible contribute to community development and sustainability in the City of Langley:

- Increase the production of local, healthy food
- Demonstrate small scale, organic food production
- Educate people of all ages
- Improve food literacy
- Increase biodiversity and have positive impact on the environment
- Utilize publicly owned land for community development and social innovation
- Support community connection through engagement with food production and environmental restoration

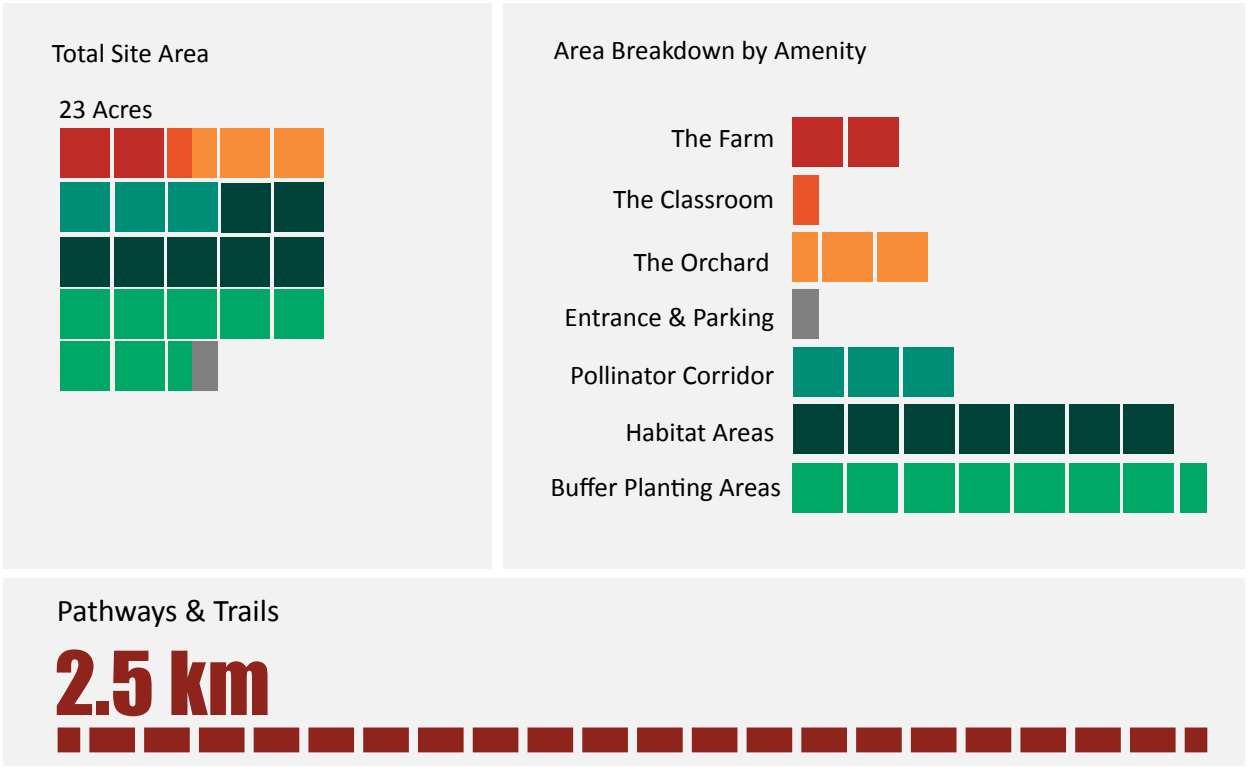


Figure 4: Langley Urban Agriculture Demonstration Project amenity area breakdown

5.1. Site Servicing & Infrastructure

Proposing UA amenities on vacant land can pose challenges when it comes to providing the resources and infrastructure needed to grow food successfully. Within hydro ROWs there are additional challenges to navigate in order to support urban agriculture due to possible conflicts with hydro utility equipment.

This section outlines the components that will support agricultural activities and programming. This includes adding new infrastructure, creating access to water and hydro, as well as maintaining and enhancing existing pathways.

5.1.1. Parking

Parking is required for those regularly working on the site throughout the growing season as well as for visitors and volunteers who come to the site more occasionally. A gravel parking area will be located just off the 200 St. entrance and will be designed to accommodate no more than 15 vehicles. A locked gate will restrict vehicles from entering the site during “off hours”. No private vehicles will be permitted in the site beyond the parking area. Access to these areas will remain restricted to site maintenance and BC Hydro vehicles.

Bike parking should also be provided near the site entry and parking area as well as in locations close to amenity areas.

5.1.2. Electricity Hook Up and Lighting

Creating a viable community amenity with a significant food production component may also requires connection to the electrical grid. Electrical servicing at the Farm Hub may be needed to power lights, tools and possible cold storage facilities. A detailed electrical plan and cost of servicing should be prepared through a collaboration between BC Hydro and the City of Langley.

As a site that is accessible to the public for passive recreation lighting may also need to be installed along pathways and in parking areas as a public safety measure.

5.1.3. Toilets

Toilets must be provided on the site for those who are working in production areas or visiting the site for education or recreational activities.

A pit toilet design, commonly used in parks, is the most appropriate for this site to avoid the additional costs of establishing a sewer connection. A pit toilet consists of a dug, and lined pit, typically 1-2m deep, with a shelter constructed above. In British Columbia Leko Precast Ltd. is a supplier of pit toilets, including shelter, vault (pit) and all interior fixtures.[34] The pit toilet will be located in an area where it can be easily accessible and does not conflict with other uses or the surrounding neighbourhood. A handwashing station should also be provided at in the pit toilet area.

5.1.4. Pathways

The LUADP site in embedded in a residential neighbourhood and facilitates passive recreation as a primary use. Users are able to access the site through the surrounding neighbourhood and from nature trails along Muckle and Pleasantdale Creeks. Maintaining existing access, connectivity and circulation on the site are both high priority.

All existing pathways will be maintained including the main pathway running the length of the site that is used by BC Hydro maintenance vehicles, including full sized line trucks. In addition to the existing pathways new pathways will be created connecting new amenities.

5.1.5. Water Access

Access to a clean and abundant source of water is necessary for urban agriculture projects. In many cases connecting to municipal water sources is ideal because it provides a source of potable water that can be used to irrigate crops, clean produce, and for sanitation (i.e. hand washing). For the LUADP a connection to

municipal water will be made at the 202 St. ROW. It is recommended that the City of Langley install a 50 mm central water hook up at this point for the LUADP at an estimated cost of $10,000.00.

Overhead irrigation is restricted in hydro ROWs. Additionally, metal pipes and fixtures can create potential induction and shock risks. The LUADP should install drip irrigation. These systems are commonly used for small scale, farming operations because of their relatively low cost, and efficiency. Components of these systems are primarily made of plastic, and are therefore compatible for use in a hydro ROWs.

The intensity of irrigation will vary depending on weather conditions, and the types of crops grown. There must be a clear agreement with the City of Langley regarding water use and any possible restrictions that might impact agricultural operations.

Once production areas are established an evaluation of water use should be conducted to better understand how much water is required for food production and other uses. Installing water meters for various production areas will provide the necessary information for drafting this agreement.

5.1.6. Signage

Incorporating unique and effective signage will provide information for visitors about the agricultural and ecological systems at work on the site. Signage is also a key component in establishing a unique identity for the project as a hub for urban agriculture, and education in the community and the region. There are three types of signage that should be incorporated to enhance the experience of the LUADP and ensure the safety and security of visitors. These signage types include wayfinding, amenity identification, and educational.

Designing and creating signage for the site can present a unique opportunity for engaging with community partners and with the public, and to foster community identity. The need for multi-lingual signage should be assessed as signage should design to be accessible to all those living in the community.

Wayfinding Signage is primarily directional, indicating where different amenities are located. It can also show visitors how the site fits into the broader community context.

Amenity Identification Signage can show the unique features of the site as well as their function (education, production, environmental) and the connection to other site amenities.

Educational Signage provides in depth information about the systems at work on the site, and highlights unique features.

Wayfinding Signage at Black Creek Community Farm features a site map as well as important information about the project, its purpose, and sponsors.
Image Source: The Toronto Star

Educational Signage at Public Produce Garden in Kamloops, BC provides information about when and how to harvest various crops.
Image Source: Kamloops Public Produce

Map 5: Langley Urban Agriculture Demonstration Project Site Plan.

5.2. Non-Production Amenities

Non-Production amenities include all those amenity areas that support but do not directly contribute to food production, or education. These areas feature habitat enhancement, native plantings and are advancing the vision and goals of the project.

Non-Production Amenities:

- Buffer Planting Areas
- Habitat Areas
- Pollinator Corridor

Opportunities:

- Increased biodiversity
- Enhanced wildlife habitat
- Provisioning ecosystem services
- Maintaining privacy for surrounding properties
- Maintaining natural character of the site
- Providing pollinator habitat and facilitating pollinator education
- Removing and reducing the spread of invasive species

5.2.1. Buffer Planting Areas

Buffer planting areas perform important functions for the site and for the surrounding community. They maintain the "naturalized" character of the site, and create physical buffers between active and passive areas of the site and between public space and private space.

Once buffer plantings are established the most intense maintenance will be required in the first 2-3 years to irrigate new plantings and control weeds. Overtime these areas will naturalize and require less maintenance. Controlling invasive species on the site will be an ongoing task.

Plant material for buffer planting areas, and all non-production amenity, is available through a local sources including NATS Nursery Ltd. and Cedar Rim Nursery Ltd.

5.2.2. Habitat Areas

With an extensive network of parks and open space in the City there is an abundance of wildlife, many of which can be seen on the site. This includes: birds, rabbits, mice, coyotes, and deer.[35] Community members value this space as a natural refuge within the city and cited "wildlife viewing" as an important activity to support.

Riparian areas and a wetland area will be incorporated into the design of the LUADP to enhance the habitat value of the site and support local wildlife populations. Habitat areas will feature native plants and be developed to mimic native habitat that may have been lost in development of the hydro ROW, and control the spread of invasive species. They will also contribute a variety of ecosystem services that contribute to agricultural productivity, and to human health

On the LUADP site areas designated for habitat enhancement may not be suitable for urban agriculture due to slope, proximity to ecologically sensitive areas, and poor drainage.

Existing Muckle and Pleasantdale Creek riparian areas that connect to the north edge of the site are recognized ecologically sensitive.[36] These waterways connect the site to the Nicomekl River greenway that bisects the City. Riparian areas are transition areas between land and rivers or streams. The vegetation in these areas usually grows well in wet conditions and is critical for protecting water quality by reducing erosion, and filtering pollutants.

Wetland areas are also can also provide increase infiltration of rainwater, reducing runoff in addition to providing refuge for birds and insects.

Urban agriculture sites, especially those developed in dense urban areas, have demonstrated the potential for achieving a number of positive ecological outcomes. With a focus on small scale food production, and both annual and perennial crops these sites can support a wide variety of local wildlife.

5.2.3. Pollinator Corridor

The pollinator corridor is specifically designed to attract and support a diversity of wild pollinators including; bees, butterflies, birds, and insects. These garden areas would be planted with native and non-native species.

The first year of maintenance is critical when establishing the pollinator corridor. Regular irrigation and hand weeding will be required to ensure that plants are successfully established and not out competed by invasive species.[37] Once established, maintenance will be relatively low and the corridor will contribute ecosystem services, while also being aesthetically pleasing.

The Langley Environmental Partners Society (LEPS) have worked with the City of Langley on "pollinator pastures" and corridors in other areas. This type of work is also ongoing in other Metro Vancouver municipalities. Existing projects and resources could provide support in the development of a corridor, or "pollinator pasture" within a hydro ROWs.

Pollinator hedgerows will also be integrated into crop production areas to encourage pollination of crops. This will also help to create an extensive network of pollinator and wildlife habitat across the site.

Table 8 shows a sample of native and non-native plants that could be incorporated into the pollinator corridor and hedgerows. These plants have a diversity of flowering times and colours, and will be easily maintained with the vegetation height restrictions of hydro ROWs.

Image Source: City of Richmond, Twitter

Pollinator Pasture, Richmond BC

This pollinator habitat was created on a 2.6 acre park beneath hydro transmission lines in the City of Richmond. Researchers and students from Emily Carr University of Art + Design collaborated on the project as did local seed house West Coast Seeds. Emily Carr contributed public art and site features including a "bee hotel". Local schools also contributed by growing 600 sunflower seed that were planted in the pasture in 2015. The pollinator pasture replaced 120 pine trees planted in the ROW years earlier and has become a low-maintenance landscape treatment. [38]

Variety	Height
Native Plants	
Red Columbine (*Aquilegia canadensis*)	0.6m
Pacific Bleeding Heart (*Decenter Formosa*)	0.4-0.6m
Pacific Aster (*Symphyotrichum chilense*)	1.5m
Fireweed (*Chamaenerion angustifolium*)	0.5-2.5m
Nootka Rose (*Rosa nutkana*)	0.6-3m
Wild Strawberry (*Fragaria vesca*)	0.2m
Western Yarrow (*Achillea millefolium*)	1m
Little Larkspur (*Delphinium bicolor*)	1m
Non-Native Plants	
Dwarf Wild Rose (*Rosa acicularis*)	0.5m
Dwarf Sunflower (*Helianthus annuus*)	0.6-1m
Butterfly Bush Milkweed (*Asclepias tuberosa*)	0.7m
Black Eyed Susan (*Rudbeckia hirta*)	0.1-0.4m
Miniature Lupine (*Lupinus bicolor*)	0.0.4m
Wild Bergamont (*Monarda fistulosa*)	1-2m

Table 8: Pollinator Corridor and Hedgerow Sample Plant List.

5.3. Production Amenities

Production amenities include all those amenity areas that contribute directly to food production and education on the LUADP site.

Production Amenities:

- The Farm
- The Classroom
- The Orchard

5.3.1. The Farm

The Farm is a proposed production amenity with systems and infrastructure that supports other food production and educational amenities on the site. Production will be small scale with about 1 acre in annual vegetable production using organic methods.[39]

Production elements include, annual cropping areas, public produce gardens, and cut flower gardens. The Farm will also features infrastructure including irrigation, equipment storage, composting, and a produce washing area.

Opportunities:

- Demonstrating small scale, organic vegetable production for urban areas
- Demonstrating the potential for food production on similar sites
- Improving access to healthy, fresh, local food
- Improving food literacy by connecting urban residents to agriculture and food systems
- Facilitating community education
- Volunteer opportunities for youth and community members
- Employment in the local food and community development sectors
- Social capital building
- Enhancing soil fertility and ecological health

Illustration 4: View of Farm Hub, walking trails and habitat area.

The Farm Hub

The Farm Hub will focus around a small, non-permanent building used to store tools, equipment, and produce. An outdoor produce washing area will be located adjacent to the building. Based on restrictions for non-permanent structures within hydro ROWs the building should not exceed 3.6m in height and have a floor area no larger than 36m^2.[40] Construction should not use of metallic materials. Water access will be required at this location for sanitation and produce washing.

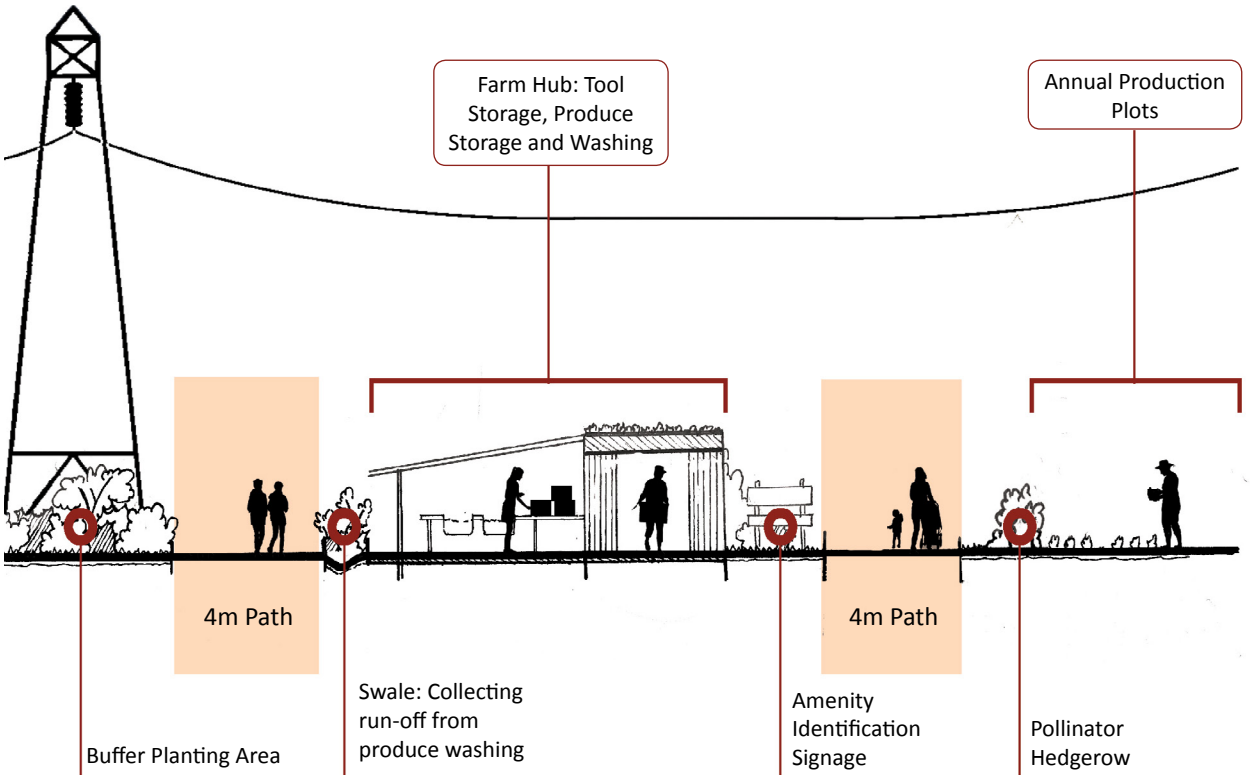
Space for meetings and other site planning activities off site may occasionally be needed. Schools, community centres or municipally owned building are all possible locations.

Produce storage needs will depend on what types of crops are grown and how they are distributed into the community. The space required should be determined when a more detailed crop plan, and distribution plan has been finalized. Some cold storage may be needed.

Farm Shed at Loutet Farm in North Vancouver, BC.

Farm Shed at Jones Valley Teaching Farm in Birmingham, Alabama is used for storage and doubles as a produce stand.

Illustration 5: Elevation of Farm Hub.



Annual Cropping Areas

Annual cropping areas are dedicated to growing annual vegetables, using organic production methods. These areas will be designed with the infrastructure necessary to grow a variety of annual crops. This plan does not include recommendations on the types of crops that should be cultivated as this will be determined by the farm manager based on site conditions and community need. The amount of food produced on the site annually will also be dependent on a variety of factors such as the crops that are grown and the intensity of cultivation.

Production beds will be standardized as much as possible measuring 1m (3.2 ft.) in width with 0.5m (1.6 ft.) pathways between each bed. There will be some flexibility in this configuration as it may be necessary to provide wider pathways in areas where children or volunteers are gardening.

Public Produce Gardens

To maximize community engagement public produce gardens will be designed to be cultivated by the public. These areas will be distinct from annual cropping areas, feature additional signage instructing people on what, when and how to harvest. The types of crops planted here may also be different. Some considerations for public produce gardens include:

- Plant short season crops that are easy to harvest such as: lettuce, radishes, kale
- Plant crops in succession to there is continual harvest throughout the growing season
- Create trellises for climbing crops (i.e. beans and pea) to make harvest easier
- Avoid crops that are highly susceptible to pests and disease
- Avoid crops that take up a lot of space and are challenging to harvest (i.e. winter squash, tomatoes)
- Create wider paths between production beds

Illustration 6: View of Annual cropping areas and pathways

Cut Flower Gardens

Cut Flower Gardens will increase the biodiversity on the site while also adding aesthetic value for to the farm area and to the site overall. Cut flowers can also provide an additional source of revenue for urban farms, while also being a crop that can be easily harvested by the public. Cut flower beds will vary in size and can be integrated into food crop production areas.

Tools and Equipment

Production areas on the LUADP can be primarily managed using hand tools with limited mechanization. Focusing on hand tools for field work will also increase the accessibility for volunteers, especially children, to participate in farming activities.

A walk behind tractor with various implements (rototiller, bed shaper, mower etc.) will be appropriate for the scale of production but should only be operated by individuals who are properly trained. In some special cases a tractor may be required for larger scale field work or site maintenance. Agreements for equipment sharing or rental should be arranged in cases where large machinery is required.

Staff and volunteers can easily move between production areas on foot, using wheelbarrows to carry tools and produce.

Composting

A compost area should be located near the Farm Hub so it can be more easily accessed and maintained. A three compartment composting system is recommended based on the scale and restrictions on the LUADP. This type of composting system is commonly used for small scale urban farming. It is estimated that with three composting compartments each 3m x 3m this system will be able to process 3000-4000kg of garden waste every 6 months, producing about 3000 kg of finished compost per year. [41]

Composting is an important consideration for farming at any scale. Composting garden waste limits the loss of nutrients and adds organic matter, micro-nutrients and beneficial microorganisms to the soil. Urban Agriculture faces unique challenges when it comes to effectively managing waste and making compost. UA sites may not have space to make enough compost to meet their needs. Unpleasant odours are often of concern, however if managed properly, a compost pile, especially one that does not contain any fatty material (i.e. oils) or animal products (i.e. animal manure, meat products, or dairy) should not smell.

Farmer using a walk behind tractor to cultivate small scale vegetable production beds.

Three Bin Composting System can be designed using inexpensive and easily accessible materials.

5.3.2. The Classroom

The Classroom will an area dedicated to educational programming. There are different elements that will have the flexibility to serve a variety of user groups. Micro-production plots, and raised beds provide dedicated garden space for learning and demonstration. Connecting directly to curriculum programming through local schools, will animate this amenity and support ongoing programming and maintenance.

The LUADP site is located in close proximity (walking distance) to several schools such as Simmonds Elementary, Alice Brown Elementary and H.D Stafford Middle School. This presents an opportunity to link to existing outdoor education, and sustainability curriculum, and to develop additional farm based programming in partnership with local students and teachers. Local schools, and the school board should be approached as potential strategic partners for the LUADP.

Opportunities:

- Hands on learning for students of all ages
- Support existing outdoor education and sustainability programs in local schools
- Improve food literacy amongst students, and in the community
- Collaboration between schools and students of different ages
- Summer programming including camps and youth internships
- Increase access to healthy, local food to be consumed in schools
- Facilitating community education

Illustration 7: View of Micro production plots and tool storage in classroom area.

Image Source: Jones Valley Teaching Farm

Jones Valley Teaching Farm, Birmingham AL

Located in Birmingham Alabama, Jones Valley Teaching farm now operates 7 teaching farm sites. Instructors align programming with curriculum in math, science, social studies and English. With a variety of school yard sites students have the opportunity to engage with farm based learning through high school in some cases. The sites feature a variety of amenities, including: annual vegetable production, raised beds, outdoor classrooms, tool storage and sensory gardens. [42]

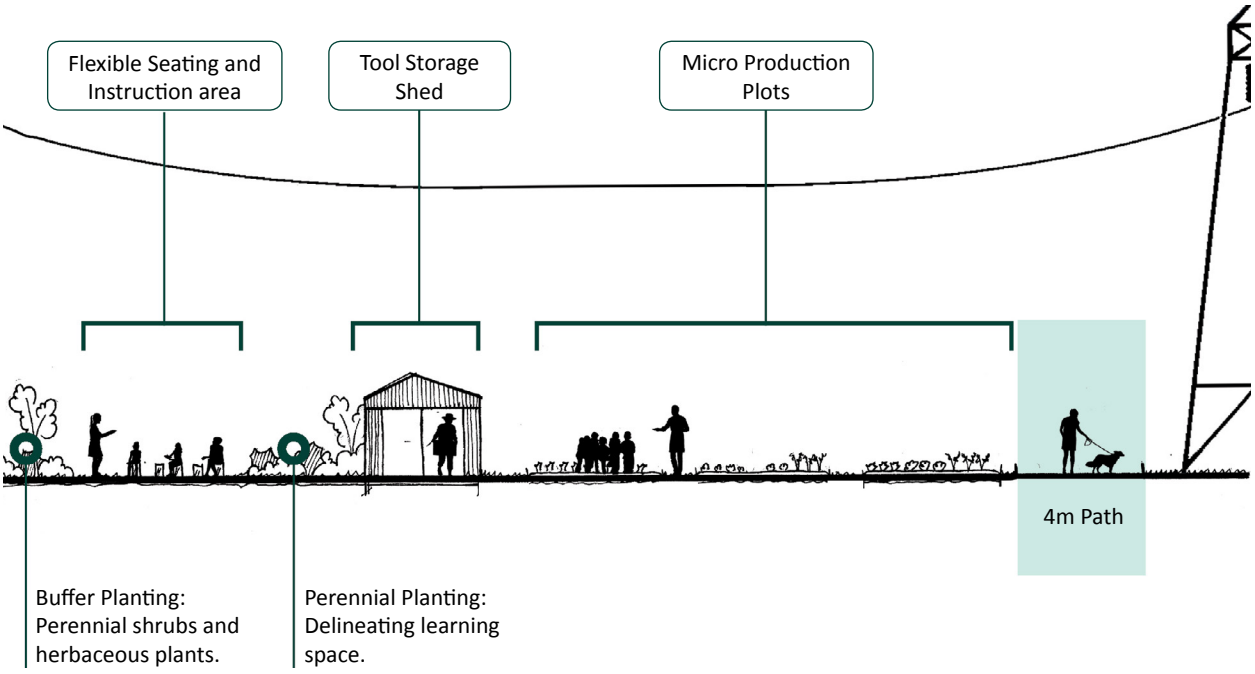
Micro Production Plots

Micro production plots will provide space for students to engage in crop production at a scale that is more conducive to experimentation and learning. These garden areas would be planned and cultivated by students. A separate tool shed should be located close to these beds to keep tools and equipment separate from the other production areas.

These plots will be used regularly by students during the school year, from September – June. It will be important to design and plan with this consideration in mind. Some strategies for establishing micro-production plots that can support classroom curriculum include:

- Provide classes or student groups with 3.5- 4m2 of garden space each
- Allow classes to personalize their garden space
- Plant long season crops in spring that will be ready for harvest in the fall
- Plant spring crops early (and indoors) so they can be planted and harvested early

Illustration 8: Elevation of Classroom Area



Raised Beds

Raised beds serve a variety of purposes in UA projects. They can increase accessibility, provide areas for teaching and demonstration, increase drainage, or deal with contaminated/ marginal soils.

Raised beds can be made using a variety of materials, many of which are inexpensive and easily accessible. Commonly used materials include: metal, concrete blocks, bricks, and naturally rot resistant woods like cedar or redwood. In the context of the LUADP, non-pressure treated cedar is an ideal choice for the construction of raised beds.

When constructing raised beds on top of existing soil the ideal depth of the bed is between 0.2 m and 0.3 m. The distance to the center of the bed should be no more than 0.4 m, and this distance may need to be slightly smaller if the beds are primarily being used by children. The distance between the raised beds should be between 0.6 m and 1 m to accommodate groups of students. [43]

Wooden Raised Beds at a Community Garden in Toronto.

Children participating in gardening activities in raised beds at the McQueston Urban Farm in Hamilton, Ontario.

Flexible Seating

A limited amount of flexible seating should be provided to accommodate groups of up to 15-20 students. In addition to fixed seating open spaces can also provide opportunities for group instruction and hands on learning.

The most appropriate material for seating and other site furnishings for the LUADP is wood. Tree stumps and logs that are embedded in the ground, so they can not be moved are ideal in this case.

Students sitting on cut stumps in an outdoor classroom area at the Washington D.C Youth Garden.

5.3.3. The Orchard

The Orchard is all areas for the production of locally suited perennial crop varieties. This includes tree fruits, nuts and small fruits (i.e. berries). In order to adhere to BC Hydro compatibility restrictions perennial crops, like all other vegetation, should be maintained at a maximum height of 3m. Tree crops should be purchased on dwarf root stock to make pruning and management easier.

The Orchard areas will be carefully managed for production but also have the potential to support high levels of biodiversity, create wildlife habitat and enhance community amenity space. The community orchard model has been implemented in different communities as a way to connect efforts to improve and animate public space while also addressing food security and other sustainability challenges. On the LUADP site orchard areas are open and accessible to the public for walking, and harvesting.

Opportunities:

- Demonstrating perennial crop production for urban areas
- Facilitating community education in perennial crop production, and orcharding
- Increased biodiversity
- Enhanced wildlife habitat
- Gleaning of fruit, nuts and berries
- Increasing the availability of locally suited orchard stock

Illustration 9: View of Production Orchard, pollinator corridor, and existing pathway.

Demonstration Orchard

The demonstration orchard is an area for education and experimentation in perennial crop production at the small, urban scale. This area differs from the block planting scheme in the production orchards and features a more diverse mix of perennial crop varieties. This area will also be a place to experiment with unusual varieties and to test the hardiness of varieties for the climate and site conditions.

Production Orchards

The production orchard areas located around the site contribute to production diversity, and facilitate community cultivation. Fruit trees should be on dwarf root stock to make it easier to maintain the mature trees in accordance with the maximum height requirements within the hydro ROW. Small fruit varieties will also be incorporated and should also be maintained to a maximum height of 3m.

Copley Community Orchard, Vancouver BC

Copley Community Orchard is an urban orchard located in Vancouver, British Columbia. It is a place to celebrate the benefits of growing fruit trees, berry bushes and other perennial plants, educating people on their cultivation, and creating a beautiful and productive space accessible to all. In June, city council approved a $15,000 grant to EYA for the project, as part of $110,000 in community urban agriculture and neighbourhood food security grants. [44]

Tree and small fruit crops will come into full production in 3-5 years with some production as the orchard is being established. In addition to the production of perennial food crops the orchard can host workshops to educate the public on how to care for a variety of edible trees and shrubs.

These production areas will be managed by production staff and community volunteers. Local schools could also be recruited to volunteer in perennial production areas.

Table 9 provides a list of different perennial crops that could be grown on the site. Based on the space allocated for perennial crops, numbers represent the maximum number of plants that could be cultivated on the site.

Variety	Number of Plants
Fruit Trees	
Apples	60
Apricots	20
Cherries	45
Peaches	10
Pears	20
Plums	25
Nut Trees	
Hazelnuts	10
Heartnuts	5
Walnuts	5
Total Number of Trees	**200**
Small Fruits	
Blackberries	80
Blueberries	60
Currants	18
Gooseberries	18
Haskaps	40
Raspberries	80
Salmon Berries	40
Saskatoon Berries	40
Total Number of Small Fruits	**376**

Table 9: Perennial crop varieties for the LUADP site.

Image Source: Adobe Stock Photos, Deyan Georgiev

6. Management Plan

For UA projects, consideration of day to day operations, and long term management is critical. A management plan for urban agriculture should acknowledge input from multiple stakeholders, and draw on existing community capacity and directly addressing local needs.

Management Questions to Consider:

- Who will be the primary stakeholders involved in management of the project?
- How will these stakeholders work together to manage the project over the long term?
- What resources (biological, physical, social, etc.) are required to support the project?
- How will site elements interact with existing community programming and activities?

6.1. Stakeholders

UA projects are managed by individuals, non-profit organizations, or a combination of stakeholders. Given this diversity, the governance structure of UA projects varies based on the stakeholders involved, and on the amount of community capacity available.

For the LUADP, main project stakeholders include: Non-Profit Society (operations and amenity management), the City of Langley (land owner), and BC Hydro (utility manager). The governance model proposed focuses on building a supportive relationship between these groups, and creating additional capacity within the community.

6.1.1. Non-Profit Society

A new Non-Profit Society (the Society) should be created to manage and coordinate day to day operations on the site including all food production components. Managing a site with productive agriculture elements requires skilled individuals with knowledge about small scale food production, and the capacity to engage with the community around agricultural and environmental issues.

The Society must also have strong ties to the community, and will be governed by a volunteer steering committee. This committee will have representation from the agricultural sector, from government, and from the community.

The Non-Profit Society will be responsible for:

- Developing a Site Use Agreement in collaboration with other management stakeholders
- Ensuring conditions of the site agreement are adhered to by all visitors and community partners
- Hiring farming and programming staff
- Managing all agricultural components
- Creating annual reports that include reporting on public engagement, financing, production and community impact
- Maintain open channels of communication with the public about farming activities and programming on the site
- Allocating space to local schools or community groups for production and ensuring that these areas are well maintained
- Recruiting and managing volunteers
- Coordinating programming on site with individuals and community groups, including local schools
- Offering educational tours of the site for community members, groups and visitors from across Metro Vancouver

Image Source: Beacon Food Forest

Beacon Food Forest, Seattle WA

The Beacon Food Forest is located in the Beacon Hill Neighbourhood of Seattle. The goal of the Beacon Food Forest is to bring the diverse community together through a permaculture approach to urban farming. The approach to management is also unique. The project sits on land that is publicly owned, and a volunteer group that has now become a registered non-profit society. Some administration support is also provided by City of Seattle staff through the P-Patch Community Garden Program. [45]

Non-Profit Society Steering Committee

The Steering Committee should meet regularly to discuss the project, make decisions about operations and programming and address any challenges or grievances from the community. The Committee will also develop an action driven charter which outlines the Steering Committee's mission, responsibilities, scope of influence, and deliverables.

Steering Committee Membership include:

- 1 Local government representative
- 1 Farm Manager
- 2 Community representatives
- 1 BC Hydro representative
- Community partner representatives

6.1.2. City of Langley

The City of Langley will continue to work closely with other management stakeholders offering servicing, and programming support. In addition to a dedicated City liaison on the Steering Committee, various municipal departments could also be engaged management and operations of the LUADP, depending on the nature of the support work needed.

The City of Langley will be responsible for:

- Develop a Site Use Agreement in collaboration with other management stakeholders
- Provide non-agricultural site maintenance support (i.e. pathway maintenance, mowing)
- Install and maintain water servicing
- Assist in dealing with site use or community conflicts
- Review operational budgets
- Assist in securing financing to support ongoing work when possible
- Provide support for programming including; advertising, staff and resources
- Help recruit and coordinate volunteers through establishes community networks
- Help promote events and activities taking place in the site

6.1.3. BC Hydro

BC Hydro participates in the development of compatible uses for hydro ROWs in order to maintain access to utility work, and protect public safety. The role of the BC Hydro will be an advisory one, consulting on all operational decisions and long term management.

BC Hydro will be responsible for:

- Review and approve final detailed plans for site development with conditions as required
- Provide a compatible use agreement consenting to uses within the ROW area
- Review and approve any proposed changes to the approved plans (new programming and activities).
- Consult with the Society on proposed changes or major works on the site

6.1.4. Community Partnerships

UA projects are strongly focused on community development and public education requiring significant human resources often drawing on existing community capacity. The likelihood for success can be increased in many cases by leverage existing community resources in a variety of forms, including: financing, knowledge, and labour. It can also be advantageous to connect to ongoing work in the community, to ensure that the project can be impactful and not take away from the impact of other initiatives.

The City of Langley is a small municipality with an active citizenry. Ongoing social programs, public education efforts and sustainability initiatives all present opportunities for integration with the LUADP. This section outlines ongoing work that could support development of the LUADP, and recognizes potential community partners.

Langley Environmental Partners Society (LEPS)

With a mandate to support environmental sustainability through public education and partnerships, LEPS should be approached as potential partners partner for the LUADP both in implementation phases and long term management. [46]

In the City of Langley there are existing community garden projects managed in partnership with the City, Langley Environmental Partners Society (LEPS), and by local schools. LEPS also manages a Demonstration Garden at the Derek Doubleday Arboretum nearby in Langley Township where educational programs focus on backyard gardening and environmental sustainability. [47] Assets that LEPS could bring to the LUADP include:

- Experience doing restoration work in riparian areas and hydro ROWs
- Ongoing work engaging the public, and youth in environmental work
- Experience managing community gardens in the City and Langley Township

- Experience establishing pollinator gardens with the City, and BC Hydro
- Ongoing work and active programming throughout the community

Local Schools and School District (SD35)

Local schools present another potential resource for collaboration on the LUADP. Connecting with schools could expand educational programming as well as providing additional volunteer labour to support food production. The project site is located within walking distance of local schools, including: Simmonds Elementary, Alice Brown Elementary and H.D. Stafford Middle School. It is also accessible to other SD 35 schools in both the City and Township of Langley. Assets that local school could bring to the LUADP include:

- Existing outdoor education programming
- Access and coordinate youth volunteers for implementation and maintenance
- Connect to sustainability and health related initiatives in Langley Schools i.e. Healthy Schools Program, Green Team

6.1.5. Engaging the Public

The public also has an important role to play in supporting the development and management of the LUADP. Active and ongoing public engagement is critical to ensure that the project continues to fit the community context and meet local needs.

Members of the Public will be able to engage with the LUADP through:

- Ongoing volunteer opportunities
- Sitting on the project Steering Committee
- Purchasing food grown on the site from the farm gate or the farmers' market
- Participating in "workbees" and community cultivation events
- Harvesting from public produce gardens
- Passive recreation on the LUADP site

Other potential project partners:

Environmental:

- Evergreen BC
- Environmental Youth Alliance
- Langley Field Naturalists
- Pollinator Partnership Canada
- Pollination Ecology Lab at SFU
- Nickomekl Enhancement Society
- Local First Nations

Education:

- Farm to School BC
- Fresh Roots Urban Farm

Health and Nutrition:

- Fraser Health
- Langley Community Harvest Program (managed by LEPS)
- Langley Food Bank
- First Nations Health Authority

Food and Agriculture:

- Farm Folk City Folk
- KPU Sustainable Agriculture
- KPU Farm School Programs
- Langley Community Farmers Market
- Langley Sustainable Agriculture Foundation

Community volunteers plant and mulch new fruit trees at the Copley Community Orchard site in East Vancouver.

6.1.6. Governance Model

The most appropriate governance model for urban agriculture projects is determined by the capacity of stakeholders, and local context. In most cases managing and regulating UA projects falls to local governments, even if they are not involved directly in operations.

A governance model should express and refine a shared vision for the project, while also enhancing the long term plans for implementation and management.[48] The stakeholders involved should also be able to aggregate resources and act to advance the projects mandate. With no available blueprint for managing urban agriculture it can be helpful to look to other successful projects for guidance or to draw on existing capacity and expertise in the community.

In the case of the LUADP, the Non-Profit Society will be the entity in charge of managing day-to-day operations. Success will also require engagement with community partners, local government, and the public.

Figure 5 shows the governance model for the LUADP demonstrating the level of coordination required amongst stakeholders and partners. The arrows demonstrate the flow of resources connected to the project, which can be either funds, expertise, in-kind support, or services. Stakeholders with "advisory" roles will be involved in high level decision making, determining project direction, and providing feedback. On the "operational" side, stakeholders will be directly involved in site operations, and program development on the project site. Funders and community partners that will support the project have yet to be confirmed.

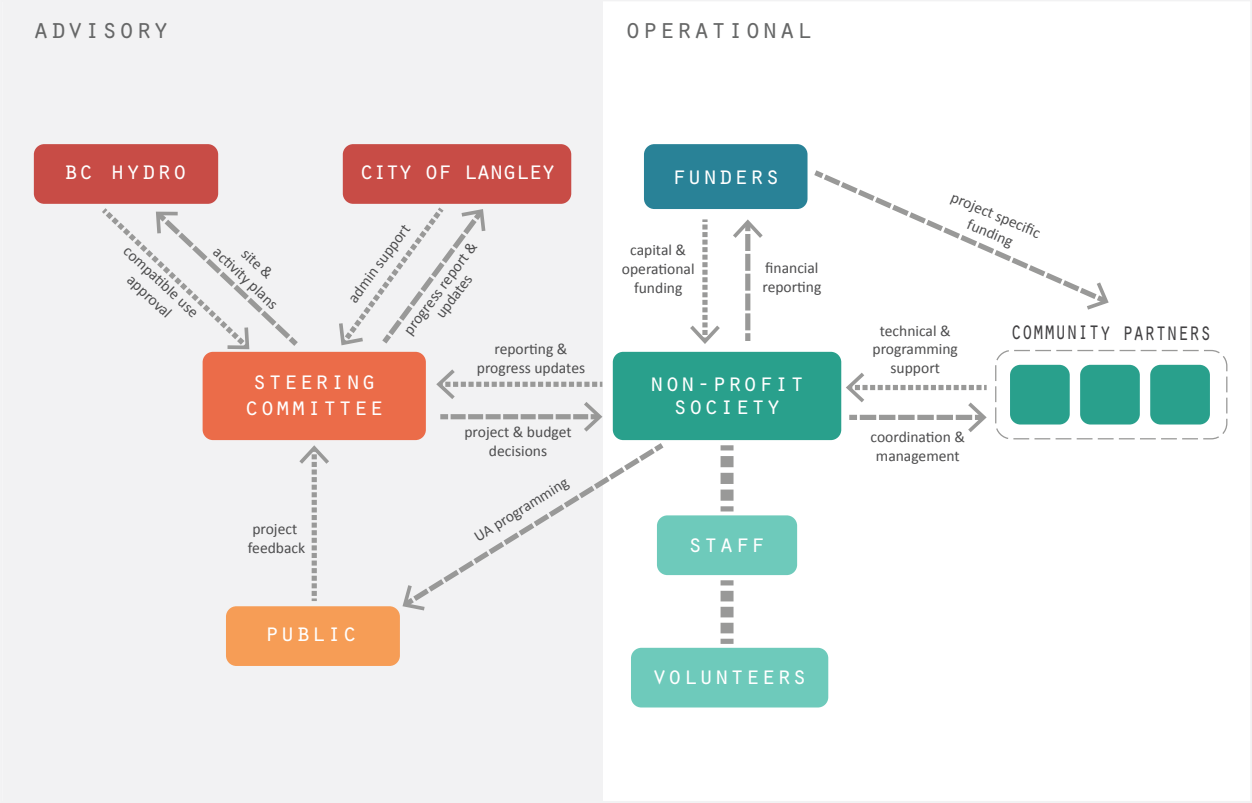


Figure 5: Proposed Governance model for the LUADP.

6.2. Operations

The operational strategy for the site aims to develop amenity plans while preserving accessibility and recreational uses. Planning for daily operations must involve the consideration of the scale of production, distribution of farm products, and management of personnel.

6.2.1. Scale of Production

The LUADP has been designed to balance food production and educational amenities with diverse habitat areas, and opportunities for passive recreation. With this approach, the scale of food production on the site is limited and these amenities have been concentrated around central infrastructure, including equipment storage and water access.

Kamloops Public Produce, Kamloops BC

Public Produce is growing in popularity as a community development model where edible plants; like fruit, nut and vegetable crops are grown in public spaces and are freely accessible to the public. Kamloops Public Produce was planted on an abandoned downtown lot with a small public health grant. The project has engaged a variety of users. Municipal staff, public institutions, school and private citizens became engaged in knowledge sharing in order to better understand how to collectively care for edible landscapes. The success of this pilot project have inspired other projects as well as ongoing research into better understanding the food security and health impacts of public produce. [49]

In total there is about one acre of annual crop cultivation space on the LUADP site. In addition, these are also 2.5 acres of the site have been designated for perennial crops including fruits, nuts and berries. Based on community need it may be possible to increase the scale of production over time, however the site will operate more efficiently if main production elements remain small in scale and concentrated around infrastructure such as, water, storage, composting and produce washing areas.

Production Practices

Urban agriculture projects may limit the scale of production in order to achieve other outcomes, such as elevating the quality of public space, social cohesion, environmental restoration, or public education.

The following principles will guide the production practices for the LUADP that can ensure the project achieves desired outcomes and is compatible with the .

- Manage production areas using organic production methods in accordance with Canadian Organic Standard
- Choose crop varieties that reflect the needs of the community, including culturally appropriate foods if applicable
- Promote the harvest of ripe fruit on a regular basis through signage and community bulletins
- Provide ongoing educational opportunities for the public to learn about production techniques used on site
- Ensure that food production activities contribute to biological diversity and support a healthy environment
- Collect regular feedback from site users about food production on the site

6.2.2. Distribution

UA projects can be successful farming enterprises because they are located close to residential populations. Based on this proximity urban farms can access a variety of distribution channels for selling their farm products.

Different Options described in this section can be explored by the LUADP and decisions about what is produced and how products are distributed should be evaluated on an ongoing basis. It is recommended that the LUADP experiment with a combination of distribution methods of farm products throughout the growing season.

The main products produced on the LUADP site will be fruits and vegetables produced in spring, summer and fall seasons. Production will support the community with a supply of healthy, locally produced food and the sale of farm products will also financially support farm operations by reinvesting revenue into the project.

Community Cultivation

Making arrangements with community volunteers to work in exchange for access to farm products is a good way to encourage community engagement and to ensure that what is grown on the farm is accessible to and used by people living in the community. For the LUADP these opportunities should be coordinated by the Society. It is also important that these opportunities are open and accessible to all members of the public, not just immediate neighbours. This type of exchange could be arranged on an individual volunteer basis or through community work events (i.e. “workbees”). Community work events are often useful when there is a significant amount of work to do in a short period of time (i.e. transplanting, or crop harvest).

Community cultivation can also be facilitated by planting areas that are specifically designed to be freely accessible to the public. This is a more informal way to engage the public, and can encourage people to learn more about local food production. Establishing an area dedicated to community cultivation requires clear signage and communication with the public to ensure that crops are harvested at the right time, and without causing damage.

Food Banks and Gleaning Programs

As a community asset the LUADP has the potential to support ongoing community programming related to improving access to locally produced, healthy food. In addition to other distribution channels the scale of production on the site could also support community harvesting for food banks and other community service organizations. Harvesting for local food bank would be coordinated by the Urban Agriculture Society with labour provided by staff and community volunteers.

Gleaning programs also represent another strategy for harvesting and distribution that engages local volunteers and ensures that food makes its way into the local community. These programs are commonly established to harvest perennial food crops in urban areas that may otherwise go unpicked. In the case of the LUADP This would involve recruiting volunteers to ensure that production areas are kept clean and tidy and that all edible food can be harvested and used in the community.

Community Connection

Langley Environmental Partners Society manages a Community Harvest Gleaning program where volunteers identify and harvest fruit from trees and bushes around the community which would otherwise be left to fall. The infrastructure and interest in this program could also support community harvesting on the LUADP site, especially in orchard and perennial production areas. Similar gleaning projects operate in communities in Metro Vancouver. [50]

Institutional Procurement

Local public institutions present another opportunity for distribution of farm products from the LUADP into the community that could support outcomes related to health and education. Establishing supportive relationships with institutions, including local schools, could provide hands on learning opportunities for students and help get healthy, local food into schools.

Image Source: Young Agrarians

Fresh Roots Urban Farm, Vancouver BC

Fresh Roots Urban Farm Society has developed a model of school yard market gardening that supports food literacy and education. Their model has also created a direct line to local organic produce for public school students. This relationship allows students to learn about a variety of other environmental issues through development of hands on, practical farming curriculum.[51]

Farm Gate Sales

UA projects are embedded in existing communities and often provide unique opportunities to improve access to fresh local food for residents. “Farm gate” sales represent an opportunity to distribute products to the people living in communities close to where the farm is located. Selling products directly from the farm site also provides a unique opportunity for local people to visit the site, meet the farmers and make a direct connection between the food they eat and the land where it is grown, which is a driving force behind the growth of the local food movement.

Traffic and parking will both be important considerations when people are coming to the farm site to buy produce. It is recommended that clear open hours be posted and followed to minimize disturbance of the surrounding community.

Farmer’s Markets

Farmer’s markets can provide an opportunity for farm products to be sold directly to consumers generating weekly revenue that can be reinvested to support ongoing farm operations. Farmer’s markets provide a good opportunity for small scale and community based farming because the barrier to entry is relatively low, and there is an existing customer base to tap into. There are also opportunities to build support and awareness for the project outside of the immediate neighbourhood and connect to the existing local food scene in the City of Langley and surrounding areas. Transportation and staffing can be challenges associated with pursuing farmers’ markets as a distribution channel which could limit the potential for the LUADP to participate.

Community Connection

The Langley Community Farmers’ Market is already established in the community taking place year round (once a month during winter months). This existing farmer’s market in the community presents an opportunity to tap into an existing market generating revenue and support for the project. [52]

6.2.3. Human Resources

As a community amenity, the LUADP will be a place for the public to experience and participate in small scale, organic farming. This will requires considerable human resources including paid staff with small scale, organic farming experience. Support from volunteers will also be required to maintain the site and manage production areas.

Paid Staff

The non-profit society will be responsible for hiring staff that will manage site operations and help to facilitate educational programing. In addition to operational staff operations it is also recommended that the LUADP be supported by a volunteer and programming coordination that can allow for public engagement to be managed separately from agricultural operations.

The following paid positions should be secured to manage operations on the LUADP:

- Farm Manager 1 FTE (Feb-Nov)
- Farm Hands 1 FTE (Apr-Nov) could be divided into 2 PT positions
- Student Interns 0.5 FTE (June-Aug)
- Volunteer and Programming coordinator .25 FTE (year round)

Volunteers and staff work together to harvest beans at the Cutting Veg in Sutton, Ontario.

Volunteers

There will be a variety of volunteer opportunities available through the LUADP that will make significant contributions to the success of the project and integration into the community. However, working with volunteers requires special considerations to ensure that the work is fulfilling (so people want to come back), and that volunteer contributions have a positive impact on the management and operations of the site. Volunteers with farming experience will be an asset to the project but will not be required.

The LUADP will create several different volunteer opportunities, including:

- Steering Committee Members
- Youth volunteers
- Ongoing/ regular volunteers
- Group volunteering and “work bees”
- Workshares (working in exchange for farm products)

Although significant human resources are required to support UA projects the number of people actively farming on the site is usually limited due to the scale of production.

6.3. Management

Long term management is often a significant concern when food production is proposed for public spaces. It is common for public sector partners to be concerned that maintenance will fall on the shoulders of often already overburdened municipal departments.

Members of the public also worry that additional pressure on municipal staff may lead to an increased tax burden. Site aesthetics and impact on property values and existing activities are also common. These concerns are all legitimate, however there is ongoing work to acknowledge and work through these challenges creating beautiful and productive public spaces.

6.3.1. Site Use Agreement

When UA projects are initiated, formal agreements between project stakeholders is critical. These agreements should consider the type of production taking place on the site, and also allow for the full range of activities and programming associated with project that may include: production, education, processing, and even distribution of products.

The site use agreement for the LUADP will be created through multi-stakeholder collaboration, and will be subject to regular review by these stakeholders. The agreement should clearly address the following topic areas, answer the guiding questions, and meet the objectives of all stakeholders:

Land Tenure

- How long can the land be used for UA?
- Is any remuneration required for use of the land? Are services provided on that land?
- Are there any conditions attached to this agreement for using the land?

Electric and magnetic Fields Monitoring

- Should EMF levels be monitored over time?
- Who is responsible for measuring and monitoring EMF levels?
- What kind of public education is necessary regarding EMF levels and public health?

Ongoing Soil Health Monitoring

- Where should additional soil testing be conducted prior to site development?
- How often should soil test be conducted?
- Who is responsible for soil testing, and monitoring soil health?

Site Aesthetics

- What aesthetic are the aesthetic and cleanliness standards for the LUADP?
- Who is responsible for monitoring and enforcing these standards?
- How and where can people communicate issues with site aesthetics, or maintenance?

Public Access and Security

- Are there any areas of the site where public access is restricted?
- Where can vehicles access the site, and where are they permitted on the site?
- What are the protocols for securing infrastructure and asset on the site?
- How will theft and vandalism be dealt with?

Production Activities and Techniques

- Are there any exceptions to the organic production practices used on the site?
- What are the guiding principles for the use of organic production methods?
- What types of tools and equipment are permitted for use on the site?
- Is there any restrictions on when farming activities or the use are machinery is not permitted?

6.3.2. Management Objectives

Successfully managing the LUADP will require coordination with a variety of stakeholders, including members of the public. The City will be a key stakeholder, but may or may not be directly involved in daily management and operations of the site. BC Hydro is also a key stakeholder, and should be consulted in the development of a site use agreement, and any significant operational changes. Decisions made about infrastructure and operations on the site should be filtered through the site use agreement and may need to be approved by the BC Hydro Properties Division before they can be implemented.

Management objectives provide guidelines for how the project should be managed based on the unique characteristics of the site and community. The objectives also communicate the most important considerations in management considerations and outline some key actions for how these objectives can be achieved. Management objectives are summarized in Table 10, on the next page.

MANAGEMENT OBJECTIVE	ACTIONS
1. Enhance biodiversity and habitat value across the site.	• Remove invasive plant species and replace with native and non-invasive varieties • Maintain hedgerows within production areas • Use organic techniques in all production areas
2. Protect soil resources and build soil fertility over time.	• Practice crop rotations in all annual production areas • Incorporate cover crops into crop rotations in all annual production areas • Use cover crops and mulch to develop a strategy for building soil fertility that is suited to the site • Compost crop residue, on site and apply to production areas • Maintain hedgerows within production areas
3. Enhance and maintain the aesthetic appeal of the site in accordance with neighbourhood and community standards.	• Ensure that all tools and equipment are put away and secured when work is complete • Do not store any broken or discarded tools or equipment on the site • Keep grass and vegetation around fields, buildings and fences trimmed and pruned • Consider the view of the site from surrounding properties. Make sure that these views are not impeded or unattractive • Encourage the public, especially surrounding residents to participate in establishing maintenance standards for the site
4. Contribute to sustainability in the City of Langley.	• Measure and aim to reduce the amount of water used in crop irrigation • Increase biodiversity by planting of native and non-invasive plant species • Increase the availability and access to locally produced food for local residents
5. Manage and decrease rodent issues on site and in surrounding areas.	• Turn compost piles on a regular basis • Harvest ripe produce in a timely manner and remove any produce that falls on the ground from fields and orchards • Collect and compost windfall from orchard areas to deter rodents • Coordinate with the City to dispose of organic materials that cannot be composted
6. Ensure the safety for all users throughout the year.	• Prune perennial crops and buffer planting areas to maintain sight lines • Monitor the conditions of all pathways of site and address any issues through resurfacing or other maintenance • Make information available about the research related to electromagnetic field exposure • Create a volunteer orientation for those who are active on the site • Post clear signage to control parking and traffic in the surrounding neighbourhoods
7. Maintain buffers around BC Hydro transmission towers, power lines and infrastructure.	• Consult with BC Hydro regarding safety measures when maintained vegetation areas within 10m of hydro towers • Use vegetation as a physical barrier between site activities and BC Hydro utility infrastructure
8. Build supportive relationship with the public.	• Post clear and attractive signage on the site with events and volunteer opportunities • Give residents opportunities to share feedback about the project • Develop a project website where news and events can be posted

Table 10: Management Objectives for the LUADP

6.4. Budget and Project Financing

For urban agriculture projects, staffing and operational costs can be high, however there are also opportunities to generate revenue from the sale of farm products. This revenue varies depending on the scale of production (i.e. how much food is produced), the type of programming on the site, and the methods of distribution. In most cases regardless of how much money is made form the sale of farm products subsidies are typically needed.

Budget Summary Breakdown

Capital expenses represent all of the upfront costs related to developing the physical infrastructure on the site including; site servicing, built infrastructure, perennial plant material and signage. The capital expenses for UA projects may be covered by charitable grants, government funding (various levels), community fundraising, private partnerships or a combination of these sources. Many projects are also successful in securing donated services and materials in exchange for recognition of the supporting businesses and organizations. Table 11 summarizes the capital expenses for the site based on amenity area breakdown.

Operational expenses represent the ongoing costs associated with maintaining and operating the site as a UA project. This includes staffing, tool and equipment maintenance, production infrastructure and programming costs. Operational budgets can often seem high because labour is a significant expenditure for UA projects when staff is required to manage production, and other public engagement on the site. Although some projects may require significant human resources costs can be mitigated by recruiting volunteers to provide labour. UA projects are know to have a high degree of volunteerism, which in many cases decreases total operational expenditures. Table 12 summarizes the estimated operational expenses once all amenities are developed and operational.

The LUADP should be operated as a not-for-profit project with funds generated from the sales of farm products invested back into farm operations and community programming. Additional funding for staffing, farm operations, and maintenance will need to be secured from other sources including municipal funding, grants and private donations. The financing strategy for the LUADP should be reviewed by stakeholders annually. Table 13 shows potential funding sources for project operations. Complete amenity budgets can be found in Appendix D following this document.

CAPITAL EXPENSES	
Site Servicing	$ 716,000.00
The Farm	$ 61, 000.00
The Classroom	$ 32,700.00
The Orchard	$ 34,750.00
Pollinator Garden	$ 26,700.00
Buffer Planting & Habitat Restoration	$ 110,075.00
Total Capital Expenses	$ 981,225.00

Table 11: Capital expenses summary for the LUADP.

OPERATIONAL EXPENSES	
General Maintenance	$ 17,000.00
Staffing	$ 60,000.00
Farm Operations	$ 9,000.00
Classroom Operations	$ 7,500.00
Orchard Operations (approximate)	$ 2,000.00
Total Operational Expenses	$95,500.00

Table 12: Operational expenses for the LUADP.

POTENTIAL REVENUE SOURCES	
Grants	$50,000.00
Donations (Funds and Materials)	$ 20,000.00
Farm Product Sales	$ 30,000.00
Total Annual Revenue	$ 100,000.00

Table 13: Possible Revenue Sources for the LUADP.

7. Implementation Plan

Implementation of the LUADP is contingent on approval by City Council, and continuing to adhere to BC Hydro compatible use and safety guidelines.

Implementation should begin in the early spring with the pre-development phase. The majority of site development will take place over the summer and fall in order to prepare production areas for planting the following spring. The amount of time dedicated to site development may differ depending on available resources.

Budget summaries provide a cost breakdown for each phase. This includes major feature and infrastructure development as well as a portion of site development costs.

7.1. Pre-development Phase

During the pre-development phase priorities are to set up the management frameworks to support the LUADP. This includes convening the Non-Profit Society Steering Committee. Once steering committee members are identified this group will engage management stakeholders in the development of a Site Use Agreement.

This phase will also involve developing a strategy for continued engagement with community partners and the public. At this time engaging with strategic community partners (i.e. LEPS, schools, and other partners) may be useful to better understand which elements they can support.

Activity Summary:

- Convene Steering Committee
- Develop Site Use Agreement
- Engage with the public to share development and programming plans
- Engage with potential community partners and identify existing resources

7.2 Site Development Phases

The following implementation phases have been divided to demonstrate how the site may be developed over time depending on available funding and resources.

Phase 1: Infrastructure & Site Servicing

This initial phase of site development is focuses on setting up servicing on the site and establishing the entrance and parking area. This will include installing a municipal water connection and the pit toilet facilities.

Phase 1 Activity Summary:

- Establish Site Entry and Parking
- Install municipal water connection
- Resurface existing pathways and create new pathways
- Install pit toilet

Phase 2: Amenity Development

The second phase will focus on development of the areas where programming on the site will take place, as well as any necessary infrastructure to support food production. This will include delineation of annual production areas, building farm hub and outdoor classroom areas.

This phase involves the development of all annual production areas, and supporting infrastructure. Once this phase is complete it would be possible for food production to begin. The remaining phases are primarily focused on environmental restoration, and habitat enhancement.

Phase 2 Activity Summary:

- Build Farm Hub and storage area
- Establish classroom infrastructure
- Delineate all annual production areas
- Cultivate annual production areas and plant cover crops

Phase 3: Habitat Restoration

The third phase will focus on planting habitat areas, including the pollinator corridor. This stage provides a good opportunity to engage with the community recruiting volunteers and students to help with planting. It also represents a good opportunity to initiate the planting of perennial crops.

Activity Summary:

- Plant habitat areas
- Plant pollinator corridor
- Prepare orchard areas (add compost etc.)

Phase 4: Site Naturalization

The final development phase will focus on ecological restoration and planting perennial crops in orchard areas. During this phase the areas designated as buffer plantings will be prepared and planted with a variety of native species that are appropriate for growing within hydro ROWs.

There is opportunity in this phase to engage volunteers, school groups, and the general public in planting perennial plant material in the orchard and buffer planting areas.

This phase can be completed at once or divide into additional phases depending on available funding resources.

Activity Summary:

- Plant orchard areas
- Plant buffer areas

Table 14 breaks down the cost per development phase, which may allow for more flexible implementation based on available funds and resources. The site preparation costs have been divided across each phase and reflect the amount of site area that would need to be prepared to develop amenities.

PHASE 1: BUDGET SUMMARY	
Site Preparation	$ 60,000.00
New Pathways & Resurfacing	$ 100,000.00
Municipal Water Connection	$ 10,000.00
Pit Toilet	$ 40,000.00
Entry Signage & Planting	$ 10,000.00
Parking Area	$ 50,000.00
TOTAL COST FOR PHASE 1	**$ 270,000.00**
PHASE 2: BUDGET SUMMARY	
Site Preparation	$ 45,000.00
The Farm	$ 61,000.00
The Classroom	$ 32,700.00
Hedgerows	$ 4,450.00
Signage	$ 30,000.00
Soil Testing	$ 6,000.00
Consultants	$ 75,000.00
TOTAL COST FOR PHASE 2	**$ 254,150.00**
PHASE 3: BUDGET SUMMARY	
Site Preparation	$ 127,500.00
The Orchard (site preparation)	$ 11,750.00
Pollinator Corridor	$ 22,250.00
Habitat Areas	$ 50,275.00
TOTAL COST FOR PHASE 3	**$ 211,775.00**
PHASE 4: BUDGET SUMMARY	
Site Preparation	$ 162,500.00
The Orchard (Perennial crop material)	$ 23,000.00
Buffer Planting Area	$ 49,800.00
TOTAL COST FOR PHASE 4	**$ 235,300.00**
TOTAL CAPITAL COST	**$ 981,225.00**

Table 14: Phase development cost breakdown for capital costs for the LUADP

8. Conclusion

The Langley Urban Agriculture Demonstration project pilot explores the feasibility of urban agriculture on a publicly owned BC Hydro ROW in the City of Langley. The land was first identified as a potential site that could support food production and related activities by the City, and partners at Kwantlen Polytechnic University in 2010.

There was little activity on the project until 2016 when funding was secured from Metro Vancouver to complete the detailed planning phase creating a site plan, management and operational plans, and preliminary budgets for the project. At this time Metro Vancouver funded a detailed planning phase recognizing the potential to create a model for urban agriculture for utility ROWs in municipalities across the Metro Vancouver Region.

The plan takes a balanced approach weaving together environmental enhancements, education and food production. The project addresses the concerns of residents by scaling back production elements, enhancing the natural character of the site and outlining a plan for long-term management that involves community collaboration.

Urban agriculture projects aim to connect urban residents to their food source. Successful projects from around the world demonstrate that urban agriculture can make positive contributions to local level sustainability, food self reliance, and livability in urban communities.

Some of these contributions which directly apply to the LUADP are:

Improving Food Literacy: Urban agriculture provides a field-to-fork experience that can enrich their understanding how food is grown, and the importance of protecting land and resources that support food production.

Health: Urban agriculture provides access to fresh, locally grown food in urban communities. Growing food, and the activities associated with it also provide opportunities, for people to get outside encouraging active lifestyles.

Social Connections: Urban agriculture sites support programming for residents of all ages and socio-economic classes. In many cases these projects encourage mixing, and may improve community cohesion, and decrease social isolation.

Encourage Self-Sufficiency: Providing support for urban agriculture creates opportunities for people to learn about food production. They can see production models at work and feel supported in growing more of their own food - resulting in self sufficiency.

Activate Public Space: Urban agriculture supports a variety of activities - in addition to food production. These diverse activities can activate public spaces and daily operations on may also encourage community building and place making.

Environmental Sustainability: Bringing diverse productive and non-productive landscapes to urban environments can help to address many different environmental sustainability challenges. These include improved soil health, decreased run off and flooding, increased biodiversity, and enhanced wildlife habitat.

8.1. Next Steps

With a completed plan, implementation of the LUADP is subject to approval by Langley City Council. It is also necessary to establish community partners who can help support programming and operations and to secure funding for implementation, program development and operations.

8.1.1. Establishing Community Partnerships

Partnerships are critical in the development of UA projects. Partners can assist in accessing funding, provide programming support, or offer advice as the project develops. With a concept developed for the LUADP a key next step in the process will be connecting with potential community partners who may be willing to fund, and support operations over the long-term.

Key project themes are: food and agriculture, health and nutrition, environment and education. Partners with mandates that support any of these themes could be valuable collaborators for the LUADP moving forward.

8.1.2. Funding Recommendations

Consistent funding is required to support UA projects. For projects that do not generate revenue, or can't be supported by the revenue generated there are a variety of alternative funding sources that can be explored.

Grants

Grants are a common financing option for community projects and there are many that can go to support local food projects, including urban agriculture. In order to be eligible for some grants it is necessary to be a registered non-profit group, therefore establishing the non-profit society will be necessary before pursuing this kind of funding. Grant writing is an activity that requires a significant amount of time and energy and it is likely that City staff, and community partners, will be required to support this work, especially in the initial stages of fundraising for the LUADP.

UA projects can be eligible for a variety of grants, including those relates to community development, local food, agriculture, education, health and nutrition, and urban sustainability. In addition to these themes, the LUADP could access funding related to habitat and environmental restoration, community amenity development, and recreation. Grants can support both capital investments, and ongoing operations depending on the stipulations from the funder.

Municipally Supported Grants

In addition to organizational and government grants that support non-profit groups, the LUADP is well suited to also access funding for municipally supported projects. Accessing this type of funding will require the LUADP to apply in partnership with the City of Langley.

Private Sector Sponsorship

Private sector companies should also be considered as valuable partners and that UA projects can appeal to both the charitable and business objectives of private companies. UA projects may also be able to secure donations of materials and services from local businesses that support capital development and operations. It may also be possible to get materials at a discounted cost which could benefit the project by lowering operating costs. The examples provided in this report show some existing opportunities for private sector sponsorship that the LUADP may be eligible for, additional corporate grants and donations may be available locally, or regionally.

Institutional Partnerships

Partnering with local schools as well as post-secondary institutions could also be a way to access funding that can support ongoing programming efforts of urban agriculture projects. Local schools may be able to provide access to education specific funding while also supporting the development and facilitation of educational programs on the site.

Post-secondary institutions may also provide access to funding for research and program development that can support the project in better serving the needs of the community, and the local food sector.

Table 15 provides a list of potential grant funding sources for the LUADP. These options represent a diversity of funding choices that could support site development, operations, programming, and staffing.

FUNDER	FUNDING DESCRIPTION	GRANT TYPE/AMOUNT
Organizational Grants		
Van City Credit Union	Very supportive of community development and sustainability projects. They currently fund a variety of urban agriculture initiatives, and food system research in the lower mainland.	• has a variety of granting programs that can support different initiative and projects
Real Estate Foundation of BC	Supportive of projects sustainable land use and local food systems. Supportive of projects which demonstrate strong partnerships, and community impact over the long term.	• provides 50% of cash portion of budgets • non-capital funding
Recreation Foundation of British Columbia	Provides funding to advance parks, recreation and culture, and the environment in BC.	• under $10,000 • supporting recreation
The Hamber Foundation	Provides grants for projects that advance recreation, culture and health.	• project based funding
Tides Canada	Supporting social innovation projects that aim to improve the environment, and contribute to sustainable and livable communities; including sustainable food systems	• supports projects that align with their core values and focus areas
United Way	Provides a variety of grants to support community development projects in the Lower mainland.	• project specific funding
Government Grants		
Metro Vancouver Agri-Awareness Grant	Provides funding to community organizations that focus on education the public about local food and agriculture.	• project specific funding
Canada Summer Jobs	This is a youth employment experience that provides wage subsidies for hiring youth for summer employment	• wage subsidies
Agriculture Youth Green Jobs	This program provides wage subsidy funding specifically for youth in the agricultural sector	• wage subsidies
Municipally Supported Grants		
FCM – Municipalities for Climate Innovation	Provides funding, training and resources to help municipalities respond to climate change	• support for programming and training
Community Recreation Program	Provides funding for capital funding projects that help to make communities healthier through the development of recreation infrastructure	• small grants for recreation focused projects
Private Sector Sponsorship		
Mountain Equipment Coop	Support projects that increase access to outdoor activities, and teach responsible outdoor recreation and environmental stewardship.	• grants up to $20,000 • focused on education an raising awareness
Nature's Path	Gardens for Good - Gardens for Good supports community food production projects.	• $15,000 grants
West Coast Seeds	Offering seed donations to community groups and educational projects.	• seed donations

Table 15: Possible grant funding opportunities for the LUADP.

8.2. Lessons Learned

Lessons learned from the Langley Urban Agriculture Demonstration Project (LUADP) pilot have the potential to inform the development of similar initiatives across the Metro Vancouver region, by providing a model for urban agriculture in utility right-of-ways (ROW), and demonstrating successful connections between municipal and community partners. When initiating the project, it was recognized that there are other publicly owned, utility ROW corridor sites within the region that may be suitable for urban agriculture. This section summarizes some of the **scoping questions**, **considerations** and **key learnings** about balancing ROW compatibility restrictions with requirements for urban agriculture to help support the potential for similar initiatives in the region.

8.2.1. Project Initiation

Covered in this section:

- Identifying and accessing land within hydro ROWs for urban agriculture.
- Establishing and managing partnership with utility companies
- Project funding
- Establishing and managing relationships with community partners
- Establishing a project timeline

Accessing Land

Is urban agriculture a compatible use on site(s) being considered?

In BC, agriculture is considered a compatible use in hydro ROWs, however farm infrastructure and practices may be restricted by the utility company based on public safety requirements. See Resources at end of this section for BC Hydro Compatible Use Guidelines.

The suitability of a given site may also be impacted by local policies related to urban agriculture, utility ROW development (i.e. land use policy, bylaws). Be sure to identify any local policies, bylaws and regulations that may impact an urban agriculture project.

Is urban agriculture aligned with the goals/ mandate of the landowner, local government and community?

First, clearly understand ownership of the land in question: Is it publicly owned? Privately owned? Owned by the utility company?

Then consider the landowner's goals and priorities, and the potential for urban agriculture to align with and support these goals.

What relevant policies or strategies support the development of urban agriculture in the community (eg. Official Community Plan, healthy city initiatives, etc)?

This may help in the process of identifying potential partners or accessing project funding. Understanding relevant policy may also help guide amenity development. For example: If a municipality is working towards improving health and nutrition for children an urban agriculture project that connects on farm learning with school food programs could be a good fit.

Key Learnings

1. Food production is possible in ROWs, but restrictions for infrastructure development on public land, and in utility ROWS, could limit the scale of food production on a given site.
2. Municipal governments are key partners for urban agriculture projects.
3. Suitability of a site is informed by site characteristics AND the surrounding context.

Local Land Inventory for Urban Agriculture Sites

The appropriateness of the site should also consider the level of need and community support in the local area, and specific site conditions which may support or deter urban agriculture. Conducting an inventory of land available for urban agriculture, or assessing the suitability of multiple sites (ROW and non-ROW sites) could be helpful when selecting the most appropriate location for urban agriculture in a community.

Funding

How much does a project like this cost?

The initial 2010 project feasibility study between the City and KPU was first proposed by the City of Langley in partnership with Kwantlen Polytechnic University, at a cost of $5000 Funding for the site plan and business plan as described in this report came from the Metro Vancouver Sustainability Innovation Fund, and cost $50,000.

Funding for implementation, and project management will vary based on the size of the site, and the type of amenities proposed (see 6.4 Budget and Finance Summary)

Who should fund a project?

Funding for urban agriculture projects can be divided into three different categories:

- Planning – Site assessment, design, community engagement
- Implementation – site preparation, amenity development
- Operations – staffing and maintenance

Partnerships with Utility Companies

When to approach a hydro/utility company?

Consultation with the utility company that manages utility works and infrastructure on this site is a critical factor in project success. In the case of the LUADP the project team engaged with BC Hydro throughout the planning process. The utility company should be contracted BEFORE any planning work begins to ensure that urban agriculture (of some kind) is possible on the site) and, the project team understands the plan approval process.

Engagement with utility companies could vary depending on the site and the type of project being proposed.

Working with BC Hydro on the LUADP

BC Hydro was contacted at the beginning of the detail planning phase for the LUADP. For all development projects in or adjacent to hydro ROW areas BC Hydro must approve site plans and work with partners to establish site use agreements. In the case of the LUADP, BC Hydro was primarily concerned with scale and location of amenities, buildings and structures, access to utility infrastructure, compromising utility infrastructure. The **BC Hydro Properties Division** is the point of contact for compatible use development, and can be reached at:

Phone: 1-800-667-1517 or 604-623-3637

Email: properties.helpdesk@bchydro.com

How much time will a representative from the utility company commit to the project?

Based on the experience from the LUADP a representative from the BC Hydro properties division should be asked to commit the following, over the anticipated project lifecycle.

- 4 hours for project scoping
- 6-8 hours for check-ins and meetings
- 3-4 hours for plan review

Funding for these various stages can come from a variety of sources including:

- Municipalities
- Regional Governments
- Foundations/Community grants
- Public/private partnerships
- Educational institutions
- NGOs

Project Team & Stakeholders

Who should be on the Core Project Team?

- **Technical experts:** practitioners with expertise in urban agriculture and design
- **BC Hydro or utility owners:** an individual(s) who can participate, and can advise the project throughout the planning phase.
- **Municipal planning staff:** individuals who have an understanding of the community.
- **Staff from other municipal departments:** Consider participation from other municipal departments, including; parks, recreation and cultural services, and engineering
- **Funders:** funding agency for the project and/or community groups providing support for the project.
- **Health authorities:** staff can provide information and research on potential health benefits, as well as guidance in addressing perceived health concerns from the community; their participation may also lead to greater visibility, and public and political support.

Who else can be engaged?

Affected and Interested Stakeholders: These stakeholders are not likely to be directly involved in development of the project, but may provide helpful feedback based on experiences from other jurisdictions.

- Neighbouring municipalities
- Adjacent Schools and/or local school board
- Community agencies with facilities near project site

ROW Ownership

In this project, BC Hydro was the utility ROW owner. However, if you are considering a similar initiative in your community, the ROW owner may be a different utility (eg. Fortis, Telus, etc.).

Meeting Date	Description	# of hours
February 16, 2017	Core Team Meeting #1 • Review of BC Hydro ROW restrictions • UA amenities discussion	3
March 29, 2017	Core Team Meeting #2 • Review of BC Hydro ROW restrictions • UA amenities discussion	3
April 20, 2017	Interagency Meeting • With local governments and agencies with interests in urban agriculture	3
June 29, 2017	Core Team Meeting #3 • Review public input • Evaluate Amenities	2
August 29, 2017	Core Team Meeting #4 • Review conceptual plans	2
October 25, 2017	Core Team Meeting #5 • Review public input • Identify components for final plan	2
Total # of hours		**15**

Table 16: LUADP Core team planning meeting summary.

- Civil society groups active in urban agriculture, environmental causes or education
- Urban agriculture, farming, or community gardening groups
- Agricultural agencies (Ministry of Agriculture, Agricultural Land Commission)

Community Partners: Establishing community partnerships can support project development and programming, support access to funding, and help garner broader community support. Initiating contact with potential community partners early can help inform project development, and support the planning phase.

What to look for in potential community partners?

- Are there urban agriculture or local food related project s in the community already? Who supports them?
- Are there organizations that represent the interest of potential user groups? For example: youth organizations, seniors groups
- Are there any special interest groups that could support urban agriculture activities? For example: garden clubs, beekeeping clubs
- Are there existing groups who have good reputation in the community for the programming they provide?

Time Requirements

Exact time requirements for the development of urban agriculture projects will vary based on site size and project complexity. The time line below reflects the experience with the LUADP, and can act as a reference for estimating a project time line.

Figure 6 : Sample project timeline.

8.2.2. Site Assessment & Planning

Covered in this section:

- Soil testing protocol and funding
- Understanding site context and characteristics.
- Considerations for site management and operations.
- Creating a site management budget and plan.

Soil Analysis

Soil testing and analysis should be conducted in all ROW sites as there is risk of contamination. Cost of soil testing depends on the size of the site. As an estimate, soil testing in BC could cost $2000 to $6000 (approx. 500/sample). This expense should be covered by the project planning budget (funder of project planning should support soil testing as an integral part of this project.

See Resources at end of this section Soil Analysis Guides and Testing Labs in Metro Vancouver

Site Analysis:

Community Considerations:

- Is there any relevant policy supporting urban agriculture? Any potential barriers?
- Any other urban agriculture in the community?
- What are the characteristics of the neighbourhood where the project would be located?
- What resources exist in the community that could support urban agriculture?

Site Considerations:

- Is there existing vegetation on the site?
- Are there any site characteristics that might impact urban agriculture amenities?
- Is the site publicly accessible? Where are the access points?
- Are there any features to protect? (i.e. existing amenities, trails, natural features)

BC Hydro ROW Considerations:

- Where are transmission towers located on the site? Is there any other utility infrastructure?
- What are ROW owner access requirements?
- Has project team obtained a copy of the title for the ROW property?
- Is there an existing hydro ROW site management agreement? (can be obtained through the BC Land Title Office).

Site Management

Key issues to address in a site management plan.

- Infrastructure needs for urban agriculture – water/electricity/waste (5.1. Servicing and Infrastructure)
- Roles and responsibilities for participating, managing the operations, and maintaining infrastructure and urban agriculture amenities (6. LUADP Management Plan)
- Site Use Agreement – agreement between ROW owner and urban agriculture stakeholders (6.3.1. Site Use Agreement)
- Production practices – scale, technical considerations (6.2.1. Production Model)
- How will food be shared / sold? (6.2.2. Distribution)
- Financing plan for ongoing management (6.4. Budget and Financing Summary)

Other technical issues to consider that are not addressed in LUADP report but that should be addressed the next phase of work (ie. Implementation Plan)

- Bio-safety – to ensure compatibility between urban and commercial agriculture (eg. management of pests, disease potential, etc)
- Security – assessing potential of vandalism/ theft of equipment & food, and mitigation plan
- Enforcement – who / how would agreements be enforced
- Closure strategy – how the municipality can 'close up' the project if interest / community capacity declines

8.2.3. Community Engagement

Covered in this section:

- Anticipating and addressing common misconceptions and barriers to community buy in.
- How and when to engage the community.
- What kind of information should you collect from the community.
- Early engagement, and how it is valuable.
- Other important considerations for public engagement.

Responses to Common Misconceptions about Urban Agriculture

Urban agriculture always means community gardens: Community gardens are a common examples of urban agriculture. However, there are many other urban agriculture features and amenities that can be adapted to meet the needs of a community. Understanding what a community's needs might be, and how different urban agriculture amenities could meet those needs is an important part of the engagement process.

Urban agriculture is messy: This assumption is often associated with community gardens or allotment gardens. Those unfamiliar with urban agriculture may envision shabby structures, or overgrown areas that don't appear well taken care of. This is not a universal characteristic, or true, of all urban agriculture, however concerns about aesthetics should be carefully considered when developing urban agriculture plans.

Urban agriculture presents public health risks: In some cases, there may be an increased risk of pollutants in the soil that could impact the health of those working on the site, or consuming food grown there. This type of risk is well understood by practitioners and can be mitigated by testing the soil to determine if there are pollutants on the site that could be harmful to human health, and designing urban agriculture amenities to safely respond to the risks. Soil test results can be compared to national standards for agricultural soils – this information, and other details about potential contaminants can be found through the Canadian Council of Ministers of the Environment.

Urban Agriculture is not the highest and best use of land: There is a common perception that urban farms use scarce land resources in cities that could be otherwise used for commercial, residential, or recreational purposes. Sites that are not appropriate locations for commercial or residential development, such as utility ROWs, floodplains, or parks may be ideal sites for creating a community amenity such as urban agriculture.

Potential Barriers to Community Buy in

Urban Agriculture will Exacerbate Existing Issues: Residents may be motivated by other underlying issues in the community. In some cases urban agriculture may be seen as undesirable because it may be perceived to exacerbate existing issues in the community, such as pest infestations, traffic, non-resident parking, vandalism and crime.

Urban agriculture projects will be a burden on taxpayers: Urban agriculture projects have the potential to achieve a variety of outcomes. Many are operated by non-profit organizations that seek external funding resources (grants, fundraisers, etc) to support non-production programming such as education, and community development, in addition to revenue generated from the sale of products grown on the site. Very few urban agriculture projects are 100% publicly subsidized.

Public perception of safety/quality of food produced in ROWs: There is often public concern around urban agriculture projects due to a perception that urban soils might be contaminated, and therefore unhealthy for food production. There can be additional concern when proposed projects are located within a hydro ROW. Health authorities can provide research, and evidence-based information on public health and safety of food production in urban areas, including in ROWs. BC Hydro also has resources that can provide information to the public.

Key Issues to Address during outreach with the Community

- Is the site currently used? If so how?
- Is there a general understanding about urban agriculture in the community?
- Are there any misconceptions to address?
- Are there any local issues that may be exacerbated by introducing urban agriculture?
- Are there local needs that could be met by introducing urban agriculture?

Early Engagement and Public Outreach

Preliminary outreach, before beginning the planning phase may help assess community need, and gauge the level of community support. This can help to:

- Identify/confirm potential site(s) for urban agriculture in a community
- Determine the level of community support for urban agriculture in the community

Value of Early Engagement

The planning process for the LUADP did not involve preliminary outreach with the community, and instead built on the earlier work from 2010 that aimed to understand the feasibility of urban agriculture in a hydro ROW.

Without preliminary consultation with the community, it proved challenging to gain community support, and the plan was ultimately put on hold by City of Langley Council due to community opposition.

Key Learnings:

1. Aim to engage potential users from across the community, including immediate neighbours.
2. Integrate public education into the planned engagement process
3. Invite potential urban agriculture partners in the community to be part of consultation, along with residents, in order to inform amenity selection and demonstrate broad community support for a project

8.2.4. Project Risks

Conflicts between ROW uses and Urban Agriculture.

- Development restrictions in hydro ROWs limiting and restricting the kind of urban agriculture amenities that may be desired by stakeholders or members of the community.

Timing or funding challenges.

- Significant time required to establish / maintain multi-agency partnerships.
- Securing funds for planning implementation, and operations could be a challenge.
- Finding appropriate community partners and supporters could be a challenge.

Community buy in and engagement.

- The potential for no, or delayed community buy in.
- Urban agriculture may appear to conflict with existing or surrounding uses.

Expertise and knowledge sharing

- Agricultural expertise is needed for development and operation of an urban agriculture site.

8.2.5. Planning Resources

Urban Agriculture Resources:

Koski, H. *Guide to Urban Farming in New York State,* 2013.

HB Lanarc - Golder. *The Urban Farming Guidebook: Planning for the Business of Growing Food in BC's Towns and Cities*, 2013.

Gocova, A. *Urban Agriculture Garden Guide*, City of Vancouver. 2016.

Szymberski, C. *Urban Farming Design Guidelines: A guide for class B urban farms on City-owned land*, City of Vancouver. 2015.

Sedgeman, E. *Growing Food in Public Spaces: A start up guid*e, 2013.

Fodor, Z., & Tay, S. *Urban Farming Practices in Metro Vancouver. Vancouver Urban Farming Society*, 2015.

United States Department of Agriculture. *Urban Agriculture Tool Kit*, 2016.

BC Hydro ROW Resources:

- BC Hydro Rights of Way Guidelines
- Planting Near Power Lines
- What the Health Experts are Saying
- Understanding Electric and Magnetic Fields

Soil Analysis Guides:

- **Toronto Public Health.** *From the Ground Up: Guide for soil testing in urban gardens.*
- **The Johns Hopkins Center for a Livable Future.** *Soil Safety Resource Guide for Urban Food Growers.*

Soil Testing Labs in Metro Vancouver

- **CARO Analytical Services, Richmond**
  https://www.caro.ca/
- **Exova, Surrey**
  https://www.exova.com/
- **Maxxam, Burnaby**
  http://maxxam.ca/
- **AGAT Laboratories, Burnaby**
  http://www.agatlabs.com/

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Appendix A: Urban Agriculture Precedent Examples

Project Name	Location	Project Links	Site Specs	Partnerships	Project Description	Unique Amenities	Governance
21 Acres Center for Local Food & Sustainable Living	Woodinville, WA	http://21acres.org/	21 acres	Centre for Sustainable Living, Puget Sound Food Hub, University of Washington Bothell, Cascadia College, Washington State University, Veterans Conservation Corps, City of Seattle	A Certified Organic urban farm in the heart of Seattle, founded in 2006. The idea emerged from a search for a new farmers market location. Offers food and farm-based programs, workshops, events and tours that encourage food production, small-scale food economies, environmental preservation and climate resilience.	Community garden, youth garden, plant nursery, apiary, veteran's eco therapy garden, LEED platinum building (21 Acres Center for Local Food and Sustainable Living), Farm market (open year round), incubator kitchen, orchard	21 acres has full time staff of administrators, managers, farmers and educators (~20ppl) as well as a board of directors. 21 acres is also a founding member of the Puget Sound Food Hub, a farmer owned cooperative, which provides aggregation and distribution services to farmers in the region.
Assiniboine Park Nature Playground	Winnipeg, MB	http://www.playworks.ca/assiniboine-park-nature-playground		Assiniboine Park Conservancy	A space that brings cognitive, creative and active play together. Features like the sand and water play area, elevated forts, musical instruments, and a garden inspired by the classic childhood board game of Snakes and Ladders each embody multiple elements of play: physical, intellectual and interactive.	Play structures, food gardens, nature play area, trails, native plant, water play area.	The playground was designed and built by a private contractor and is maintained by the City of Winnipeg.
Beacon Food Forest	Seattle, WA	http://beaconfoodforest.org/	7 acres	Seattle Public Utilities (landowner), Seattle Parks and Rec (maintains Jefferson Park). Seattle neighbourhood grants provided funding for planning. BFF is managed through the P-Patch community gardening program. Community Garden coordination through P-Patch (city staff position, community/city liaison). Non-profits (City Fruit)	The goal of the Beacon Food Forest is to bring the richly diverse community together by fostering a Permaculture Tree Guild approach to urban farming and land stewardship. The Beacon Food Forest combines aspects of native habitat rehabilitation with edible forest gardening. The BFF started in 2009 as a result of a permaculture course final project, the final design created by a landscape architect had massive community support and input. BFF is located in the Beacon Hill Neighbourhood in Jefferson Park.	Food forest, berry patch,nut grove, community garden using the p-patch model for families to grow their own food, Gathering Plaza, Kid's Area, living gateway.	Local residents conceived the idea for BFF then approached Seattle Public Utilities (landowner) and Parks and Recreation (managing Jefferson Park). Initial funding came from Seattle Neighbourhoods grant. Ongoing funding is grant based, much which comes from neighbourhood grant programs provided by the city. SPU has been a supportive partner.
Big! Compost	New York, NY	http://www.bigreuse.org/compost/		Snug Harbour Cultural Centre & Botanical Garden, Queens Botanical Garden, Lower Eastside Ecology Center, Brooklyn Botanical Garden, Earth Matter, NYC Sanitation	The NYC Compost Project hosted by Big Reuse is part of a community-scale composting network that works to rebuild our soils by providing New Yorkers with the knowledge, skills, and opportunities they need to produce and use compost locally. They host food scrap drop-offs, provide outreach and education about composting through stewardship events, and produce high-quality compost.	Compost collection sites, compost piles	Hosted by the Big Reuse which is a materials recycling organization. Also have partnerships with other organizations in the city and with the city's sanitation department.
Black Creek Community Farm	Toronto, ON	http://www.blackcreekfarm.ca/	8 acres, farmhouse and woodland	Everdale, African Food Basket and Food Share. Jane Finch Community and Family Centre	Black Creek Community Farm (BCCF) founded by Everdale Environmental Learning Centre, Food Share and African Food Basket has operated as a start-up focused on improving food security, reducing social isolation, and improving employment and education outcome. Working farm that also provides youth workshops, training programs, and community events.	Heritage farmhouse, farmland, forest and Black Creek Ravine, greenhouse, outdoor classroom, bake oven, beehives, mushroom growing, food forest, trails, certified organic vegetable production	Founded and managed by a collective of organizations BCCF each with a focus on particular programming aspects. Everdale (production and farming) Food share (food education and access) African Food Basket (community and cultural development). As the project matures BCCF is becoming its own entity for management, relying less on outside organizations. These organizations and others still arrange programming on the site. Funding is largely grant based. Food is produced for the community and sold through farmers market and a CSA.
Brooksdale Farm and CSA	Surrey, BC	https://arocha.ca/where-we-work/brooksdale/brooksdale-csa/	2 acres	A Rocha Canada, Brooksdale Environmental Learning Centre	Community Shared Agriculture (CSA) project at the Brooksdale Environmental Centre in Surrey, BC.	CSA, community kitchen, market garden, ecological restoration	The farm is part of a larger environmental conservation project led by A Rocha, which is a national environmental organization. Hired farmers, interns and volunteers to the bulk of the field work. CSA members pay for weekly produce boxes.
Burgoyne Valley Community Farm	Salt Spring Island, BC	http://www.ssifarmlandtrust.org/2016/06/15/burgoyne-valley-community-farm/	62 acres	Salt Spring Island Farmland Trust, Community Services	The Burgoyne Valley Community Farm, is a sixty acre parcel of farm land in the Agricultural Land Reserve. This property has been continuously farmed since 1887 and was granted to the Farmland Trust for the benefit of the community in exchange for a zoning amenity in 2013. The Farmland Trust board in collaboration with farmers and families has brought all 62 acres back into full high value production. Most of the land is rented to farmers whose farm operations are an interesting mix of produce production. Community Services is also operating a farm on the property and growing an abundance of fresh, healthy produce for many people in their programs who would not otherwise have access to local produce. The Shaw Family Community Gardens is providing small garden spaces for 70 Salt Spring Island families and individuals to grow their own food.	Poultry production, garlic, market veggies, chicken tractor, community gardens	Farmland Trust secured the property and the BOD continues to have a role in development of the property. Currently 6 different private farming enterprises on the land and community gardens.
Chicago Urban Farm District (Proposed)	Chicago, IL	https://www.cityofchicago.org/content/dam/city/depts/zlup/Sustainable_Development/Publications/Green%20Healthy%20Neighborhoods/GreenHealthyNeighborhoods_PC_Low_Res_pt_2.pdf	Southside Chicago Neighbourhoods, vacant lots, 100 acres of city owned land	Department of Housing and Economic Development, City Planning, Growing Power (Milwaukee)	Long-term plan to turn a community filled with vacant lots into a community built around agriculture. Part of the consortium's plan is to use the South Side's strong rail system to distribute Chicago-grown food to the rest of the nation. Part of green and healthy neighbourhoods (GHN) revitalization plan. Ongoing work, with redevelopment happening in pockets.	3 mile long neighbourhood trail called Englewood Line (spine of development). Two half-acre job training farms already exist in the district. A fourth half-acre educational farm run by the Center for Urban Transformation and Angelic Organics Learning Center.	Planning and development of UA elements are happening at the municipal level and integrating organizations and individuals with production skills and experience to realize the project. For example Growing Power (headquarters in Milwaukee) is a partner.
Colony Farm Community Gardens	Coquitlum, BC	http://www.cfcg.ca/contact-us/	7 acres		A 7 acre farm site located within Colony Farm Regional Park that is operated by 250 members. There are 550 individual plots as well as a berry border, small orchard, tool sheds, a pagoda, lawns, a food bank garden and area for community group plots.	Demo plots, composting facilities	Use of the land is governed by Metro Vancouver. Members are required to use organic practices. Community gardeners work the land.

Project Name	Location	Project Links	Site Specs	Partnerships	Project Description	Unique Amenities	Governance
Columbia Centre for Urban Agriculture	Columbia. MO	http://columbiaurbanag.org/urban-farm	1.3 Acres		Urban farm started in 2010. Two-thirds of an acre is devoted solely to commercial vegetable production. The purpose of the Urban Farm is to break down the common notion that where we live should be geographically and intentionally distant from where our food is produced.	Commercial vegetable production, native plants, community composting, chickens, demonstration garden	Initiated by individuals and managed as a non-profit. Organization also builds other urban gardens and has a program to empower people to start gardens in unused backyards.
Copley Community Orchard	Vancouver, BC	http://www.copleycommunityorchard.com/	~ 1 acre	Environmental Youth Alliance, City of Vancouver, Vancouver Parks and Recreation, TD Green Streets, Trees Canada and the Vancouver Foundation, Community Studio	Copley Community Orchard is an urban orchard located in Vancouver, British Columbia. It is a place to celebrate the benefits of growing fruit trees, berry bushes and other perennial plants, educating people on their cultivation, and creating a beautiful and productive space accessible to all.	Apple orchard, espaliered apple and pear trees, rare or unique fruit trees, berry bushes and fruiting shrubs.	The Environmental Youth Alliance initiated the project and they contracted community participation in the early planning and design stages. Community support is a key in ongoing operations as well as partnership with the City of Vancouver. Grant funded.
Dowling Community Garden	Dowling, MN	http://www.dowlingcommunitygarden.org/pages/projects.htm	190 plots, 4 raised accessible 5'x12' beds, garden shed, 20x 55gallon barrels for water, on-site composting		Community Garden project that has both ground level plots and accessible raised beds. Promote sustainable gardening projects, share produce with community organizations (food shelves and meal programs), disseminate gardening information through website and newsletter.	Wheelchair accessible gardens, on-site composting.	Volunteer run, plots utilized by members
Downsview Park "Cultivation Campus"	Toronto, ON	https://www.freshcityfarms.com/our-farms	6 acres (another resource said 1.5 ha)	Urban Harvest (seed producer), Fresh City Farms Ontario Beekeepers Cooperative, site is federally owned.	"Cultivation Campus" – is a space meant for both food production and education. Planned to include gardens, greenhouses, a horticultural centre and space for a wide range of educational programs.	Commercial production, incubator plots, beehives	Fresh City Farms Inc. is the organization currently managing the site. Food Cycles, a non-profit organization, was a key partner in development of the cultivation campus. Private enterprises operate on the land and market through fresh city farms and independently.
Fairview Gardens	Goleta, CA	http://www.fairviewgardens.org/	12.5 acres	Centre for Urban Agriculture, Land Trust for Santa Barbara County	The conservation easement was designed to protect the land in perpetuity. Unlike most "open space" easements, ours is based on active use, requiring that the land must always remain a working organic farm and that the education work must continue under the non-profit organization, officially named the Center for Urban Agriculture. The farm continues to produce an explosion of fresh fruits and vegetables. Its assured presence in the heart of a growing urban center provides a way for people to reclaim their lost connection to the land and to one of the most important and intimate acts: securing the food that they and their children eat.	Farm Stand, Fruit trees,	Conservations easement protects the land from development, based on active use and ongoing educational programing by the Centre for Urban Agriculture non-profit. A BOD and advisory board support the farm. Farmers and apprentices are hired for farm operations.
FarmStart McVean Farm	Brampton, ON	http://www.farmstart.ca/programs/start-up-farms/our-farms/#near-urban-farming	45 acres	FarmStart, Toronto Region Conservation Authority	The McVean Start-Up farm in Brampton is the first of it's kind in Canada and has become a viable model for others to learn from across the country. McVean is a vibrant example of viable near-urban, ecological agriculture and an opportunity for new farmers from urban and near-urban areas to begin to grow food for their communities. This 45-acre facility is owned by the Toronto and Region Conservation and leased to FarmStart on a long-term lease.	Greenhouses, incubator plots, farm stand	The land is managed by non-profit FarmStart and leased from the Toronto Region Conservation Authority. Educational programs planned and administered by FarmStart. There are also incubator plots where farmers lease land from FarmStart and operate independent businesses
Fresh Roots Urban Farm	Vancouver, BC	http://freshroots.ca/	Two quarter-acre schoolyard market gardens at VanTech Secondary and David Thompson Secondary	Vancouver School Board, Grant funding (Vancouver Foundation, Van City, Real Estate Foundation)	In 2013 Fresh Roots forged a working agreement with the Vancouver School Board. Together we established first-of-their-kind Schoolyard Market Gardens: thriving places where multicultural and intergenerational knowledge sharing abounds! These are productive educational farms on school grounds. The food grown goes into school cafeterias, local neighbourhood house food security initiatives, and a weekly Salad Box program for East Vancouver families.	Edible schoolyard gardens	Production and educational programming managed by Fresh Roots and school gardening made possible trough partnerships with Vancouver District School Board and individual institutions
Gabriola Commons	Gabriola Island, BC	http://www.gabriolacommons.ca/	26 acres	Mid-Island Co-op Coastal and support and funding from: Community Credit Union Spirit Fund, Nanaimo Community Foundation, the Gabriola Recreation Society, the Gabriola Lions Club, GabEnergy Society, and the Vancouver Foundation	The Gabriola Commons is a place where sustainability, community and agriculture meet, featuring 26 acres of peaceful rural landscapes and rich ecosystems with significant biodiversity. The property includes connecting pathways, open vistas, meditative spaces, vibrant community gardens, learning and meeting facilities for the use and enjoyment of the public.	Community Kitchen, Community gathering space, land held in Public Trust.	Managed by a council made up of representatives from different interest groups. Their coordination meetings are open to the public. Legal ownership is held by the Gabriola Commons Foundation, a charitable non-profit society.
Greenline (proposed)	Toronto, ON	http://www.workshoparchitecture.ca/projects/public-spaces/p2.html https://www.facebook.com/GreenLineTO?fref=ts https://greenlinetoronto.wordpress.com/	5km hydro corridor	Park People, Workshop Architecture, City of Toronto, Hydro One	The project began with an international ideas competition that asked artists and designers to contribute to an overall vision for the public use of a 5km long hydro corridor across mid-town Toronto. They displayed a selection of the 77 entries at a public event and workshop in May 2013 attended by over 300 people, three councillors and the local MP and MPP. There is no proposed food production element but recreation, conservation and public green space are all central.		This project was conceived as part of a design competition but upon implementation would be managed by the city as part of the public open space network.

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Prairie Crossing Farm	Grayslake, IL	http://libertyprairie.org/places/prairie-crossing-farm/	100 acre farm, part of >600 acre community	Private Development	The Prairie Crossing Farm is owned by the Liberty Prairie Foundation which operates from headquarters in the Yellow Farmhouse. The Prairie Crossing Farm is home to educational programs, a Farm Business Development Center, multiple independently operated farm businesses, and more. Prairie Crossing is a 667-acre farming subdivision in Grayslake, Illinois. Initiated in 1987 by a group of neighbours who formed Prairie Holdings Corporation and purchased the land. The resulting 359 clustered single-family homes and 36 condominiums.	incubator plots, community garden plots	This project is managed as a private operation, owned and managed by the Liberty Prairie Foundation.
Prinzessinnengärten	Berlin, GR	http://prinzessinnengarten.net/about/			Nomadisch Grün (Nomadic Green) launched Prinzessinnengärten (Princess gardens) as a pilot project in the summer of 2009 at Moritzplatz in Berlin Kreuzberg, a site which had been a wasteland for over half a century. Along with friends, activists and neighbours, the group cleared away rubbish and built transportable organic vegetable plots.	Mobile growing boxes made from recycled and repurposed materials	Founders established a non-profit org (Nomadic Green) and initiated the project from there, it is now run through that group which has the aim to start similar projects elsewhere
R-Urban - AgroCite	Colombes, FR	http://r-urban.net/en/projects/agrocite/			AgroCité is designed to introduce and support the dynamics of urban agriculture and provide support for the cultural and educational activities related to the R-URBAN project, currently emerging in the city of Colombes.	experimental urban farm, shared garden for residents, educational garden, greenhouse, rainwater collection infrastructure, alternative energy projects, shared bread oven	Part of the larger R-Urban design and development project is to establish projects that can be managed by residents in the long run
Santropol Roulant	Montreal, QC	http://santropolroulant.org/en/	Senneville (3 acres), McGill Edible Campus, Roulant Rooftop	McGill University	The Roulant's agriculture program aims to build a food system that is healthy, just, and sustainable. Use intensive organic practices we produce food that nourishes all other programs and members of our community. Peri-urban farm is production -focused and runs a CSA program. The urban gardens feed into the meals on wheels program and are sold at a community pop-up market. They have been a strong presence in Montreal for 20+ yrs and could be a useful example of well established urban ag programs.	Volunteer project Incubator, worm composting, apiculture, Internships, meals on wheels distribution, CSA, farmers market	Santropol Roulant is an established non-profit with deep roots. UA projects aim to integrate collective community decision making and horizontal management to ensure projects and programming meet community need
Scarborough Centre Butterfly Trail	Scarborough, ON	https://parkpeople.ca/archives/7394	3.5km	City of Toronto	Hydro corridor redesigned as a walking/biking trail planted with butterfly and pollinator attracting plants.	pollinator corridor	Initially funded by the Weston Family Parks Challenge grant.
SerenbeFarms	Atlanta, Georgia	https://serenbefarms.com/ http://serenbe.com/	25 acres (8 acres cultivated)		Serenbe Farms is a small diversified certified organic farm located in the Serenbe community and surrounded by the rural oasis of the Chattahoochee Hill Country.	CSA program	The farm is on lands at the Serenbe community and managed independently by farm managers. Food is sold through a CSA
Sole Food Farms	Vancouver, BC	http://solefoodfarms.com/	4 farms (total of about 5 acres) including an urban orchard	United We Can, Real Estate Foundation, Van City	Sole Food transforms vacant urban land into farms that grow food available at farmer's markets, local restaurants, and retail outlets. Sole Food's mission is to empower individuals with limited resources by providing jobs and agricultural training. During the past seven years, Sole Food Street Farms has transformed acres of vacant and contaminated urban land into street farms that grow artisan-quality fruits and vegetables.	urban orchard, urban garden plots	Sole Food Farm, which operates as a non-profit social initiative, manages 4 farm sites around Vancouver selling food at farmers markets, and to restaurants.
Stanford Avalon Community Garden	Los Angeles, CA	http://www.urbansemillas.com/Stanford_Avalon_Farm.html	180 plots	Los Angeles Community Garden Council	Community of 120 farmers producing food in an urban community garden.		The farmers manage the gardens under the Los Angeles Community Garden Council.
Strathcona Community Garden	Vancouver, BC	http://strathconagardens.ca/	3.34 acres		Urban garden started in 1985 by local residents. The garden has approximately 200 plots for residents to grow organic food. Several raised beds are available for those with physical /mobility limitations.	eco-pavilion, greenhouse, storage sheds/nursery, bee hive, espalier area, orchard, herb garden, wildlife habitat, children's' play area, garden plots	The Strathcona Community Gardeners Society manages the gardens and the gardens are volunteer tended.
The Battery Urban Farm	New York, NY	http://www.thebattery.org/projects/battery-urban-farm/	1 acre	The Battery Conservancy, Environmental Club at Millennium High School	The Battery Urban Farm is an educational farm where New York City's students, residents, and visitors learn about sustainable farming techniques, the joys of tasting new foods, and their role as environmental stewards.	forest farm with fruit trees, berries, mushrooms, flowers for pollinators, and examples of medicinal plants.	Started as an initiative of the Battery Conservancy and local high school students. Now managed by farming and educational staff (4ppl)
The Sharing Farm	Richmond, BC	http://www.sharingfarm.ca/about/	4 acres		Small food production project that grows food for families in need. Also provide formal and informal education programs that teach new generations of urban farmers and backyard gardeners. Mental health and addiction groups have been blended into the volunteer program as a form of horticultural therapy.		Managed as a production and educational resource for the community by the Sharing Farm Society. Staff are hired to carry out programming, which includes the large and very popular garlic festival. Community members run the farm.
The Stop Community Food Centre @ Wychwood Barns	Toronto, ON	http://thestop.org/programs/fight-hunger/urban-agriculture/	Primary site located at the Wychwood Barns, 8000 square feet	Community Food Centres Canada	The community garden at Earlscourt Park focuses on building skills, confidence, connections, and sparking conversations about where and how food is produced. They partner with the Sagatay program from Na-Me-Res (Native Men's Residence) to animate the garden at Hillcrest Park. This partnership provides the men of the Apaenmowineen (Having Confidence in Oneself) program the The sites together yield over 4,000lbs of fresh, organic produce for every year, and engage community members of all ages in learning how to use environmentally-friendly methods to grow produce.	Community gardens, a greenhouse & compost demonstration centre, a sheltered garden, and a medicine garden. They operate a garden-sharing program called Yes In My Back Yard (YIMBY).	Managed by a BOD
The Urban Farm at Stapleton	Denver, CO	http://theurbanfarm.org/			The Urban Farm is an educational campus that teaches its participants about animal husbandry (equine, poultry) and horticulture in an intimate farm setting.	equine activities, children's programming, garden plots	Managed by a BOD

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Troy Gardens/Troy Community Farm	Maddison, WI	http://www.communitygroundworks.org/what-we-do/troy-community-farm	31 acres, 5 acres in cultivation	Madison Area Land Trust, Urban Open Space Foundation	Growing certified organic food on Madison's northside since 2001, they are the city's first urban farm. Grow vegetables, herbs, and flowers.	market garden, land trust	Managed as an integral piece of the Troy Gardens development. The farm operates a CSA, hires staff and engages in training new farmers
UBC Farm	Vancouver, BC	http://ubcfarm.ubc.ca/food-production/	24 hectares	University of British Columbia, Faculty of Land and Food Systems	The Centre for Sustainable Food Systems at the UBC Farm is a unique research centre that integrates the production farm in both teaching and learning. The farm itself is situated within a 90-year old coastal hemlock forest that comprises a mosaic of cultivated annual crop fields, perennial hedgerows, fruit orchards and educational demonstration gardens. Beyond the research fields, the UBC Farm dedicates large fields to production and public engagement. The UBC Farm grows over 200 varieties of fruits, vegetables and herbs.	Flower farm, indigenous gardens, children's programming, orchard, composting	The farm is managed as an educational resource and supports the land based education in sustainable food and farming.
Un plant de tomate à la fois	Montreal QC	https://plantdetomate.com/		Dawson Community Centre, Riverview Elementary School and Community Learning Centre, South West United Mission.	Un plant de tomate à la fois is a collaborative, community-based initiative focused on improving local access to fresh produce and encouraging healthy eating within the Desmarchais-Crawford neighbourhood of Verdun. There are school and collective gardens (everyone gardens the same plot and shares the harvest as opposed to individual plot in community gardens). Gardens are roof-top, in containers and in the ground. There is more of a teaching and community engagement focus here rather than a production focus.	4 garden sites, roof top, container, in-ground. Collective gardening, where everyone works together and shares the harvest.	Managed by the organization in partnership with community organizations and participating schools. The project was initiated as a partnership between multiple community orgs.
Urban Edge Farm	Providence, RI	https://www.southsideclt.org/urbanedge	50 acres (35 acres cultivated)	Southside Community Land Trust	Urban Edge Farm is a model farm demonstrating environmentally sound land stewardship and farming practices. The farm hosts new farmers who collaboratively manage the farm's operation and maintenance. The farm also offers opportunities for volunteers to work alongside the farmers and hosts farm-related public events. The food grown by farmers at Urban Edge Farm feeds Community Supported Agriculture (CSA) shareholders, Farmers' Market customers, and diners at local restaurants, soup kitchens and food pantries.	incubator plots, conservation, CSA	A project of the Southside Community Land Trust which helped secure the farmland. 7 independent businesses operate from the 50 acres of land.
Washington Youth Garden	Washington, DC	http://www.washingtonyouthgarden.org/	1 acre, located on the grounds of the US National Arboretum	U.S National Arboretum	Washington Youth Garden was established in 1971 by D.C. Department of Parks and Recreation. WYG was created to teach children horticultural skills and environmental awareness, as well as life skills such as team building and personal responsibility. It was one of many youth gardens created in that era and is one of only three original youth garden sites still operating today. WYG receives in-kind support from USNA which include land, soil amendments, office and greenhouse space, equipment use and horticultural expertise.	demonstration garden	Established on city owned land the site is now managed primarily as an educational resource. It is located on the grounds of the USNA.
West Seattle Bee Garden	Seattle, WA	http://www.westseattlebeegarden.com/	Able to host 30-35 participants at a time.	Puget Sound Beekeepers Association	The Bee garden was created as an educational site for learning about pollinators.	educational information, outdoor classroom	Managed as an educational resource through partnerships with the Puget Sound Beekeepers Association
Wood Street Urban Farm and Honore Street Farms	Chicago, IL	http://growinghomeinc.org/our-farms/	.87 acres of growing space (2 adjacent farms)	Growing Home	The Wood Street Urban Farm was fully operational by 2009, a four-year process that convinced City lawmakers to amend the zoning ordinance and formally allow urban farming in Chicago. In 2011, Growing Home started another farm adjacent to the Wood Street Farm. Together, the Wood Street and Honore Street Farms are the center of their programming. In each of these cases, the City tested, cleaned and prepared the sites and installed water and fencing.	unheated hoop-houses	This is an initiative of Growing Home which manages many different urban growing projects in Chicago. It also acts a a hub for the work of other farming, job training and food access non-profits.
Woodlawn Highschool Urban Farm	Birmingham, AB	http://whsurbanfarm.org/	2 acres+ infrastructure and amenities	Jones Valley Teaching Farm	2 acre farm built and managed by high school students. Integrated science and farm business educational components.	In addition to two acres of in-ground production space, WHS Urban Farm includes a state-of-the-art greenhouse, classroom, office, and produce processing and storage facilities.	An initiative of the Jones Valley Teaching farm
Zenger Farm	Portland, OR	https://zengerfarm.org/	16 acres	City of Portland, Friends of Zenger Farm, David Douglas School District	The Urban Grange, built with $2.3 million in donations, has 6,600 square feet of classroom, office and meeting space. A commercial kitchen is available for start-up food businesses and community events. The Urban Grange is part community center, part conduit to proper nutrition and a vibrant local food system.	Market garden, orchard, vermiculture, chickens, beehives	Land was purchased by the City of Portland and is now managed as a public space with a 50 year lease. Zenger Farm managed for production, environmental programming and community activity.

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Greensgrow	Phillidelphia, PA	http://www.greensgrow.org/	3/4 acre	EPA Green Partner, Green Mountain Energy, faith based groups	Urban farm operation that engages community, supports local entrepreneurship, produces foods and integrates sustainability practices and environmental stewardship.	Livestock (pigs, chickens, ducks, bees), composting toilet, food business incubator, urban farm CSA, hydroponics, greenhouses, community kitchen	Greensgrow has a BOD and farming, educational and administrative staff.
Groundswell Centre for Local Food & Farming	Ithaca, NY	http://groundswellcenter.org/	8 acres	Located on the grounds of Ecovillage Ithaca, Cornell University extension and small farms program	Groundswell's Incubator Farm is the first of its kind in New York State, creating pathways to ownership for aspiring farmers from marginalized communities. They provide land, equipment, training and mentoring for three years, so that participants can launch their farm businesses with minimal investment and risk.		Land owned by Ecovillage Ithaca. Supported through grants and donations.
Grow Calgary	Calgary, AB	http://www.growcalgary.ca/	11 acres	Food Access Agencies in Calgary (ie: foodbanks)	Canada's largest urban agricultural farm. Grow fresh produce for Compassionate Food Access Agencies in Calgary.		Grow Calgary grows produce for Food Banks in Calgary. Non-profit organization founded and run by Paul Hughes.
Haliburton Organic Farm Society	Victoria, BC	http://haliburtonfarm.org/	9.3 acre, zoned as new rural demonstration farm zone, 6 separate farm businesses on property	District of Saanich	Haliburton Community Organic Farm is a publicly-owned farm within the Agricultural Land Reserve (ALR). The farm was saved from development by a group of concerned citizens and the District of Saanich, who purchased the land. The Farm is now being developed as a community and educational certified organic farm. New "demonstration farm" zone was created to facilitate the development of this project.	Greenhouses, native plant nursery, walking trail , wetland	The society is managed by a BOD with 7 independently operating businesses are operating on.
Highfields Centre for Composting	Hardwick, VT	http://www.highfieldscomposting.org/	Compost demonstration site located in Greensboro, VT	Central Vermont Solid Waste District	Providing technical educational resources on composting, soil security, and heat recovery systems to the farming community.	Heat recovery systems testing (bio-heat)	Highfields has a BOD and staff that oversee technical operations, outreach and administration. There is also a significant research component managed by staff.
Hives For Humanity	Vancouver, BC	http://hivesforhumanity.com/	200 hives dispersed throughout Vancouver and Delta	partner with local schools, businesses, non-profits, and bee organizations	Hives for Humanity is a non-profit organization that installs and manages beehives in throughout Vancouver and Delta. They also run educational programming around apiculture.		Has a BOD. Receive grant funding from a variety of organizations.
Intervale Center and Intervale Community Farm	Burlington, VM	http://www.intervale.org/ http://www.intervale.org/what-we-do/farms-program/	135 acres (total)	Vermont Foodbank, Intervale Center	The Intervale Center leases land, equipment, greenhouses, irrigation and storage facilities to small independent farms. Each year, these farms produce fresh produce, eggs, meat, and flowers on 135 acres of land and contribute about 60 full-time, part-time and seasonal jobs to the Burlington economy. The Intervale Center currently leases land to 7 mentor farms. These farms serve as established businesses that provide mentorship to the incubator farms and leadership in the agricultural community. Also operate a "gleaning" project that distributes extra produce to those in need.	Incubator plots, mentor farms (more established), "gleaning" service.	Intervale community farm is a consumer cooperative, managed by CSA members. Land is subleased from the Intervale Center, which also leases land to other independent businesses. There are 3 full-time, year-round employees.
Jones Valley Teaching Farm	Birmingham, AB	http://jvtf.org/	One city block	School boards and individual schools.	Farm used to teach pre-k - 12 year old students about food, farming and the culinary arts. It is "...a food-based education model rooted in academic standards."	outdoor classroom, garden shed	The farm is managed by the organization and staffed to work directly with neighbouring schools.
Just Food Start Up Farm	Ottawa, ON	http://justfood.ca/just-food-farm/	each new farmer is provided 1/4 acre of land	Farmworks with Operation Come Home; Karen Community Farm with KLEO (Karen Learning and Education Opportunities Support Group);	The incubator farm teaches and supports start-up farmers by allotting each of them a ¼ acre plot in which they can produce vegetables and fruit for either Community Supported Agriculture or for sale at Local Farmer's markets. In return, Just Foods provides a communal wash station and cooler for sorting and temporarily storing the produce. They also provide basic support necessary in accessing water and electricity.	wash station and cooler	Just Food is an Ottawa based food security organization which is responsible for managing the incubator farm. Each member farmer then runs their own independent business.
Lafayette Greens	Detroit, MI	https://www.asla.org/2012awards/073.html	.425 acre		The garden is a showcase for urban growing techniques from bio-intensive methods, organic pest management, SPIN Farming and the French Potager tradition of the kitchen garden planted for its beauty as well as its productivity. It was designed to encourage public participation through interactive demonstration and intuitive design.	raised beds, plaza, seating, interactive children's garden.	Developed through corporate sponsorship.
Langley Demonstration Garden at the Dereck Doubleday Arboretum	Langley, BC	http://www.leps.bc.ca/demonstration-garden/		Langley Environmental Partners Society (LEPS)	The Langley Demonstration Garden is an educational facility operated in partnership with the Township of Langley. The Garden was established in 1992 to demonstrate sustainable gardening techniques. In 2013 it moved to a new permanent location inside the Derek Doubleday Arboretum. The garden is staffed weekdays May to August, and is open to the public year round.		Garden operations and educational programming aare managed by LEPS.
Lenape Edible Estate	Manhattan, NY	http://www.fritzhaeg.com/garden/initiatives/edibleestates/lenape.html		Hudson Guild, NY Public Housing Authority, Friends of the Highline	This garden is located in the middle of Manhattan in front of a community center that currently serves the 2,000 residents. The garden includes the native edible plants and mounded plantings of beans, corn, and squash that the Lenape people would have eaten for millennia in that very location. The Lenape garden is surrounded by detailed signage that tells the story of each plant, the food it produces, how the Lenape used it in their diet, and the natural history of the site. It is not intended to feed the current local residents, but rather to provide visible evidence of both the general fact that our food comes out of the dirt and specific examples of the sources of food for the previous residents of the island. It is a demonstration garden, part experimental laboratory and part educational display.	First nations garden, educational signage, native plants	On land owned by the Hudson Guild a New York public housing agency.
Living City Farm	Vaughn, ON	http://tour.thelivingcitycampus.com/site/living-city-farm	4.8 acres. The Living City Campus is the Largest Environmental Education Centre in Canada.	Toronto Region Conservation Authority, Kortright Centre for Conservation	The Living City Farm demonstrates sustainable and diverse farming practices and produces a variety of organic produce for local markets. Situated just 10 km north of Toronto, this farm reconnects traditional agricultural practices in rural areas with the large metropolitan region of the GTA. Produce is sold at local farmers markets. Nature trails at the Kortright Centre pass alongside the fields and greenhouse, providing visitors with opportunities to experience a working farm firsthand. Educational tours, and sustainable agriculture-themed programs and activities are offered, including a children's garden.	market garden, educational programming, walking trails, conservation project, heritage orchard, greenhouse.	Living City farm is operated by Akachi Farms on land owned by TRCA. This is a private enterprise but educational opportunities are part of the larger mandate of the Living City Campus

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Loutet Farm	North Vancouver, BC	http://ediblegardenproject.com/loutet-farm/story/		North Shore Neighbourhood House, the City of North Vancouver and the University of British Columbia	Loutet Farm's goal is to operate an economically viable urban farm within a residential area. Funds generated through the sale of the produce are directed back into the operations of the farm while creating valuable green-collar jobs for north shore residents. In addition, the Loutet Farm offers a range of workshops and hands on learning opportunities focused on sustainable food production for both adults and children.	operated in underutilized public parkland	Managed by the Edible Garden Project
McQueston Urban Farm	Hamilton, ON	http://mcquestenurbanfarm.wixsite.com/grow	3 acres, adjacent to a school in residential neighbourhood	City funded (city owned land), partnerships with non-profit and educational institutions, Hamilton Victory Gardens, Hamilton Community Foundation	As part of an initiative to increase food security in the McQuesten area, a plan to create an urban farm in the green space behind the former St. Helen's school is being developed. These urban farms address the issue of securing a nutritious and sustainable food source for the community, but it will also create a positive change in the neighbourhood by providing volunteer opportunities for citizens of all ages, adding economic value to the community, and fostering strong bonds amongst residents in McQuesten.	community gathering space, a native plant walk, a pond and farm fields producing crops to be sold at the Ottawa Street Farmers Market and a small market onsite for locals.	The farm is managed as a social enterprise and relies on partnership from schools in the community. Staff are hired and community volunteers are relied on to do farming work.
Medicine Wheel Garden	Toronto, ON	http://www.nameres.org/medicine-wheel-garden/	Connected to the Na-Me-Res Residences supported housing for aboriginal men	Na-Me-Res Residences, The Stop Community Food Centre	The planning of the Medicine Wheel Garden began in the winter of 2012. In the spring of 2013, rocks from the Na-Me-Res sweat lodge were positioned to give the garden direction and identity. Vegetables, herbs, and medicinal plants were introduced with the guidance of medicine wheel teachings. The Medicine Wheel Garden officially opened on August 13, 2013. The Medicine Wheel Garden in Hillcrest Park is Toronto's first Aboriginal community garden. Truly a one-of-a kind sacred space, it has given the men of the Apaenmowineen program an opportunity to learn more about gardening and Aboriginal medicinal plants.	medicine wheel, thereputic gardening	This project was initiated through the stop community food centre.
Middlesbrough Urban Farming Project	Middlesbrough, UK	http://www.ryerson.ca/carrotcity/board_pages/city/middlesbrough.html	City wide	Bohn & Viljoen Architects, town council	Middlesbrough became a living experiment for urban design ideas that integrated food production. The design process involved mapping placed for food production in the city. As part of the initiative containers of various sizes were distributed to the public to help them get growing. The city now has active food growing culture through community gardens, community orchards, school gardens.	multiple, separated growing plots across city	This was a massive city wide design in initiative to create more space for food production in the city. The municipality supported the design process and offers resources and knowledge directly to residents.
Mole Hill	Vancouver, BC	https://www.mole-hill.ca/	1 city block, 26 homes, 170 housing units	Vancity, Heritage Legacy Fund of BC	Housing restoration project and community food production initiative Mole Hill saw the restoration of 26 character homes into 170 affordable units along with the creation of storm water management systems, a community garden and orchard and a landscape laneway open space.	Redeveloped laneway, storm water management, edible landscaping	Municipality facilitated development which is now maintained by residents under the Mole Hill Community Housing Society.
Nelson Food Cupboard	Nelson BC	http://foodcupboard.org/	9000 sq ft. (donated land)	Columbia Basin Trust, Community Food Centres Canada and others who donated infrastructure and supplies	The Food Cupboard Garden is a little urban farm where vegetables are grown for Nelson Food Cupboard customers. There is focus on growing produce locally and teaching production skills to community members. Nelson Food Cupboard Society is a food security and access organization.		This garden is managed by the Nelson Food Cupboard Society.
P-Patch Community Garden	Seattle WA	http://www.seattle.gov/neighbourhoods/programs-and-services/p-patch-community-gardening/about-the-p-patch-program	88 community gardening sites around Seattle, 14.9 acres of the land and in addition steward 18.8 acres for the public for a total of 32 acres	Neighbourhood groups (including Beacon Food Forest)	The P-Patch Community Gardening Program, a program of the City of Seattle Department of Neighbourhoods, oversees 88 P-Patches distributed throughout the city. P-Patch community gardens are a partnership between neighbourhoods and the City. Common planning and maintenance framework has been established.	multiple urban garden plots	The P-patch program is administered by the City of Seattle which makes space available for individual gardeners across the city.
PLOT Community Garden	Surrey, BC	http://theplot.ca/		City of Surrey, People's Food Security Bureau	A group of community members have gained access to city-owned land in Surrey to create a food production, education and land art instillation. PLOT is a collectively cultivated space worked by coordinators and volunteers. The group has a one year lease on the land which was extended for the 2017 growing season.	First Nations medicine wheel, collective plots, public art, beekeeping	Founded by community members and cultivated by volunteers on land that has been leased from the city on a year to year basis.

Appendix B: Public Feedback Forms

Public Feedback Form for Community Openhouse #1

Langley Urban Agriculture Demonstration Project - Community Open House #1

Participant Survey

Do you live in the City of Langley? ☐ Yes ☐ No

If not, where do you live? _____

How did you hear about this project? _____

Do you live within walking and/or biking distance of the project site? ☐ Walking ☐ Biking

Do you actively use the site currently? ☐ Yes ☐ No

If so, how do you use it? If not, why not? _____
_____

What interests you most about this project? _____
_____
_____

What do you think are the biggest **challenges** for urban agriculture on this site?
_____
_____
_____

What do you think are the biggest **opportunities** for urban agriculture on this site?
_____
_____
_____

Based on the amenity list presented at the Open House, which amenities would you most like to see incorporated into this site? Why?
_____
_____
_____
_____
_____

Do you have any remaining questions? About urban agriculture? About the Langley Urban Agriculture Demonstration project?
_____
_____
_____

To receive project updates and invitations to any further community open house events, please leave your email below:
_____

Thank you for taking the time to share your feedback with us! If you have any additional comments please use the back of this form.

Public Feedback Form for Community Openhouse #2

Langley Urban Agriculture Demonstration Project Community Open House #2

QUESTIONS TO CONSIDER

Do you live in the City of Langley? Yes ☐ No ☐

If you would like to receive future correspondence about this project please provide your email address.

1. Of the OPTIONS, which do you prefer?
   - ☐ #1 THE CLASSROOM
   - ☐ #2 THE ORCHARD
   - ☐ #3 THE FARM

Why do you prefer this OPTION?

2. What modifications would you make to the OPTIONS?

3. What challenges do you think could arise with the proposed OPTIONS?

4. What additional comments do you have?

*Please use the back of this sheet if you need more space.

Langley Urban Agriculture Demonstration Project Community Open House #2

QUESTIONS TO CONSIDER

Do you live in the City of Langley? Yes ☐ No ☐

If you would like to receive future correspondence about this project please provide your email address.

1. Of the OPTIONS, which do you prefer?
   - ☐ #1 THE CLASSROOM
   - ☐ #2 THE ORCHARD
   - ☐ #3 THE FARM

Why do you prefer this OPTION?

2. What modifications would you make to the OPTIONS?

3. What challenges do you think could arise with the proposed OPTIONS?

4. What additional comments do you have?

*Please use the back of this sheet if you need more space.

Appendix C: Public Feedback

Public Feedback from Community Open house #1

Do you live in the City of Langley?	Walking distance?	How did you hear about the project?	Current use?	What most interests you?	Challenges?	Opportunities?	Amenities?	Remaining Questions? Final thoughts?
Y	Y (back onto)	letter in mail	occasionally walk dog	putting area to good use	parking who has access	people able to grow food for themselves, personal interaction with others	walking and sitting areas	
Y	Y	letter in mail	walking	making use of vacant city owned land	traffic and parking	to make better use of vacant land	not sure	waiting for more info to come
Y	Y	letter in mail	walk dogs, walk though on way to shopping		noise and traffic, would prefer natural park, not people centred	bee farming and orchard trees	pollinator garden community garden demonstration garden	not in favour of this proposal at this time
Y	Y	letter in mail	access through	traffic problems	parking	for rats to multiply	None	no
Y	Y	letter in mail	walking	development of all weather trails	car access	civic open space to be enjoyed by all	Interested in all amenities proposed, suggest opening up pleasentdale creek, clean up salmon stream	
Y	Y	local paper	walking	money and extra traffic this will make	traffic	none	none	good to have urban ag, not here. Who will attract all the rodents?
Y	Y	letter in mail	walking. Biking		whose paying for it? maintaining it?			
Y	Y	letter in mail	walk though		who's paying for it parking and traffic			
Y	Y	letter in mail and local paper	walking	sounds like a goof use of land	what happens to wildlife? Vandalism - secured at night? Homeless camping parking water	some people get to enjoy gardening who may live in apartments	classroom. School garden, accessibility garden	will keep and interest in this project
Y	Y	letter in mail	taking walks to brookswood	Would like to see this located further out, Campbell valley park (poor location)	parking water supply		waste management, don't want something that attracts more rats	
Y	Y	letter in mail	walking	who is paying?	maintenance. Ownership	not sure about opportunities yet, looking forward to more details	clear walking paths	who will have access? How will access be granted? Who is paying for this?
Y	Y	letter in mail	walking	202 st push through waste trucks material loading fire revert back if fails who will pay	keeping residents involved	education	keep as is	
Y	Y	letter in mail	biking	nothing	don't like it	none		
Y	Y	letter in mail	bike commute walking bird watching blackberry picking sledding	sustainable agriculture	security at night (lots of shady stuff going down) parking, traffic powelines opening 202 to traffic	lots of space, decent exposure	community farm training farm demo farm	Are there other sites?
N (brookswood)	Y	letter in mail	no	all of it!	vandalism	getting people of all ages outdoors, away from devices and screens	all of them, highly educational	Hurry up!
Y	Y	years ago through work and school	walking	all great, education, food, sustainability, demonstration, template for hydro ROW	soil quality and drainage from old dump	education	children's garden community orchard ecological habitat outdoor classroom school garden pollinator garden training farm	concerned about animals because not patrolled at night
Y	Y	letter in mail	walking biking running	utilizing land that is sitting stagnant and neglected	attitudes	education, community connection, beautification, sharing	accessibility garden community garden training outdoor classroom school garden	
Y	Y	letter in mail	walking, grandchildren ride bikes		access to water parking security who policies it?			Neighbour impacted will be up in arms concerned about property values what keeps people from coming and going all night long

Public Feedback from Community Open house #1

Do you live in the City of Langley?	Walking distance?	How did you hear about the project?	Current use?	What most interests you?	Challenges?	Opportunities?	Amenities?	Remaining Questions? Final thoughts?
Y	Y	letter in mail	walking	possibilities for education	traffic parking increased use of people not living in walking distance loss of privacy loss of property value	education		No opposed but don't think it works here Lots here are large enough to have our own gardens traffic and parking would have an adverse effect on residents increased noise and disturbing ecosystem increased policing costs
Y	Y	letter in mail	walking, biking	concerns about cleanliness, safety and access	Access rodents homeless camps concern of bordering properties grow-ops			
Y (lived next to area for 25 years)	Y	letter in mail	area in constant use	a possible small project	maintaining access to nature habitat for birds, coyotes, rabbits water parking security for close by neighbours preventing increase of rats protect walk through access	start small, evaluate and address the problems and challenges	possible orchard education	No livestock Have many concerns, but in theory support some of the concepts possible to locate this in an area with more parking and better access
Y	Y	letter in mail	walking and biking	pollinator garden	security increased traffic parking ugly chain link fence takes away natural beauty blackberry and habitat preservation	pollinator garden wouldn't need security and could look wild		
Y	Y	letter in mail	walking the dog, good running trail	Doing something with dead space, not a bad idea but there are concerns	parking access without opening up 202 st	getting the community out to take care of plots would be good for the community	parking access off 200 st	What about wildlife that would be displaced by the project?
Y	Y	letter in mail	walking wildlife viewing	Nothing. We will have all the rodents and wildlife in our backyards		put money into upgrading existing trails		No questions, concerned that people in power will not listen
Y	Y	letter in mail	walking and wildlife viewing, good for fitness and mental health	resent the idea that natural habitat for song birds and wild animals will be destroyed	biggest challenge is for people to accept that wildlife habitat is being destroyed. Residents have previously fought golf course/driving range on this site	no opportunities for urban wildlife if project goes ahead		Leave this area peaceful and undisturbed for wildlife
Y	Y	letter in mail	walking dog, daily enjoyment as we back onto the site	how the site will be developed in terms of construction activity and increased traffic food production could be shared with community kitchens and food bank	increase of traffic and noise structures that will block views change the current landscape	enhance community sharing food crops with homeless shelters and community kitchens	pollinator habitat ecological areas orchard indigenous garden training farm	How will construction noise and disruption be mitigated? How will use of site be monitored? How will traffic, both auto and people, be controlled or monitored? Go for it, just do it well!
Y	Y	local paper	approx. 4 times a week, Langley has lots of trails - love it	to use land for something useful	parking	show people how to garden	great to make use of area	Hopefully will still be able to walk dog here!
Y	Y	letter in mail	walking to school and Brookswood	the area could be beautiful, removal of blackberry	concern about how busy the area could become parking lots		School garden pollinator garden accessibility garden	
Y	Y	letter in mail	walking and biking to dog park and trails	for it to be used wisely with tax payers and property owners in mind	chasing rats and rabbits onto property homeless people parking problems			

Public Feedback from Community Open house #1

Do you live in the City of Langley?	Walking distance?	How did you hear about the project?	Current use?	What most interests you?	Challenges?	Opportunities?	Amenities?	Remaining Questions? Final thoughts?
Y	Y	letter in mail	walking with dogs and family	the negative effects on my neighbourhood	parking, currently very limited increased traffic safety non residents homeless gathering place need for security increased rodents should be for the use of surrounding residents loss of trees that buffer noise from traffic	none	none- would like this to remain a passive park with trails	Would like to see more info about how each specific option would be integrated
Y	Y	local paper	dog walking	like the classroom, but don't want to loose the natural feel of the trail	keeping hydro ROW clear	learning and hands on classroom	don't want the area to be cleared and leveled, would like to see ecological garden	
N (Brookswood)	Y	local paper	dog walking and biking	visibility on site, more people means more security and safety	access water parking (only200 st or 206)	teaching people about gardening	little building or structures leave natural space with small gardens plots for local residents want to see natural greenery for existing wildlife keep building away from edges to maintain property values	
Y	Y	letter in mail	biking, walking	nothing	removal of greenbelt loss of wildlife added traffic non-residents parking on street washroom location	a large teaching garden could donate food to food bank and not increase traffic	training farm and outdoor classroom would both limit traffic, no large parking lot or washrooms needed maintain greenery and buffer from 200st	Why not put this closer to the city centre? People in area have their own properties to plant how will backing properties be compensated for loss of property value
Y	Y	letter in mail	running, walking dogs, bike riding	community involvement, gardens are always a good idea, attracting birds and bees	flow of traffic, people to the area	ecological enhancement	pollinator garden community garden back to nature is important	
Y	Y	letter in mail	not anymore - once walked dogs and used actively	concerned about sustainable food supply we need to grow more of our own food locally	concern about power lines	community garden, partnership with Kwantlen research support volunteer opportunities education for children and students	all would have positive outcomes	
Y	Y	letter in mail	walk dogs, bike	cleaning up the area, having some kind of security	keeping security parking no pesticides looking after property in july and august and during winter	organic gardening for schools	demo garden no pesticides used keep area clean	Do not want community plots, too much traffic no outdoor washrooms parking is a concern
Y	Y	local paper	walking, biking, sledding	community involvement education for schools and older people		better use of over grown land teaching opportunities	accessibility garden children's garden community garden ecological habitat Incubator farm outdoor classroom pollinator garden training farm school garden	
Y		letter in mail	no	garden produce and public education	soil nutrients (lack of)	varied crops		
Y	Y	letter in mail	walking recreation	possible to protect or improve ecological area	public support, hydro restrictions, public support	expand current uses	ecological restoration pollinator habitat wetland	
N (walnutgrove)		Kwantlen - horticulture program		food production, sustainability	power lines/health			

Public Feedback from Community Open house #1

Do you live in the City of Langley?	Walking distance?	How did you hear about the project?	Current use?	What most interests you?	Challenges?	Opportunities?	Amenities?	Remaining Questions? Final thoughts?
Y	Y	letter in mail	walking biking picking berries	I think a community garden is great but not in our backyard	wildlife homeless traffic	Good idea for condos or townhomes but not for people who have their own yards to garden		
Y	Y	letter in mail	relaxing walks/nature	Nothing				Why can't this be somewhere else?
Y	Y	letter in mail	child/dog walking, jogging, berry picking, nature photography	Making our neighbourhood more beautiful	encroachment on existing homeowners parking loss of natural wildlife removing natural predators means more rats attracting homeless not opening access through 202 st. décor/clutter garbage collection compost washrooms vandalism	maintain dog walking and recreation trails to keep naighbour happy education on urban agriculture growing native to BC flowers beekeeping - natural pollinators	Washrooms -locked at night because of homeless parking off 200th only speed signs and signs on side streets (already have issues with speeders) beehives, honey bees and native pollinators playground?	Will/can this open the door to chickens or beekeeping in Langley City?
Y	Y	neighbour, mail	walking accessing dog park picking blackberries and apples biking sledding in winter	Nothing	traffic parking homeless people vandalism displacing wildlife	if anything, a pollinator garden	keep the undeveloped natural location that is enjoyed by residents	I believe in UA but not on this site, not a good location
Y	Y	newspaper	walking berry collecting	Nothing	rats eating the food raccoons, coyotes location too close to the garbage dump how to handle security		None - school projects are best done on school property	What will be done with all the extra rats?
Y	Y	letter in mail	walking, daily	food production education	access	local food production	Demonstration centre	
Y	Y	letter in mail	walking, dog walking, biking	not interested, would like to see this site remain as it is	traffic parking ruining nature (coyotes, rabbits, birds)			Not interested in seeing this project located here
Y	Y	letter in mail	walking biking walk dog	not interested, live off 202 and worried about parking and access	People bought here to be on a quite dead end street, we have fought to keep 202 closed twice	Good idea for those who don't have space to grow food. Idea good, location not		access of 200 only, parking at west end under power line to not impact residents, increased traffic as is
y	y	letter in mail	walk along fence on south side to dog park, back along north side		parking and where it will be	school children can learn about agriculture	foot paths for walking, now when it rains there are large muddy puddles	
Y	Y	letter in mail	walking trails and dog park, natural undisturbed trails	don't want this project	parking homelessness water access maintain dead end street people in area have yards so not needed	none	put this somewhere else	Who will maintain and ensure safety? Parking on 202 St unacceptable - no more traffic Do people want to grow food under power lines? Who will pay for this? Who will maintain cleanliness? Are other areas being considered (west side of 200th street on underutilized areas, Buckley Park)?
Y	Y	letter in mail	walking	good use of land	surrounding residents want to keep low traffic on their roads	people who can't afford land can use it	lockable washrooms, fences with locked private plots	
Y	Y	newspaper	walking	urban food production allotment gardens	resistance from neighbour vandalism	community involvement in food production education for adults and schools physic garden	community food garden ecological areas accessibility garden children's garden incubator garden	
Y	Y	letter in mail	walk and bike	I like the idea of enhancing the area	parking attracting too many people and disrupting community	enhance current park issues and not introduce new uses		
N (aldergrove)		Langley Field Naturalists	no	protecting wildlife corridor	security	growing food	ecological habitat (too much lost already	

Public Feedback from Community Open house #2

Do you live in the City of Langley	Which option do you prefer?	Why?	What modifications would you make?	What challenges could arise?	Additional Comments
	2	If I had to pick #2			
	2	Only using a small portion of the site with access off 200st. Perhaps only to 201st			Please leave the majority of the site for wildlife. Ecological system in place
Y	2	I moved to this area because my home bordered the easement. I wanted a quieter life. This option seems to have less people and activity	Parking - if parking lost is created the parking on 46A /203 and others should be evaluated i.e. no parking on both sides of street for safety	Rats	I would prefer the easement be maintained and monitored and made more natural rather than any of the options
Y	3	Bees, producing food and opportunities for education beyond elementary school classrooms. As there are already opportunities, or possibly, available in school yards.	Outdoor school gathering space so it can still offer seating for classes	Concern about parking along 202 st to be able to access middle of farm. Hopefully there will be well communicated allowances for parking on site when needed.	Trust seems to be a big issue that needs to be overcome, I hope staff and council can reflect on what caused this. Concern orchards will bring in homeless people and goods may be stolen. Concern about mowing and other machinery needed to maintain site. Concern about time needed to maintain classroom and orchard options. Huge concern of pesticides used on trees in orchard. Love pollinator pathways.
N	3	Food production. People will be there	Parking for school bus. Existing parking lot will be dangerous	Public Buy-in. Vandalism. Long term management/care	
Y	3	opportunity for non-profit to develop food source	clarity on who will be using	theft vandalism impact on current residents backing on to greenway	is there anything wring with current use? Seems to be used regularly
Y	3	Good way to clean up area		Possible theft of food	
Y	1,2,3	Any of choices are good	If this doesn't go forward playing fields could go in	There is a big rat problem in the area, where would they go?	I think it should go for a vote
Y	1,2,3		keep it simple		restrooms
Y	1,3	I like the idea of mixing farm and classroom	Like classroom and school involvement also farm growing veggies would be ok	Don't like orchard. Fruit would drop and cause issues with pests	If expecting school buses, make space for them to turn around. Lot is small for them
Y	1,3	Combine farm and classroom	For parking make big enough for bus parking. Otherwise it will not be usable for a classroom	The orchard would be a mess because people would not pick the fruit	Proper washrooms (flush and water) Do not open 203 st
Y	No Development	Leave as passive park with adjustments like removing invasive plants			Realize that one letter, one formalized response represents many. 1 letter represents 25-500. View petitions in the same way. Avoid separating factioning, bring people together Let us hear from the people whose ideas these are There is an air of disenfranchisement. That could be changed
Y	No Development	I enjoy the urban feel and seeing wildlife in its natural element is the best way to see it.			I have lived in the city for 17+ years and I like the way it is. Please leave it alone.
Y	No Development	We bought in this city for the privacy and passive park land. We stand to directly suffer with these plans.		rodents transient people/crime traffic loss of enjoyment of property loss of property value	Not happy that the City omitted the option to leave this land as is. Residents feel bullied and censored,

Do you live in the City of Langley	Which option do you prefer?	Why?	What modifications would you make?	What challenges could arise?	Additional Comments
Y	1	There are lots of small farmers in the Fraser Valley, they need continual replacement of new farmers and this could inspire young people to farm or to understand why they should support small scale food producers.		Orchard issue: long term management could be an issue and it could falter and decline. The continual management of a school garden brings stability to the site	What happens when school is out for the summer? How is engagement encouraged in summer months?
Y	1	Because of educational aspects, but with modifications	Keep classroom and use it for children education plus adult workshops etc. Combine school garden and community farm keep community orchard and beehives include native berries in orchard area		main concern is about vandalism. How will this be addressed? Otherwise this is a good use of barren land and can serve the community well if properly managed.
Y	1	Because it focuses on a practical designable use for the area with a demographic in mind. It also seems to require the least upkeep	Concerned about annual maintenance and proper upkeep has not been taken into consideration. I foresee the development becoming overgrown and broken down in short time	Increased transient presence in my neighbourhood (my property backs on to site) Increased pests and rodents. Increased traffic and parking on my street.	I am not opposed to development of change. I like the design ideas and the variety of options. I fear there is a lot of development that needs to happen to address residents concerns. The Derek Doubleday arboretum has a demo garden which is only upkept May-Sept. This project will become overgrown, vandalized without regular staff or group to upkeep it. Most residents have gardens of their own so community garden in unnecessary - but we would be the ones who would have to upkeep it because we live close and access it often. I also fear that 202 st will be connected on both sides and I would be unhappy if this happened. I support the project as a classroom because its purpose seems more clear and defined by use of local schools . Don't forget the upkeep and long range planning!
Y	2			Opposition from neighbours regarding parking Financing	I like the concept
Y	2	Like the amount of habitat areas pollination area and orchard forest. This feels like the most natural of the tree options		Worried about crime increase, homeless people adopting the area. I have young kids and like to walk and bike in the area	Increasing crime is a concern. I currently don't feel safe walking in Langley City North of the powerlines
Y	2	Rats come with vegetables. Most people in the area grow some veggies. Designs look nice.			
Y	2	Would look attractive and be lower maintenance than other options. Love the option of pollinator corridor with lots of flowers.	incorporate the classroom concept at a smaller scale to provide educational opportunities without huge commitment from schools	Theft and vandalism may be a concern depending on a final design.	I think the implementation of this type of plan will be a huge improvement to the area. I like all the options presented and some combination of the three could be a good compromise
Y	2	Looks like less human traffic, orchard for food use is a benefit to the community	Ensure no parking in subdivision areas If fertilizer is used it should be organic	Parking on residential streets keeping wild animals out of garden	

Do you live in the City of Langley	Which option do you prefer?	Why?	What modifications would you make?	What challenges could arise?	Additional Comments
Y	No Development	too many kid sin the area to bring in traffic - the area is already being enjoyed by the public, kids, dogs, wildlife no reason for the added costs to the city		No reason for construction to a perfectly fine area that can be enjoyed by everyone already	Leave it alone waste of money wrecking natural habitat wrecking homes for wildlife dangering my kids with way more traffic give us the option to leave the area alone
Y	No Development	Leave area as is	Don't do it	Where are animals going Rats go to houses	
Y	No Development	Leave as is			
Y	No Development	No options needed	No Modifications	Traffic issues, homeless camps	Leave it alone
Y	No Development				1-3 are the same with different names for gardens. Poorly prepared design and layout, no parking. Not true consultation. Poorly designed and thought out
Y	No Development	No options needed	Stop planning	Traffic homeless problems	Please forget this project
Y	No Development	Do not want it			Leave as is
Y	No Development	I think all options are good, wrong location		parking, more traffic	I live on 202st and I like the quiet street
Y	No Development	Keep Brookswood the way it is	leave it be		
Y	No Development	Traffic parking on 202 st. No one will wheelbarrow from 200st uphill	Find a more suitable site. Downtown where residents who will use the site live Douglas park of Kwantlen	Parking Traffic	The people of our street 202 are tired of public forums where people don't listen
Y	No Development	the school garden is too big, kids won't work the garden	My options, I do not like it	Where all the rats going in my yard	Keep it as a park
Y	No Development	There are too many negatives that could/ would potentially happen as a result of development	too many to list	Increased amount of people coming to neighbourhood resulting in theft and vandalism. Parking issues. Loss of recreation area	Save the money and leave this right of way area alone, especially the blackberries. This is one of the few areas in the city that is still untouched. Developing it would not benefit the surrounding community it could bring outsiders who would not show the area the same respect that neighbours currently do.
Y	No Development	I believe the proposed site is inappropriate for garden because it is a valuable wild piece of Langly in its untouched state	More the location, move to a more suitable one. A more high density area would need this more that the area presently proposed	Peaceful area of Langley would become overrun by cars our street would become parking lot	Don't go through with this. You have not asked those of us who live here. You make it sound like a done deal without any consultation of residents
Y	No Development	I don't we are suburban, not urban	If there are funds you don't know what to do with you can regravel the path	It is a necessary wildlife corridor to connect ravines	Let Kwantlen students do studies on campus site. We wouldn't benefit
Y	No Development	Wrong area, waste of money, too much wildlife. Everyone in the area has a yard. No need for more bees (allergies)	Do this in an urban area not a sub-urban one. Everyone has a garden already	Where does the water come from? What about homeless people? What about bathrooms? Who gets the food?	
Y	No Developme	I love the space the way it is I use it all the time and enjoy the wild life natural landscape		Too much traffic Increase homeless people Noise	Please leave the space as is
Y	No Developme	Like the way things are	Leave it alone	Rats and animals will come to our house. Punk kids will destroy things. Increase traffic	If not broke, don't fix it. Put garden at Douglas park

Do you live in the City of Langley	Which option do you prefer?	Why?	What modifications would you make?	What challenges could arise?	Additional Comments
Y	No Developme	This option makes more sense	Who gets the food? Who maintains area? Who gets access?	Bees - what if there are allergies? Where is water coming from What about restrooms? What about animals? What about attracting rats? What about prop. Values?	
Y	No Developme	Development of a community garden is unnecessary at this site as it is not beneficial to local residents who have bog yards enough to have their own gardens if they choose. Development will bring an influx of people who will disrupt the quiet of the neighbourhood and will also disrupt the existing biosphere that is enjoyed by the local population		Increased traffic opens area to undesirable land use Increased monitoring and policing costs decreased property values disrupt the existing lifestyles of residents	Where does water come from? Is the area to be completely fenced? Is the boundary to be the full extent of the ROW?
	No Developme	I am against all options	Discard them all	Loss of natural green space	This in not the right area for an urban garden. We are not urban near the ROW. Most of us have garden space on our own properties I do not want people living in the downtown core to park on my street which is now quiet and safe.
Y	No Developme	None of the above		destruction of wild green space - displacement of birds and animals	We love it as is - well used
Y	No Developme	Habitat for wildlife	rabbits and birds quiet area now well used by walkers, rider, joggers	promotes parking in surrounding dead end streets	A community garden is a fine idea but I feel the proposed location is a poor choice
Y	No Development			All three options have parking in an unsafe location, just over the crest of a hill	If it's not broken don't fix it
Y	No Development				Let this piece of land stay the way it is. Can keep maintaining but many Langley residents use it for walks and outdoor recreation.
Y	No Development (modified)		Golf course, high fences	Increased homeless camps, increased crime. We have had enough	Do not make the same mistake others have made with these gardens
Y	No Development (modified)	We want ecological preservation of this environment	change of focus. No urban garden. Get LEPS to remove invasive species (we can help). Restore and enhance ecology	parking homelessness loss of habitat loss of open space	Please ask for legitimate input, not use agenda
Y	No Development (modified)	as a resident of 202 approx. 5 houses from entrance there is no upside - all will bring more traffic	keep as is	tax payers will pay $$ to upkeep, many animals will be displaced	The project is too aggressive for this area. Tone it down and start with a small improvement of none at all. Keep as is.
Y	No Development (modified)	Leave as is but a major clean up and maintenance agreement for the future	As listed above		
Y	No Development (modified)		Only use the area from 200st to 201 st so that the majority would remain unchanged		Leave majority alone

Do you live in the City of Langley	Which option do you prefer?	Why?	What modifications would you make?	What challenges could arise?	Additional Comments
Y	No Development	Any other option will push rodents into our yards and houses	Put community gardens close to community that needs land to grow i.e. condos and apartments	rats in my yard homeless people attracted to free food teenagers will be given a target for hangouts and crime	My house and property value will go down
Y	No Development	Enjoying pathways the way they are. Nature and all its beauty now		Parking on residential street would be next, lose privacy and increase traffic for us	Every 15 years new ideas come. They haven't maintained it now. At first they will and then it will go downhill and back to no maintenance
	No Development	Good idea, wrong place			
Y	No Development	No change necessary, area not broken	None - do not change area. Stop planning traffic issues on 202 St. Speed concerns	No option is good	Find elsewhere. This area is not broken. Leave the area and existing homeowners alone
Y	No Development	I don't prefer any of the options. I am in favour of option 4, leave as wildlife corridor	Put them in a more desirable location	It would disrupt the wildlife and bird habitat and the peace and tranquility of the community	It seems that the agenda has already been decided and that there are no choices. The definitive choice is to leave the area alone
Y	No Development	The area is home to various wildlife. We don't need community gardens because we all have yards			
Y	No Development	Leave it alone. There are mature trees for wildlife. Residents enjoy the pathways the way they are. Do not need orchards and gardens to enjoy nature.		Loss of wildlife. Loss of privacy for homeowners. Increase of traffic and parking in our neighbourhoods. Open to vandalism	The area does not need to be clearcut. Area can be left with existing trees. Maybe develop only half the site.
Y	No Development	Wildlife habitat, nature walk, nice natural area	have at 208th st where there is floodplain during winter and homeless camps during summer. Closer to Kwantlen		Please leave it alone as we were told it would be after the golf course was proposed
Y	No Development	The area is too open to crime if changes in the area are allowed	Blackberry bushes left along fences to prevent fence damage and crime	lots of clean up and loss of habitat rat problem and rats will find new homes	Leave ROW as natural area with no changes
Y	No Development	I don't prefer option 1-3. I would like to keep this as a natural wildlife corridor	Put them in more desirable location	This would disturb the wildlife and bird habitat and peace and tranquility of the area	There is a definitive choice to leave the ROW as is
Y	No Development	This is the worst idea. Leave it alone. No one would use a garden	Leave it alone the space is already being used in a great way. Dog walking, bike riding, nature walks	Increasing traffic in a neighbourhood where kids play endangering their safety	Stop wasting tax payer money and leave it alone. No need for a garden to pay people to maintain it. Stop taking away greenspaces that are well used. There is already Sendell Gardens in the City put these ideas there and stop wasting money.
Y	No Development	Enjoy ecological system as is	Leave it alone , it is a wildlife corridor	Increased homelessness/ delinquent presence wildlife threatened Increase rats Increased traffic on 202 st	These options are unenforceable. Who would use the orchards and community garden
Y	No Development			Parking	
Y	No Development	Do Not Change			
	No Development				

Appendix D: Amenity Budgets

Capital and Operational Budgets for Site Servicing and Infrastructure

Capital Expenses	
Site Preparation	$ 345,000.00
Entry Signage and Planting	$ 10,000.00
Parking Area	$ 50,000.00
New Pathways and Resurfacing	$ 100,000.00
Water Connection	$ 10,000.00
Pit Toilet	$ 40,000.00
Site Signage	$ 30,000.00
Soil Testing	$ 6,000.00
Contractors and Consultants	$ 75,000.00
Electrical Servicing	$ 50,000.00
Total Capital Expenses	**$ 716,000.00**

Operational Expenses	
General Site Maintenance	$ 10,000.00
Pit Toilet Maintenance	$ 5,000.00
Trail Maintenance	$ 5,000.00
Pest Control	$ 500.00
Replacement Plant Material (non-production areas only)	$ 2,500.00
Total Operational Expenses	**$ 23,000.00**

Budget Notes:

- Contractors and consultants could refer to additional services requires from professionals, such as: agronomists, soil specialists, or advisors on development of agricultural amenities.
- Operational expenses outlined here refer only to “non-amenity areas” i.e. pathways, servicing areas, washrooms facilities, parking area etc. Operational costs for amenity areas are outlines in the following amenity budgets.
- General site maintenance refers maintenance activities outside of production areas (i.e. mowing, pruning, pathway maintenance)

Capital and Operational Budget for The Farm

Capital Expenses	
Farm Hub Building	**$ 17,500.00**
Concrete Slab @ 80m^2	$ 6,500.00
Building Supplies	$ 8,000.00
Shelving	$ 3,000.00
Produce Washing Area	**$ 5,000.00**
Concrete Slab (part of storage building)	N/A
Building Supplies	$ 4,000.00
Hoses and Fixtures	$ 1,000.00
Produce Storage	**$ 5,100.00**
Building Supplies	$ 2,500.00
Shelving	$ 600.00
Cooling Equipment	$ 2,000.00
Composting Area	**$ 5,700.00**
Concrete Slab @ 40 m^2	$ 3,200.00
Building Supplies	$ 2,500.00
Irrigation System	**$ 13,500.00**
Valves, fixtures, and adapters	$ 3,000.00
Mainline and Sub-mainline	$ 5,000.00
Drip Tape	$ 4,000.00
Water meters	$ 1,500.00
Tools, Equipment and Supplies	**$ 13,600.00**
Walk behind tractor with tiller	$ 6,000.00
Walk behind tractor attachments	$ 1,500.00
Hand tools	$ 1,600.00
Harvesting Equipment	$ 1,000.00
Flat Wheelbarrow	$ 1,000.00
Seeding Supplies	$ 800.00
Seeder	$ 800.00
Pest Management	$ 1,000.00
Ground cover/mulch	$ 500.00
Total	**$ 61,000.00**

Operational Expenses	
Farm Operations	**$ 9,000.00**
Transportation and Produce Distribution	$ 4,000.00
Equipment Maintenance	$ 1,000.00
Irrigation Maintenance	$ 2,000.00
Crop Seeds	$ 600.00
Cover Crop Seeds	$ 150.00
Compost	$ 600.00
Pest Management	$ 150.00
Ground Cover/Mulch	$ 500.00
Personnel	**$ 59,650.00**
Farm Manager	$ 32,000.00
Farm Hand	$ 10,500.00
Intern(s)	$ 3,150.00
Programming Coordinator	$14,000.00
Total	**$ 68,650.00**

Budget Notes:

- Budget estimates for all food production elements were made based on capital and operational expenses on the Tsawwassen First Nation Farm School operated by The Institute for Sustainable Food Systems
- The cost of water has not been included in preliminary project budgets. An agreement with the City will have to be reached regarding water use and renumeration prior to project development.

Capital and Operational Budgets for The Classroom

Capital Expenses	
Storage Building	**$ 2,500.00**
Building Supplies	$ 2,000.00
Shelving	$ 500.00
Raised Beds	**$ 8,000.00**
Building Materials	$ 5,000.00
Signage	$ 500.00
Drip Irrigation	$ 400.00
Soil	$ 1,500.00
Compost	$ 600.00
Irrigation System	**$ 1,300.00**
Irrigation Supplies	$ 1,000.00
Water Meters	$ 300.00
Tools and Equipment	**$ 1,000.00**
Hand Tools	$ 500.00
Harvesting Equipment	$ 500.00
Seating	**$ 7,500.00**
Stump Seating	$ 5,000.00
Log Seating	$ 2,500.00
Plant Material	**$ 10,000.00**
Perennial plants	$ 10,000.00
Micro Production Plots	**$ 3,700.00**
Soil and Compost	$ 2,000.00
Mulch	$ 1,200.00
Seeds	$ 500.00
Total	**$ 32,700.00**

Operational Expenses	
Site Maintenance	$ 7,000.00
Seeds and Gardening Supplies	$ 200.00
Tool and Equipment Maintenance	$ 300.00
Total	**$ 7,500.00**

Capital and Operational Budgets for The Orchard

Capital Expenses	
Site Preparation	**$ 5,250.00**
Compost	$ 3,000.00
Ground Cover Seeds	$ 250.00
Mulch	$ 2,000.00
Plant Material	**$ 12, 650.00**
Trees	$ 10,000.00
Small Fruits	$ 4,000.00
Production Infrastructure	**$ 9,000.00**
Tree Guards	$ 1,000.00
Trellising and Tree Supports	$ 8,000.00
Irrigation	**$ 4,000.00**
Irrigation Systems	$ 3, 000.00
Water Meters	$ 1,000.00
Tools and Equipment	**$ 2,500.00**
Harvesting Equipment	$ 500.00
Hand Tools	$ 1,000.00
Packing and Storage Supplies	$ 1,000.00
Total	**$ 34,750.00**

Operational Expenses					
	Year 1	**Year 2 (-25% Y1)**	**Year 3 (-25% Y2)**	**Year 4 (-25% Y3)**	**Year 5 (-25% Y4)**
Replacement Plant Material	$ 1,450.00	$ 1,087.50	$ 815.63	$ 611.72	$ 458.79
Tool and Equipment Maintenance	$ 300.00	$ 225.00	$ 168.75	$ 126.56	$ 94.92
Pest Control	$ 500.00	$ 375.00	$ 281.25	$210.94	$158.20
Compost and Soil Amendments	$ 525.00	$ 393.75	$ 295.31	$ 221.48	$ 166.11
Mulch	$ 500.00	$ 375.00	$ 281.25	$ 210.94	$ 158.20
Cover Crop Seed	$ 150.00	$ 112.50	$ 84.38	$ 63.28	$ 47.46
Total	**$ 3,425.00**	**$ 2,568.75**	**$ 1,926.56**	**$ 1,444.92**	**$ 1,083.69**

Capital Budget for Ecological Restoration (Buffer Plantings, Habitat Areas)

Capital Expenses				
	Per Acre	**Buffer Planting**	**Habitat Areas (Wetland)**	**Habitat Areas (Riparian)**
Site Preparation	$ 2,00000	$ 8,000.00	$ 6,000.00	$ 6,000.00
Invasive Species Removal	$ 1,000.00	$ 4,000.00	$ 1,500.00	$ 3,000.00
Perennial Plant Material (1 gallon pots)	$ 10,000.00	$ 20,000.00	$ 5,000.00	$ 15,500.00
Perennial Plant Material (plugs)	$ 5,000.00	$ 10,000.00	$ 7,500.00	$7,500.00
Mulch	$ 1,200.00	$ 4,800.00	$ 1,800.00	$ 3,600.00
Compost	$ 500.00	$ 3,000.00	$ 1,125.00	$ 2,250.00
Total		**$ 49,800.00**	**$ 22,925.00**	**$ 37,350.00**
Total Restoration Costs				**$ 110,075.00**

Capital Budget for Pollinator Habitat Restoration (Corridor and Hedgerows)

Capital Expenses				
	Per Acre	**Hedgerows**	**Corridor**	**Site Total**
Site Preparation	$ 2,000.00	$ 1,000.00	$ 5,000.00	**$ 6,000.00**
Perennial Plant Material (plugs)	$ 5,000.00	$ 2,500.00	$ 12,500.00	**$ 15,000.00**
Seeds	$ 400.00	$ 200.00	$ 1,000.00	**$ 1,200.00**
Seeding and Transplanting	$ 1,000.00	$ 500.00	$ 2,500.00	**$ 3,000.00**
Compost	$ 500.00	$ 250.00	$ 1,250.00	**$ 1,500.00**
Total		**$4,450.00**	**$ 22,250.00**	
Total Site Costs				**$ 26,700.00**

Total Area of Pollinator Habitat on Site

	Hedgerows	**Corridor**
Approximate Length	**1000m**	**550m**
Width	**2m**	**18m**
Area	**2000m2**	**9000m2**
Acreage	**0.5 acres**	**2.5 acres**

10. Endnotes

1. Introduction

1 Lovell (2010) describes the multi-functional characteristics of urban agriculture citing projects that have successfully achieved a variety of outcomes including: social connection, urban greening, environmental sustainability, food literacy, food security and community health.

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