



Yellowknife Food and Agriculture Opportunities Analysis

Winter, 2019

GROW Yellowknife Food and
Agriculture Strategy

The research, engagement, analysis, and mapping has been provided by Urban Food Strategies in association with LGEO and AMW Design for the City of Yellowknife.



CITY OF YELLOWKNIFE



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Introduction

The City of Yellowknife is undertaking a process to engage community, conduct research and analysis, and establish the policy and planning framework for increasing food and agriculture activities. In addition to considering the economic, social, and environmental aspects of food and agriculture in Yellowknife this process will generate a Strategy that will set-out a plan for how the City of Yellowknife can enable and support food and agriculture. This *Opportunities Analysis* summarizes findings to date that will form the basis for forming recommendations in the Strategy.

The Strategy title, *GROW*, was selected to provide an easy-to-remember title as well as encapsulate the overall desired trajectory of food and agriculture in Yellowknife. The title *GROW* indicates that the Food and Agriculture Strategy will focus on multiple aspects of *growing* including:

- Growing the local food economy,
- Growing connections to land, histories, culture and people,
- Growing the level of food security,
- Growing the amount of food that is grown, raised, hunted, fished, and foraged
- Growing links to regional and territorial food and agriculture opportunities and funding.

GROW is firmly rooted in the principles and vision outlined in the Yellowknife Food Charter that was developed by over 50 community organizations and endorsed by City Council in 2015.

Although GROW will be focused on Yellowknife and what is possible within the municipal boundaries and jurisdiction, the City has a strong role to play within the regional and Territorial centre of food and urban agriculture testing and innovation, food infrastructure, food culture, demonstration and local food distribution. GROW is intended to provide a 10-year plan to guide municipal, community organizations, food businesses, schools and senior levels of government in a coordinated approach that leverages existing food assets and expertise.

This *Opportunities Analysis* provides information and ideas collected that will become the foundation for GROW. It brings together core concepts of urban agriculture, community insight, best practice research, a document review, food asset inventory and a vacant land assessment to identify key opportunities for further development within the next stage of this work. Appendix A provides a list of participants to date, Appendix B provides soil and water information, and Appendix C presents an urban agriculture typology.

In addition, the 94 Recommendations in the Truth and Reconciliation Commission Calls to Action provides an important backdrop to GROW (TRC 2015). Food provides important common ground for dialogue, relationship building, and collaboration that can help support responding to the TRC Calls to Action. As will be further explored in this report, there are many important connections between urban agriculture and food, health and wellness for all people in Yellowknife.

Key Concepts

GROW, the Yellowknife Food and Agriculture Strategy, will be based on six key concepts. These help to provide clarity on what the parameters of the strategy are and to provide a basis for developing bylaw definitions.

Food and Urban Agriculture

Food is a general term to include all elements of the food system (See Figure 1), inclusive of community and commercial activities. Food also goes beyond agriculture to include other primary food sources including fishing, trapping, hunting, foraging, and other non-timber forest products.

Urban Agriculture is the growing and raising of a diversity of plants and animals within the boundaries of the City of Yellowknife. Urban agriculture requires support systems such as small-scale storage, processing, and distribution facilities in addition to other infrastructure such as roads and utilities, as well as a range of community-based programs for increasing food access and teaching and learning opportunities. Urban Agriculture can be personal-scale (e.g. backyard), community-scale (e.g. community garden), or commercial scale (e.g. greenhouses, containers).

Food and Agriculture System

A food system is the cycle, or value chain, of primary production, processing, distribution, buying, selling, eating, celebrating, recovering waste, educating, in the context of larger social, political, environmental and economic driving forces

Food Asset

A food asset is a physical place that supports various elements of the food system. Community gardens, farmer's markets, local food stores and restaurants, community kitchens, social services providing hampers and meals, among others are all examples of food assets.



Figure 1: Six Elements of the Food System

Food Security

Community food security is a situation in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximize community self-reliance and social justice (Hamm & Bellows, 2003).

Intersection of Food Security, Urban Agriculture and the Local Food Economy

Although GROW is focused on urban agriculture, there are important overlaps with both food security and the local food economy. For example, organic waste from the restaurant/beverage sector could be used to create a soil amendment for community, commercial, or personal gardens. Figure 2 depicts these areas of overlap.

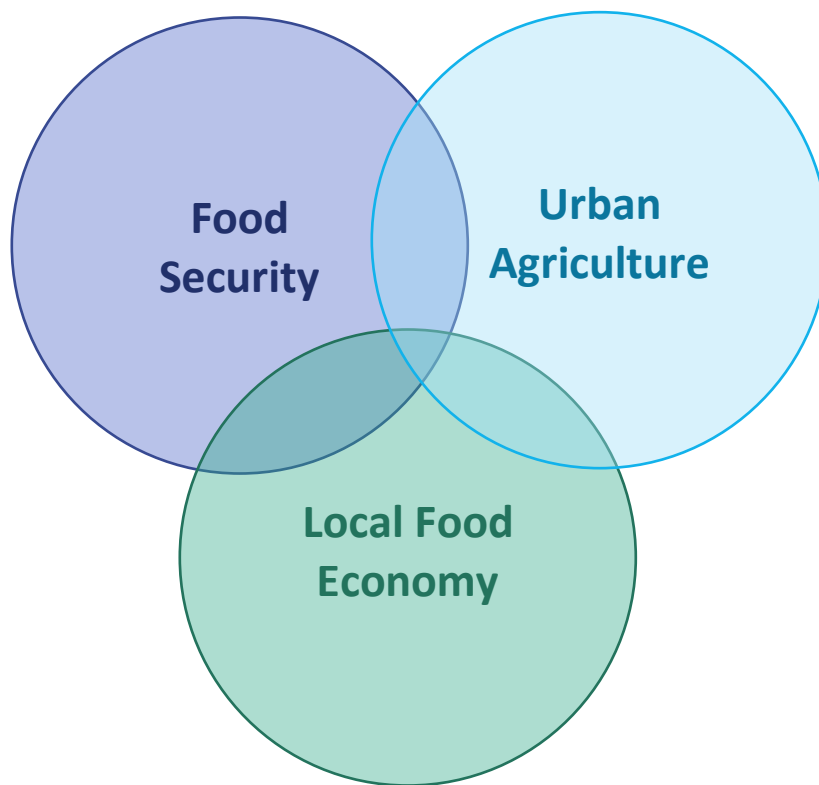


Figure 2: Intersecting Areas in GROW

Spheres of Influence in Yellowknife Food and Urban Agriculture

There are many distinct and overlapping roles in planning and implementing actions for food and agriculture systems. This complex web is somewhat simplified by focusing food and agriculture plans at one level of jurisdiction. Food and agriculture system planning often occurs at the local government level, including regional and municipal governments. This is partly due to the fact that local governments have jurisdiction over land use and infrastructure and often have Community Plans that integrate sustainability. Local governments are also closest to communities and local businesses who are also important players in food and urban agriculture. In addition to local government, there are many other roles that can become an important part in community plan creation and implementation. These roles are briefly described below.

Federal and Provincial Levels of Government

The federal government has jurisdiction over trade agreements, health inspection and food regulation, among other things. The activities of Agrifood Canada: *range from the farmer to the consumer, from the farm to global markets, through all phases of producing, processing and marketing of farm, food and bio-based products.*

The Government of the Northwest Territories (GNWT) also has jurisdiction on regulating farming in on Commissioners land and is currently working on new policy and administration frameworks for farming.

Department of Health and Social Service (GNWT)

The Department of Health and Social Services promotes, protects and provides for the health and well-being of the people of the Northwest Territories. In addition to many other areas, the Department is responsible for inspecting and permitting kitchens and food processing areas, as well as enforcing food safety rules regarding foods grown and/or processed for sale. In other jurisdictions, Medical Health Officers are increasingly engaging in community planning exercises like creating Official Community Plans, that can support food and agriculture system planning. Community nutritionists and health practitioners are also working with communities on increasing community food security.

Community Sector, Schools, and Post-Secondary Institutions

Volunteers and staff in the community and non-profit sector are critical partners in developing and implementing food and agriculture plans. Schools and post-secondary institutions can also be part of providing food system education in the classroom and program development.

Industry Associations and Business Sector

There are many industry associations and business sector interest groups that are also a key part of creating and implementing food system plans. The Chamber of Commerce and Economic Development agencies are all examples of organizations who are focused on

economic diversification, creating investment opportunities, and strong local business communities.

Local Government

Often local governments will be the primary facilitator for and lead on food and agriculture system planning processes. While local governments have many ways to increase community food security and interact with many dimensions of the food system, they are limited in their ability to directly address some of the core drivers of household food insecurity such as poverty and low- income status of residents. However, there are areas where local governments do have influence in some of these areas of food insecurity. For example, affordable housing and local economic development, often priorities for local government as implemented through regulation, incentives, and land use planning, can positively impact household income and, indirectly, food security.

Other specific ways that local government can strategically intervene and engage with food and agriculture include but are not limited to are summarized in Table 1.

Table 1: Food Assets and Local Government Leverage Points

| Food Asset | Local Government Leverage |
|---|--|
| Food production, hunting, fishing, foraging | <ul style="list-style-type: none"> • Agriculture planning and policy (OCPs, ZBLs) • Managing/ regulating increasingly complex issues on farmland • Urban Agriculture and Farming • Ensure urban agriculture is allowed and supported in public and private lands (OCPs, ZBLs) • Managing potential conflicts (e.g. wildlife) • Encouraging / requiring food assets including urban agriculture in development projects (tax breaks, requirements, design guidelines). • Providing education and resources • Collaborating with community partners • Indigenous Food Systems (water, land, air) • Establishing teaching, learning, and stewardship centres/programs |
| (Healthy) food sources | <ul style="list-style-type: none"> • Responding positively to land management needs. • Planning and policy to support walkable (800m) access to healthy food assets (e.g. grocery store, farm stand, community garden, farmers market) • Supporting food hub testing and development • Support Farmer’s markets |

Table 1: Food Assets and Local Government Leverage Points

| Food Asset | Local Government Leverage |
|---|---|
| | <ul style="list-style-type: none"> • Zoning for food districts, light industrial for agriculture sector • Zoning for food retail especially healthy options • Adopting food truck policies and creating permits • Purchasing relationships and contracts with local producers and caterers • Transportation planning |
| Learning environments | <ul style="list-style-type: none"> • Provide information on new food-security related initiatives. • Be open to requests/applications for new facilities to support educational programs • Integrate home food growing into any existing programming offered |
| Community food culture | <ul style="list-style-type: none"> • Responding positively to First Nation land management needs. • Providing space and programming for food celebrations • Collaborating with community partners to deepen food culture • Providing signage, communications, and marketing of food assets, where appropriate • Designing public spaces to support a lively streetscape (e.g. patios, spill-out onto the sidewalk, street trees, plazas) |
| Capacity for social connectedness and emergency food relief | <ul style="list-style-type: none"> • Working with food banks to find appropriate facilities • Preparing for emergencies (education, planning, preparation) |
| Food Recovery Systems | <ul style="list-style-type: none"> • Working with food gleaning programs to find facilities • Working with businesses to find processing facilities • Business license rules • Partnership programs • Developing internal programs to reduce food waste within local government operations • Regional organic diversion policies and programs |
| Soil and compost | <ul style="list-style-type: none"> • Organic waste diversion and composting • Make compost available/for sale to residents and businesses • Soil health and restoration in public lands |

Table 1: Food Assets and Local Government Leverage Points

| Food Asset | Local Government Leverage |
|--|--|
| Research, knowledge creation, and policy | <ul style="list-style-type: none"> • Conducting baseline food assessments (e.g. food security, local food economy assessments, food hub feasibility) • Conducting best practice research from other jurisdictions • Engaging with stakeholders and the general public • Developing food and agriculture strategies and plans |
| Macro supports | <ul style="list-style-type: none"> • Local governance and management systems (e.g. Food Councils) • Protecting and restoring the environment (e.g. Link to indigenous food systems) • Implementing affordable housing strategies • Attracting livable wage job opportunities |

Vision and Principles

This section outlines the foundation for GROW. The vision and principles are drawn directly from the Yellowknife Food Charter that was developed by the Yellowknife Farmers Market and endorsed by Council in 2015. Goals and actions will be further developed within the Strategy.

| | |
|--------------------|---|
| Vision: | A desired future state. |
| Principles: | Core values around food that will guide collective behaviour and decision-making. |
| Goals: | General directions (<i>To be developed</i>) |
| Actions: | Specific and measurable ways to implement the plan (<i>To be developed</i>). |

Our Vision

A just and sustainable food system in Yellowknife is rooted in a healthy community, where everyone has access to adequate and affordable nutritious food; more food is grown and harvested locally; and food production policies and infrastructure are in place to support an economically viable, diverse, and ecologically sustainable local food system.¹

Our Principles

A just and sustainable food system in Yellowknife means:

- The human right to safe and secure access to adequate food is honoured and everyone is food secure.
- Everyone has access to knowledge about a just and sustainable food system.
- Equitable, healthy relationships exist among all people in the food system.
- Food based entrepreneurial initiatives are essential to sustainable local economies.
- The benefits of local food based economic development are celebrated and leveraged.
- Food producers, harvesters, and entrepreneurs generate value from their work and use ecologically sustainable practices.
- Indigenous and traditional practices are respected and supported.
- Community members have confidence in the quality, safety, supply, and distribution of food.
- Public policy and infrastructure reflect these principles of a just and sustainable food system.
- Improved access to nutritious foods leading to better health outcomes.

¹ This vision and principles are drawn directly from the Yellowknife Food Charter that was developed by the Yellowknife Farmers Market and endorsed by Council in 2015. The Charter has provided the foundation for the Food and Urban Agriculture Strategy.

Planning Context

Food and agriculture systems in the Northwest Territories and Yellowknife are governed and shaped by a wide-range of histories, policies, biophysical conditions, economic development strategies, and health priorities, among others. This section summarizes current information relevant to the Yellowknife food and urban agriculture system, provides an overview of what planning and policy may be affected by the new strategy and a context for developing realistic goals and actions in GROW.

Study Area

The study area for GROW is the municipal boundaries of the City of Yellowknife. The primary focus of GROW will include municipal policies, programs, bylaws and licensing that can impact food and urban agriculture. Lands both inside and outside of the City boundary are regulated by other levels of government. However, it is recognized these non-municipally regulated lands and the activities that occur there maintain a role and relationship to municipal lands.

Policy Context

Council's Goals & Objectives 2016-2018

The City of Yellowknife Council has identified five goals governing public policy for 2016-2018. There are many connections to food and urban agriculture within these goals.

1. Better Engagement with Stakeholders
2. Downtown Revitalization
3. Strengthen and Diversify the Economy
4. Community Sustainability (Includes developing and agriculture strategy)
5. Stronger Internal Working Relationships and Accountability

At the time of the writing of this background report, a process to review the General Plan and develop a new Community Plan is underway and these goal areas could change as a result. A potential benefit of this timing is that the Food and Urban Agriculture planning process could identify recommendations for the community plan.

Yellowknife Bylaws Related to Food and Urban Agriculture

Current bylaws and policies have not specifically been considered from a food and urban agriculture perspective prior to recent times. With few exceptions, this practice is very common within local government and even the municipalities considered most 'progressive' on the subject have only adapted plans and operations within the last 10-15 years.

Generally, the City of Yellowknife Bylaws do not regulate food and urban agriculture in a comprehensive manner. This has led to gaps in the overall policy framework for food and

urban agriculture. For example, there is no bylaw to allow, enable, or limit urban hen or bee keeping.

With the vision for GROW in mind, recommendations for updating the City's policy framework, including bylaws, will be made. By-laws that are anticipated to require update and amendment include:

- General Plan By-law No.4656 (Community Plan, already underway, as noted above)
- Zoning By-law No.4404 (primarily affected)
- Business License By-law No.3451
- Building By-law No.4469 (e.g. design guidelines for food and agriculture)
- Land Administration By-law No.4596

Additional regulations and policy that may require updating include:

- Licensing & Permits (required by bylaws)
- Community Grant Funding Policy

GROW will also identify where additional policy or programs would be beneficial. These may include (but are not limited to):

- Community Grant Funding Policy - Include food security and urban agriculture as a priority within the exiting grant program. Consider new funding potential for targeted areas.
- New Bylaws, Permits & Licensing – For example, an animal/livestock licensing and control bylaw in residential areas to cover beekeeping, rabbits, poultry, and goats.
- Other new policy & program opportunities.

A more detailed description of what changes and new policy or programs may look like are included in the section entitled, '*Challenges, Opportunities and Potential Responses*'.

Department of Lands (GNWT)

In addition to municipal land use policy and bylaw, the GNWT regulates lands outside of Yellowknife through the Land Use and Sustainability Framework (GNWT, 2014). This Framework provides a vision that sets out the GNWT's thinking about land use in the Northwest Territories. Specific to food and urban agriculture, the framework sets out a vision for responsibly managed resource harvesting including (wildlife, fish, forests, and agriculture). The vision for the plan is aligned with that of the Yellowknife Food Charter and the Food and Urban Agriculture Strategy and provides an important link and common interest area with the GNWT. The Territorial vision for land use is:

Land is life – it sustains and nourishes us spiritually, culturally, physically, economically and socially. Working together, Northerners will responsibly and sustainably manage the lands, waters and natural resources of the Northwest Territories for the benefit of current and future generations.

The message from Premier Bob McLeod in the Framework, also articulates an important common agenda between levels of government, including the City of Yellowknife.

Land is life. It is the link to our past. Many people draw their spiritual and cultural identity from the land. It has provided food and materials to sustain the people of the Northwest Territories for hundreds of years, and it is the key to the future. The abundance of natural features and resources offers the potential for economic development and revenues to support investments in our people, our environment and our economy.

The GNWT framework also identifies internal and external, policy and planning directions, many of which are underway and at a stage that could influence and be influenced by this urban agriculture planning process.

Health and Social Services Authority (GNWT)

In addition to local and territorial government land use policy, Health and Social Services also plays an important role in food and urban agriculture, specifically when it comes to food safety training and food establishment inspections and permits.

The Local Food Economy

The estimated total expenditure on food in the NWT is \$147.7 million. In 2009, the average household purchased \$8060 from food stores, and \$1435 of food from restaurants annually (Serecon, 2014).

For fresh foods, NWT residents consume between 130 and 190 kg of fresh fruits and vegetables, well-below the national average of 213 kg (Aurora Research Institute, 2013). This could indicate a latent demand for fresh product that is high quality and affordable. It is estimated that the entire NWT represents a market for 8 million kg of fresh produce at an estimated retail market value of about \$17 million (Ecology North, 2014).

Economic Development Strategies

To support growth in the Territorial food economy and access for all residents to good quality affordable food in rural, remote, and urban areas, several economic development strategies have included objectives and recommendations that GROW can align with and build off of.

The NWT Economic Opportunities Strategy (2013) includes agriculture as part of the key diversification strategies for NWT (e.g. Foods and food service availability for communities and the tourism industry). Specific objectives and recommendations relevant to the Strategy include:

- Objective 5F Increase Opportunities in Agriculture. Recommended actions:
 - Develop and implement an Agriculture Strategy for the NWT.
 - Conduct mapping, land classification and identification of long-term access to lands suitable for agriculture in all communities.
 - Develop, with the NWT Farmers Association, a “Grown in the NWT” branding program.
 - Examine the viability of establishing commercial market gardens in all regions.

- Objective 5G- Increase Opportunities in the Traditional Economy (including subsistence food harvest). Recommended action:
 - Increase funding and program support for the Traditional Economy through:
 - The GNWT’s Community Harvesters Assistance Program, and;
 - The Genuine Mackenzie Valley Fur program.
- Objective 5H: Encourage and Grow Domestic Markets for NWT Products. Recommended action:
 - Promote the sale of northern foods to NWT stores, restaurants, industry establishments and government institutions.

The NWT Agriculture Strategy (2017a) provides a 5-year plan for growing the Territorial food economy. It contains, six pillars or goals, that contain several links to Yellowknife’s urban food and agriculture system which could be a source of information and resources. Overall goals include:

- Build a relevant and viable agriculture industry;
- Support the safe, sustainable development of food production systems;
- Contribute to the sustainability of NWT communities;
- Encourage and support the transfer of food production skills;
- Increase availability of local food for northern residents, and;
- Reduce the cost of food for northern residents.

Recommended actions in this Strategy that could link to GROW include:

- 1.1 Support sustainable commercial food production planning with potential entrepreneurs and communities that express a strong interest in growing food for profit.
- 2.1 Assist with the development of coordinating committees among communities, government departments and agencies involved in the implementation for agriculture and economic growth initiatives.
- 4.1 Support access to agricultural training and expertise in order to meet the needs of communities and regions.
- 4.2 Support appropriate agricultural training, using a “train the trainer” approach, outreach or extension services that improve regional and local capacity.
- 4.3 Investigate opportunities for experiential learning at all levels to further develop skills, knowledge and confidence in one or more areas of commercial food production.
- 4.4 Develop commercial agriculture and food production education resources to include resources related to topics such as livestock production, processing, distribution and marketing.
- 4.5 Develop and offer educational resources supporting the inclusion of agriculture into a variety of educational environments to raise awareness, skill and build capacity related to agricultural initiatives for communities, families, youth and children.

- 5.6 Work in partnership with key stakeholders to establish a broad regulatory framework that addresses disease transfer as well as a Pests, Pathogens and Invasive Species Council as it applies to agriculture and wildlife.
- 5.7 Work in partnership to assess, minimize and respond to health risks associated with the transfer of pathogens and parasites from domestic livestock, wild species and other native species.
- 5.8 Support the development of local quality soil resources accessible to growers, in partnership with cost-sharing initiatives, such as the creation of soil amendments.
- 5.9 Support education and development of locally produced, high-quality soil amendments as secondary food production products.
- 5.10 Encourage agriculture as a potential land use by providing expertise and recommendations on soil science and testing.
- 5.11 Work in partnership with federal, territorial and municipal organizations and agencies to ensure that relevant legislation related to water access, use and licensing is effectively integrated and communicated as part of agricultural planning processes.
- 6.1 Facilitate food production plans and support agricultural business planning expertise for regions and communities interested in commercial food production.

Specific to the berry industry, the **Stimulating Commercial Berry Production in the NWT Capital Region (2012)** report provides market assessment and agrological information on growing the berry industry. The consumption of purchased fresh berries in Canada averaged 6.7 kg per person in 2008, which is thought to be approximately the same for NWT (Ecology North, 2012). The Yellowknife wholesale berry market is about 20,200 kg of berries per year. Table 2 provides wholesale demand estimates for specific berries. Based on survey findings, there is an interest and willingness from local retailers to sell local berries. Links to GROW may include identifying lands suitable for commercial berry production, considering berry producing shrubs as part of edible landscaping, and looking at ways to increase personal home berry crops.

| Berry | 6-week total |
|-----------------------|---------------|
| Strawberries | 14,000 |
| Blueberries | 4,500 |
| Raspberries | 910 |
| Blackberries | 460 |
| Total (Kg) | 20,200 |
| (Ecology North, 2012) | |

The **Hay River Agriculture Plan (2014)**, provides key background on agriculture in Hay River and a strategic plan containing a vision, three strategic goals, multiple objectives and recommendations. Highlights from this plan include findings indicating strong support for urban agriculture in the Northwest Territories. In a 2012 online survey, 95% of NWT-resident respondents agreed that they support the idea of urban agriculture as a means to provide local food to community residents. The section on Enabling Urban Agriculture has six objectives and multiple recommendations that could also be relevant for the City of Yellowknife- specifically, around developing appropriate bylaws for urban livestock (bees, hens, rabbits,) and urban gardening.

Demographics, Income, and Housing

The population of Yellowknife is 20,300 people (City of Yellowknife, 2014). The City continues to grow year over year. The population is relatively young with an average age of 34 years old (Statistics Canada, 2016). Many traditional and non-indigenous languages are spoken, though English is the most common. Although the average 2011 personal income is \$67,629, higher than the NWT average of \$56,030, there are many people in Yellowknife that live well below this average income amount. For example, 4,800 households make less than \$40,000 while 4,450 households make over 100,000 (total income) (Statistics Canada, 2011).

In Yellowknife, 16.3% of households spend more than 30% of total household income on housing. This is slightly more than the NWT average of 14% and significantly less than the national average of 25% (City of Yellowknife, 2014).

Homelessness is a growing concern. **Yellowknife's 10-Year Plan to End Homelessness (2017)** highlights the level of homelessness in Yellowknife and multiple ways to begin addressing this systemic issue. In Yellowknife, homelessness has increased significantly in recent years and core housing needs in 2014 was reported to be approximately 18% of total households (NWT Bureau of Statistics, 2014). In 2008, 936 people used an emergency shelter. With 91% of people counted as homeless self-identifying as indigenous, the issue is complex, multifaceted, and complicated by a colonial past and a Northern context (Falvo, 2011, Minich et al. 2011, Schmidt et al, 2015).

As part of the Plan to Ending Homelessness and creating an approach to balance, traditional foods and diet including hunting and gathering on the land are identified as important and related to wellbeing and being able to secure housing. Other links to GROW may be around providing therapeutic gardening and horticultural therapy opportunities with urban agriculture.

Food Security and Cost of Food

In 2015, \$10,456 per year on food, \$1,800 more than the average Canadian (NWT Bureau of Statistics, 2015). While there are no statistics kept on the exact pricing, some examples of pricing for goods sold in Hay River and Yellowknife suggest premiums of 15% to 100% over the retail price for non-local produce (Hay River Agriculture Plan, 2014).

Proteins are the most expensive cost and are often inordinately more expensive than produce, where prices are more comparable to southern stores. For low income families in Yellowknife, buying healthy foods is often out of reach.

In 2012, NWT had the second highest rate of food insecurity in Canada (behind Nunavut) at 20.4%, also with a high prevalence (29%) of children living in food insecure households (Tarasuk et. al 2013).

In 2010, a **Food Assessment and Action Plan** was sponsored by the Northwest Territories and Nunavut Public Health Association (NTNUPHA). This plan contains an environmental scan and SWOT analysis of food assets, and recommendation for improving food security.



Although the data is dated, there are many ideas in the Action Plan that remain relevant to consider in developing GROW. For example, determining the intersection between the different food security intervention types recommended in the Action Plan (e.g. short term relief from hunger, capacity building strategies, food policy development and redesign) and urban agriculture is important for GROW to consider and address where possible.

According to the Food Assessment and Action Plan (2010), hunger relief programs provide over \$700,000 annually in support in the form of meals (Table 3), produce donation, and take home bags (Table 3). This indicates a strong need in communities for food security services.

Table 3: Value of food programs. Northwest Territories and Nunavut Public Health Association (NTNUPHA), 2010

Estimate of Hunger Relief for Yellowknife, Ndilo, and Dettah

| Agency | Hunger Relief Efforts | Imputed Annual Value |
|--------------------------------------|---|----------------------|
| Food Distribution | | |
| Yellowknife Food Rescue | 126,364 lbs. rescued and distributed | \$252,728 |
| Yellowknife Food Bank | 150 bags bi weekly @ \$30/bag | \$117,000 |
| Salvation Army Food Bank | 50 bags per week @ \$30/bag | \$78,000 |
| St Vincent De Paul | 76 emergency calls @ \$200 | \$15,200 |
| Yellowknife Garden Collective | 6000 lbs. harvested, 1463 lbs distributed | |
| Meals | | |
| Salvation Army Soup Kitchen | 90 meals/day | \$114,975 |
| Centre for Northern Families Kitchen | 30 meals/day 10,778 meals/year | \$37,723 |
| YKDFN elders meals | 15 meals/week at \$30 per week | \$1,560 |
| Weledeh school lunches | 25-30 lunches per day | \$19,250 |
| Side Door | 2 meals x 1200 bednights/year | \$8,400 |
| Yellowknife Homeless Day Shelter | 30 meals/day | \$38,325 |
| K'alemi Dene School | \$300 -\$500 per week | \$16,000 |
| Lunch with a Bunch | up to 90 meals/wk @ \$300 per week | \$15,600 |
| | | \$714,761 |

Assumptions: Yellowknife Food Rescue provides \$2 per lb. value for recovered and redistributed food.
Meal cost calculated at \$3.50 per meal.

External Funding Programs

Canadian Agriculture Partnership Program

CAP is a Federal Government Funding program² for agriculture, previously named Growing Forward and Growing Forward 2. It is anticipated that by the end of March 2023, approximately \$5.6 million will have been invested in developing the NWT agriculture sector, with funding coming from the federal and territorial governments. Yellowknife is situated in the North Slave Region. Key funding is being provided for the following programs:

- Market Development
- Agriculture Training
- Agriculture and Food Processing Development
- Agriculture and Agri-food Research
- Food Safety
- Agriculture and the Environment
- Agriculture Awareness
- Small-scale Foods

The intent is that with an urban agriculture and food strategy (GROW) in place, a share of CAP funding can be secured for actions outlined within it. CAP funding comes from the Federal Government to Territorial Government. Both municipalities and individuals are eligible to apply for funding. A program guide and application forms are available [on-line](#).

Industry Tourism and Investment (ITI)

Another funding program that promotes agriculture in the NWT is the **Agriculture Awareness Initiative: Northern Foods Development Program**, which has two primary focus areas:

Small Scale Foods Program: The Small Scale Foods Program enables the installation and establishment of self-sufficient community-based gardens and greenhouses in 30 communities throughout the NWT. Existing community gardens and greenhouses will be built upon and expanded while new initiatives will be established.

Support for Entrepreneurs and Economic Development: provides financial support for entrepreneurs looking to start a business or improve their capacity or skills as well as small communities seeking to expand their local economies.

Opportunities for GROW will be to set the framework and identify any regulatory changes which may in turn, better enable those who might capture such funding programs to do so.

² For more information on this funding please visit https://www.iti.gov.nt.ca/sites/iti/files/cap_final_eng_guide.pdf :

Food and Agriculture Snap Shot

This section describes the profile of food and urban agriculture within Yellowknife.

Brief History of Farming in NWT

Historically, NWT had a relatively thriving agricultural industry, with experimental farms, dairy farms, an abattoir, and large market gardens in most communities. These farms were developed out of necessity by the remoteness of the north and lack of available fresh foods. Community gardens were common place before air transport become more accessible (Ecology North, 2014). This changed with new technology, roads, planes, and cheap fuel, but the agriculture industry is coming around again as fuel and food prices rise and people realize the benefits of local, fresh and healthy foods.

Biophysical Conditions for Food and Agriculture

Climate and Frost Free Days

The mean annual temperature in the NWT is -4.6°C and there is an average frost-free summer period of 123 days (Ecology North, 2012). According to Agriculture and Agri-food Canada, Yellowknife is located within plant hardiness zone 0b.

A Changing Climate

There is strong evidence, from scientific data, but also local observations, that climate change is and will have a great impact on Northern Canadian cities.

Impacts to consider include:

- Decreased weather predictability and warming temperatures;
- Risk of increased wild fires, impacting local foraging and wild crafting opportunities;
- Melting permafrost;
- Increased incidence of freezing rain and decreased snowfall in some regions;
- Increased incidence of landslides, coastal erosion, thinning ice;
- Decreased availability and quality of freshwater;
- Changes in biodiversity - new species of wildlife and vegetation migrating north; and
- Change in wildlife behaviour and decreased health of wildlife.

Such changes will affect lifestyle, resource development and conservation. With this, it's possible that land, once considered not viable for agriculture, may present viable opportunities. In addition, vegetation and the growing season may be extended. However, the risks are largely considered to outweigh the benefits (fresh water access, pests, negatively impacted wildlife and foraging opportunities, etc.).

GROW will acknowledge impacts of climate change and outline that any municipal work focused specifically on climate change adaptation should include a review of urban agricultural activities.

Soil and Water

There are limited good quality natural soils in Yellowknife due to the underlying geologic conditions. Soils are typically thin, acidic and low in nutrients (Ecology North, 2017).

Early years of gold mining activity (pre-1958) has left large amounts of arsenic trioxide in lake sediments and soils across the region, including areas within City boundaries. The Government of the Northwest Territories has provided a frequently asked questions information sheet that provides key information on water and soils in and around Yellowknife (GNWT, 2018a).

Highlights relevant to eating and growing local foods in Yellowknife include:

- Tap, or City water, is safe to drink (and use for irrigation).
- The Human Health and Ecological Risk Assessment completed in 2018 findings indicated that there is low to very low human health risk as a result of exposure to arsenic in and around Yellowknife.
- Eating fish from Back Bay and Yellowknife Bay is considered safe to eat.
- Collecting berries away from roadways and industrial sites does not pose a risk to human health.
- Mushrooms should be harvested greater than a 25km radius from Giant Mine.
- Although garden produce has been found to contain arsenic, there has been no evidence to date that demonstrates garden vegetables grown within the City of Yellowknife, N'dilo and Dettah pose a risk for human consumption. Imported soil can be used as a precaution.
- Berry picking and harvesting of wild plants and mushrooms (up to 10km) should be avoided in the (area of interest), and soil should not be used for gardening.

The public health advisory map indicates this 'area of interest' where areas with arsenic in the surface soil are indicated (GNWT, 2018b). Although Yellowknife is within the 'area of interest', it is technically excluded, leaving the boundaries of the 'area of interest' somewhat open for interpretation as to whether Yellowknife is included. This map is provided in Appendix B.

Importing soil is expensive and energy intensive and can pose a risk of transporting contaminants and pests. Furthermore, the microbiology of imported soil may not be suitable for northern conditions (Ecology North, 2017).

Yellowknife falls within a zone of discontinuous permafrost (GNWT, 2015) and receives an annual 280 mm of precipitation (The Weather Network, 2019). A large amount of precipitation is stored as snow and with snowmelt run-off during spring.

Given the long periods of cold temperatures earth worms are not present in Yellowknife gardens. However, the City's composting system turns household food waste into compost that

is provided for sale and can be used as fertilizer and structural amendment to home owners garden soil. To date, the program has been successful and well-utilized.

Yellowknife Urban Farmers and Gardeners

NWT does not have many full-time farmers – It is estimated that there are 29 farmers in the NWT (Aurora Research Institute, 2013). Within the Yellowknife region there is a potato producer, an egg producer, and a market gardener in addition to several greenhouse businesses.

Despite the lack of conventional agriculturalists, there are a healthy number of Yellowknife gardeners, and many who describe themselves as hobby gardeners who like to grow their own food. It is estimated, that currently there are over 100 people gardening in their backyards, 30-40 more seriously, and with 12X12' greenhouses. This highlights that NWT agriculturalists rarely make a living at farming, but they grow food because they enjoy it.

There are twelve shared gardens in Yellowknife. Six sites are managed by the Community Garden Collective, two by schools, three by community organizations, and one by the Yellowknives Dene First Nation. These are:

1. Bagon Dr, (Future garden site)
2. Dene First Nation garden (Dettah)
3. Kam Lake Community Orchard
4. Kam Lake Gardens
5. Mary Murphy Senior's home gardens
6. Mildred Hall School Garden
7. Niven Gardens
8. Northlands Community Garden
9. Old Town Gardens
10. Trails End Community Garden
11. Range Lake North School Garden
12. Weledeh Garden

Community gardens on public land are currently defined by the City as *a parcel of public land used by a non-profit society to produce edible and ornamental plants for the personal use of society members, for donation of produce to other non-profit organizations, and/or for sale by society members whereby the resulting revenues are used solely to develop and improve their community garden.*

The Community Garden Collective currently has about 400 members. Within this group, gardeners donate 25% of their harvest to local meal providers, including the Salvation Army and Aven Mannor, among [others](#). In one year, the gardeners donated over 1100 lbs of fresh produce. As the gardens are on City-owned, public land, the lease agreement in place allows the sale of produce where revenues go back into the organization and not to individuals or businesses. This is to ensure fairness and alignment with intended uses of public land. The City provides the space and water to the community gardens.

There are a number of citizens that keep hens. In Yellowknife chicken coops have formed where people take turns caring for the flock. As of October 20, 2017, the The Department of Industry, Tourism and Investment (ITI) signed an agreement with the Northwest Territories Association of Communities (NWTAC) to develop backyard agriculture by-laws (GNWT, 2017b). By-laws which address beekeeping and the raising of chickens and goats will be made available to Northwest Territories municipalities to be tailored to reflect specific community needs.

Agriculture Sector Food and Crop Type

Overall, the following activities make up the NWT's agriculture sector (ITI, 2018):

- Commercial egg production
- Community gardens and greenhouses
- Backyard gardening
- Commercial potato production
- Farmers and community markets
- Harvesting of wild edibles
- Nursery and greenhouse
- Closed container growing (experimental)

Table 4 summarizes foods that are either natural to NWT or do well under cultivation (Partially derived from Ecology North 2014).

Made in Yellowknife Markets, Businesses, and Products

There are many new and emerging ‘made in Yellowknife’ food businesses and products. One wild crafting business in Yellowknife employs five FTE staff and 17 seasonal staff to collect over 50 species of wild plants to create a wide-range of personal health products. Another micro business kept honey bees, harvested the honey, and sold approximately 40 lbs of honey in 20 minutes at the Farmers Market. Yet another local producer cultivates nearly 6,000 sq ft of raised beds in produce. With this model, each square foot produces an average of \$6-7 per square foot, with some crops reaching \$18/sq ft.

There is also a local company who is testing and modifying container growing systems for the NWT, with the idea of deploying the modified technology throughout the territory. Challenges with being able to sell product from the site are addressed in subsequent sections.

Yellowknife also has a brewery and several restaurants, cafes, and pubs that are seeking out innovative ways to establish the Northern Equivalent of ‘farm to table’. One restaurant is in the process of developing a greenhouse that would provide food directly to the restaurant. Challenges with developing and permitting this greenhouse are addressed in subsequent sections.

Made in Yellowknife foods include:

- Birch syrup;
- Fresh and Smoked fish;
- Dried wild berries;
- Artisanal breads using local ingredients;
- Ready meals using local ingredients;
- Wildflower arrangements, and;
- Beer.

Table 4: Yellowknife Foods

| Grown | |
|--|---------------------|
| Asparagus | Nasturtiums |
| Beans | Onions |
| Beets | Parsnips |
| Berries | Peas |
| Brassicas | Peppers |
| Broccoli | Potatoes |
| Brussel Sprouts, | Poultry and eggs |
| Cabbage | Pumpkin |
| Carrots | Radishes |
| Cauliflower | Raspberries |
| Celery | Raspberries |
| Cherry | Rhubarb |
| Corn | Rhubarb |
| Cucumbers | Root crops |
| Currants | Rosemary |
| Fava beans | Spinach |
| Flowers | Squash |
| Garlic | Strawberries |
| Herbs | Swiss chard |
| Kale | Tomatoes |
| Leeks | Turnips |
| Lettuce | Zucchini |
| Raised | |
| Hens/ eggs | Rabbits |
| Ducks | Goats |
| Quail | Crickets |
| Hunted and Fished | |
| Moose | Lake trout |
| Cariboo | Arctic greyling |
| Northern pike | Lake whitefish |
| Foraged | |
| Wild Berries- saskatoons, strawberries, raspberries, hascaps, cranberries | Birch Syrup |
| | Spruce tips and sap |
| | Rosehips |
| | Mushrooms |

The main point of sale of local products is the Yellowknife Farmer's Market. Vendors at the Yellowknife Farmers Market include commercial food growers, and hobby gardeners. The Harvesters table at the farmers market provides an opportunity for gardeners to sell excess produce on commission. This acts as a bridge program into the farmers' market. In 2015, weekly sales averaged approximately \$20,000 contributing to an estimated economic impact of over \$1 million for the season (ITI, 2018).

Although abattoirs are not currently a permitted use within City limits, if there was an interested party, Planning could consider it on a case-by-case basis and, where appropriate, take it to Council for approval. It is common for municipalities to not permit abattoirs within urban areas but, instead, locate them in more rural settings. With protein production/harvesting being identified as a key opportunity for Yellowknife, further consideration of meat processing may be warranted.

Opportunities for GROW are to consider how to better facilitate these companies and products, if they can be expanded, added to and marketed in other ways within the community.

Community Insight

There are many reasons to pursue local food and urban agriculture in Yellowknife. This section outlines community input received through one-on-one conversations and group workshops with key stakeholders.

There are many reasons to pursue local food and urban agriculture

In speaking with over 15 stakeholders, interviewees were asked what about food and urban agriculture is important to Yellowknife. People generally felt there are five main reasons to pursue food and urban agriculture in Yellowknife.

Table 5: Stakeholder Comment Summary- Reasons to Pursue Food and Agriculture in Yellowknife

| | |
|-------------------------------|---|
| Self-reliance | <ul style="list-style-type: none"> • Feeding ourselves, growing as much as we can on our own • Having local food • Self-reliance, hardiness • Personal pride in growing/harvesting your own |
| Health and wellness | <ul style="list-style-type: none"> • Personal and community health and wellness • Reconnecting to traditional food knowledge and practice • Healthy food for all people |
| Sustainability in Food | <ul style="list-style-type: none"> • Sustainable healthy lifestyle, DIY • Food sustainability (lessons learned from 2014 fire season, closing of the road and empty shelves at the grocery store) • Long distance food travels to us |
| Building community | <ul style="list-style-type: none"> • Creating an nice environment, beautification • Passing on knowledge, leaving a legacy Connecting to land • Poor health puts strain on other things • Using empty lots Meaningful connections to decolonization and reconciliation • Learning from Indigenous food practices |
| Economic opportunities | <ul style="list-style-type: none"> • Household economics and income diversification • Increasing use of non-wood timber products (i.e. wild harvesting) • Creating connections to and resilience for remote communities not accessible by road (create a ripple effect from Yellowknife out) |

Yellowknife faces some challenges to local food and urban agriculture

Even though there is an increasing number of people and potential businesses interested in local food and urban agriculture, stakeholders reported there are some current barriers that GROW should address. A short growing season was not viewed as a challenge. Themes and specific comments from stakeholders are presented below in Table 6.

Table 6: Stakeholder Comment Summary, Challenges for Food and Urban Agriculture

| | |
|--------------------------------|---|
| Access to land | <ul style="list-style-type: none"> • Affordability of land, land prices at a premium • Currently no land use policy to encourage/enable agricultural activities • Unsettled Land claims within Yellowknife • Hemmed in by mines, lake, forest/industrial park, airport, water |
| Soil amount and quality | <ul style="list-style-type: none"> • Very little natural soil. • Adding soil amendments such as bagged soil, peat moss, sand, organic matter, and fertilizers can be costly and creates a disincentive for some people. • Concern about arsenic in natural soils and water ways |
| Food insecurity | <ul style="list-style-type: none"> • Need to create more accessibility for everyone • Farmers market and local food is not accessible to everyone in Yellowknife • Transportation is a challenge for accessing food and gardening |
| Lack of policy | <ul style="list-style-type: none"> • GNWT is in early stages if establishing and implementing a land use framework for agriculture. To date, it has been very challenging to secure an agricultural lease. • Health authority regulations are viewed as a barrier- no policy or supports for selling what you grow • Lack of local government policy specific to urban agriculture |
| Other concerns: | <ul style="list-style-type: none"> • Concern that honey bees could negatively impact wild bee varieties • Lack of supply for local markets • Concern about creating a plan that does not sit on a shelf- need clear roles for community gardens and others • Concern over the high cost of power (i.e. for heating greenhouses all year round) • Identified need to better promote the food charter and eventual plan so that the average person can easily access it and read it. • Perception that people can not sell produce from industrial zone in Kam Lake, when in fact sales are allowed in Kam Lake under current regulations. • To establish a greenhouse requires work arounds |

There are important links between urban agriculture and food security

Interviewees were asked about what the most important connections between urban agriculture and food security are in Yellowknife. The most common response was around creating learning environments for people of all ages and backgrounds to learn about how to grow food and then how to prepare and preserve foods. Several people noted that making gardening knowledge, tools, and places more accessible will help everyone in Yellowknife to participate in urban agriculture. People felt that GROW should consider how to provide fresh food to individuals and families that are experiencing temporary or long-term economic hardship.

There are many opportunities to increase urban agriculture in Yellowknife

People are generally excited and optimistic about the potential of growing food and urban agriculture activities in Yellowknife. Opportunity themes and specific comments from stakeholders are summarized below in Table 7.

Table 7: Stakeholder Comment Summary, Opportunities to increase food and urban agriculture in Yellowknife

| | |
|---|--|
| Bring pride to local community | <ul style="list-style-type: none"> • Create neutral and equalizing spaces/ environments • Connections to Indigenous culture and history • Empowering people • Food to create beauty and vitality in town • Making food part of the Yellowknife experience • Food market on a daily basis |
| Small to medium scale business opportunities | <ul style="list-style-type: none"> • Want to look at potential of large greenhouse operations (e.g. barriers, what policies need to be in place, how to get involved with implementation) • Potential new interest in setting up greenhouse operations (up to 5 in the pipeline)- how to create an industry. Seed funding program (30k), the game changing seed funding (75k) • Aquaponics • Some restaurants want to serve local ingredients, grocery stores want to carry local products • Identify funding sources to stimulate local businesses (e.g. funding wages and scaling up) • Recruit new farmers to the market • Selling urban agriculture products to restaurants and food trucks |
| Urban agriculture opportunities | <ul style="list-style-type: none"> • Microgreens (Yellowknife) • Focus on things that do well in Yellowknife • Growing nutrient dense foods • Apitourism (bee tourism) • Host a hive, help purchase hives |

Table 7: Stakeholder Comment Summary, Opportunities to increase food and urban agriculture in Yellowknife

| | |
|--|---|
| | <ul style="list-style-type: none"> • Accessing land for agriculture purposes for a food/agriculture business • Ensure that backyard chicken keepers are on board with health and safety practices • Consider an egg grader if production gets to small enterprise levels • Worm sharing program to overwinter worms to help create high quality soil for growing food gardens |
| Potential sites for urban agriculture | <ul style="list-style-type: none"> • Double lot downtown • Esso site • Parker Park |
| Overall | <ul style="list-style-type: none"> • Extend and expand on what we do have • Shift mindset, appeal to the average person, make it mainstream • Establish a committee to oversee and coordinate • Plant processing, medicinal foods, accessible to hospital, schools, and seniors |

Stakeholders support most types of urban agriculture and support systems

Interviewees were asked to rate the type of urban agriculture that has the most potential as well as what urban agriculture support systems were most important. Generally, stakeholders agreed with most types and support systems were needed. However, some people indicated water availability was not a concern and thought that urban farms are not currently feasible on public land (given current policies), which generated low scores for both. Stakeholders during workshops challenged both of these perspectives.

While there is keen interest in greenhouse production to extend the season, high-tech all-year round greenhouse, hydroponic, and aquaponics systems were not seen as having the most potential in Yellowknife. Please note that this data is based on a small sample size (n=7) and does not necessarily represent the views of all stakeholders.

Q What type of urban agriculture has the most potential? 1- least, 3- most

Type of Urban Agriculture

Average rating

| | |
|---|-----|
| Container growing systems | 2.9 |
| Backyard and front yard gardens | 2.7 |
| Edible landscaping | 2.7 |
| Greenhouses | 2.7 |
| Urban chickens, rabbits, ducks, goats, eggs | 2.6 |
| Mushroom barns | 2.3 |

| | |
|-----------------------------|-----|
| Urban farms on private land | 2.1 |
| Food recovery | 2.0 |
| Aquaponics, Hydroponics | 1.9 |
| Urban farms on public land | 1.7 |

Q: What support systems are most important for urban agriculture? 1-low, 3-high

Support Systems for Urban Agriculture

| | |
|---|-----|
| Processing equipment and facilities, day rental | 3.0 |
| Soil creation and composting | 3.0 |
| Education | 3.0 |
| Points of sale | 2.9 |
| Advisory group | 2.9 |
| Community Kitchens | 2.7 |
| Storage | 2.7 |
| Policy and bylaw | 2.7 |
| Communications | 2.6 |
| Increasing visibility | 2.3 |
| Food recovery | 1.9 |
| Water conservation and availability | 1.4 |

Exploration questions from the City of Yellowknife Perspective

As part of this research process the project team met with various city staff independently as well as together in a workshop. Some of the questions the City has regarding food and urban agriculture that GROW should resolve or provide a critical path on include (but are not limited to):

- How can we put a municipal lens on the food charter?
- Does the City need to ensure water to new urban agriculture areas?
- What are community objectives around agriculture?
- How can the Zoning By-law be updated, what approach is best?
- How to consider greenhouses outside of services areas- will the City be responsible for these servicing costs?
- What food and agriculture uses can go together, what needs to be separated?
- How will the strategy address unsettled land claims in the boundary?
- Should the City develop a tax exemption and/or specialized fees, charges, and land administration for urban agriculture?
- What is the path for prospective urban agriculturalists and City staff?

- Are there any negative impacts of commercial greenhouses near residential areas?
- What is the Indigenous lens on food and urban agriculture?
- How/if to regulate mobile units, especially where there is an expectation of municipal services?
- Are there neighbourhood venues for sharing product?
- How to support food safety compliance?
- How to promote community kitchens?
- What are the demographics of the industry? Who is involved?
- What should go where, should gardens be networked?
- What can the city do from a business license, land tenure perspective?
- Food processing space for mobile vendors?
- Competing land uses?
- Is there an opportunity to decrease property taxes (i.e. create an incentive) if buildings are used for food and urban agriculture purposes?
- How to better support/fully embrace fishing sector
- How to make this an inclusive strategy.

The process of developing GROW will continue to respond to these questions. Many of these questions are discussed and addressed in the section entitled, '*Challenges, Opportunities, and Potential Responses*' as a preliminary basis to development of GROW.

Action Ideas

Stakeholders provided insight into what specific actions could be addressed and included in GROW. These comments are summarized below and use original stakeholder wording as much as possible. Some adjustments have been made for clarity and sentence structure.

- Growing and Harvesting
 - Expand zones that allow greenhouses. Currently only allowed in Business Industrial Zones (BI).
 - Connect with Taiga Environmental Laboratory to create a new read-out so that test findings are easy to interpret by the lay person
 - Bulk rate for soil testing
 - Winter worm exchange
 - Edible landscaping – public and private (connect with social housing land owners)
 - Encourage people to practice restorative agriculture
 - Map out wild harvest zones (i.e. 50km radius around Yellowknife)
 - Require food growing areas in new developments
 - Develop a strategy for composting spent beer grains into soil, substrate for mushroom cultivation
 - Food forest demonstrating wild food, perennial plantings
 - Protect access to wild food areas
 - Passive solar greenhouse

- Increase availability of locally produced raised garden beds for elders
- Consider an experimental farm site- demo site as part of education
- Consider a sub-strategy for dealing with arsenic
- City growing food instead of flowers
- **Education and Celebration**
 - Connect local food to pre-natal cooking programs, shared community kitchen
 - Engage youth
 - Create an inventory of knowledgeable people in gardening. Consider specific outreach to community elders who have been growing food in Yellowknife. Based on this inventory, consider creating a mentorship program.
 - Launch a knowledge exchange expo
 - Link existing expertise and teaching capacity to education programs
 - Local celebrations in neighbourhoods
 - Increase knowledge about composting
 - Build hunting skills
 - Consider Fresh Roots-type program to teach children about farming
- **Local Economy**
 - Attract new industries in tourism, agriculture
 - Bundle garden supply shipments to remote communities (e.g. books, soil, tools, lumber) to remote areas. Initiate a 12month pre-ordering system to ensure delivery.
 - Start with one piece of land to provide space to incubate new business and encourage new entrants to test crops, learn from each other, and scale up.
 - Think about Yellowknife as a testing area for Northern food and agriculture tech
 - Undertake Farmers Market improvements as identified by the Farmers Market Association
 - Tourism around food, foraging, growing, making
 - Connect Indigenous Youth to new technology
- **General**
 - Focus activities in areas of need
 - Provide an incentive for bringing people together (e.g. small honorarium)
 - Establish managed and shared cold storage capacity, passive cold storage
 - Support the expansion of GNWT funding to include small to micro-scale operations
 - Provide a definition of UA that separates community and personal uses from
 - Take on a 'big idea' then smaller producers will come vs the last 5 years we have been trying to build a small scale food growing operation and have faced significant barriers
 - Develop regulations with room for growth (or changing technologies of food production)

Possible Big Ideas

In addition to the ideas summarized above, three Big Ideas were discussed and initially supported by stakeholders. Big ideas include initiatives that will require external funding, land, facilities, and an ongoing governance/management structure. Big Idea projects are intended to catalyze and mobilize other activities in food and agriculture. Further feasibility testing is required for all of these big ideas.

- **A Community Greenhouse:** Establish a community greenhouse on public land that may be managed and used by the community to increase production and learning potential. City of Revelstoke has completed a feasibility study for a community greenhouse that may could important information. The operational role of the City would need to be further explored.
- **A Social Enterprise Urban Farming Project:** Like the Sole Food Project originated in Vancouver, support the development of a social enterprise that provides low-barrier training and employment opportunities in agriculture as well as an inclusive community around growing a significant amount of food that is sold into local stores and restaurants.
- **A Food Hub:** Cluster multiple food activities in one place to leverage synergies between uses and provide essential infrastructure for community and/or commercial activities around increasing food and urban agriculture in Yellowknife. Activities could include but are not limited to:
 - Commercial kitchen, processing kitchen, community/teaching kitchen;
 - Local food store;
 - Indoor market space;
 - Classrooms, meeting rooms, office space;
 - Cold, frozen, and dry storage areas, and;
 - Additional supporting elements, as identified through a design process.

Case Studies

Town of Hay River Market Gardening Zone

The Town of Hay River has implemented many aspects of their agricultural plan including updating zoning and definitions to encourage food production. The *Market Garden* zone (Bylaw #1812) is generally intended to accommodate small land holding for the growing of market gardening. Permitted uses include:

- a) Market Gardening
- b) Cereal or Forage crops
- c) Apiaries
- d) Greenhouses and Plant Nurseries*
- e) Tree Nurseries
- f) Fish Farms
- g) Sod Farming
- h) Mushroom Farms
- i) One Single Family Housing unit per lot
- j) A commercial scale poultry operation on specific lots
- k) Municipal and Public Utility Installations
- l) The keeping of animals in accordance with Section 5.12 of this bylaw
- m) Accessory buildings and uses
- n) Market Gardening
- o) Cereal or Forage crops
- p) Apiaries
- q) Greenhouses and Plant Nurseries
- r) Tree Nurseries
- s) Fish Farms
- t) Sod Farming
- u) Mushroom Farms
- v) One Single Family Housing unit per lot
- w) A commercial scale poultry operation on specific lots
- x) Municipal and Public Utility Installations
- y) The keeping of animals
- z) Accessory buildings and uses

* Hay River does not provide a definition of greenhouse in Bylaw #1812

The Market Garden Zone is indicated on maps 20, 21, and 24 of Bylaw #1812. The Town of Hay River does not specify urban agriculture as a permitted or discretionary use in residential zones.

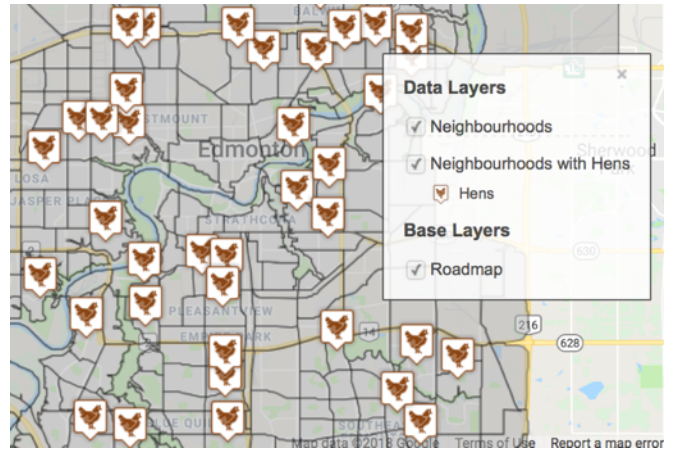
<https://hayriver.com/wp-content/uploads/2017/07/Bylaw-1812-Zoning-Building-ByLaw-A-R-Consolidated.pdf>

City of Edmonton – Urban Hen Program

As part of FRESH: Edmonton’s Food and Urban Agriculture Strategy, the City has developed urban hen and beekeeping bylaws and programs.

The City of Edmonton Urban Hen Program enables residents to keep backyard hens. There are currently 50 registered sites, and new applicants are added to a wait list. The process requires applicants to pay a small fee and complete an online application to fulfill license and permit requirements. This application includes:

- Certificate of completion (or equivalent confirmation of completion) of an urban hen keeping course.
- Permission from the property owner (If the applicant is not the owner of the property)
- Proof of neighbour notification
- Proposed hen breed and number of hens.
- A site plan that shows compliance with Zoning Bylaw that requires an accessory structure be located:
 - a minimum of 0.9m from a side property line,
 - a minimum of 18.0m from a front property line,
 - a minimum of 0.6m from the rear property line, and,
 - a minimum of 0.9m from any other buildings on the site.



The website includes instructions for what to do when you are approved e.g. building a coop and run, applying for PID number (related to AB health requirements), and site inspection. It also tracks all of the locations that are registered urban hen locations.

The website also includes information for program participants such as urban hen keeping procedures and guidelines, additional resources, animal welfare, eggs, poultry manure, enforcement, and public complaints, and program history.

Related policies to the Urban Hen Program include:

- Poultry keeping is enforced under Section 27 of the [Animal Licensing and Control Bylaw, 13145](#).
- Standard setback requirements for hen coop and run structure locations are outlined in the [Zoning Bylaw, 12800](#).
- [Fresh: Edmonton's Food & Urban Agriculture Strategy](#)
 - Recommendation 3.4: "Examine opportunities for citizens to keep bees and raise hens", by "partner[ing] with local non-profits to assist in the evaluation and

implications of allowing urban backyard hens. City staff to report findings to City Council".

To date, the Urban Hen Program has had excellent uptake with all 50 licenses being allocated and several people on the waiting list.

https://www.edmonton.ca/city_government/initiatives_innovation/food_and_agriculture/urban-hens-project.aspx

Definition of Urban Gardens, City of Edmonton (Bylaw # 12800): **Urban Gardens** means the cultivation and harvesting of plant and/or animal products in urban areas for the primary purpose of beautification, education, recreation, or social or community programming. Accessory buildings or structures may include Hen Enclosures, or those used for the operation of the Site and the extension of the growing season, such as coldframes, hoophouses and greenhouses. On-Site sales and processing of plants or animal products are prohibited. Accessory activities may include outdoor storage or composting of plants grown on-Site. Typical activities include community gardens. This Use does not include Livestock Operations, Rural Farms, Recreational Acreage Farms, Urban Indoor Farm, Urban Outdoor Farms, or Cannabis Production and Distribution, unless operating pursuant to a registration certificate issued by the Federal Government for personal production or designated personal production for medical Cannabis.

Urban Gardens are permitted in all residential and some commercial zones in Edmonton.

Agriculture Land Program- Government of the Yukon

Yukon is one of the few places in Canada where Crown land can be obtained for agricultural purposes. To qualify for a license to conduct agriculture on Crown land, proponents complete an application to the Agriculture Branch of the Department of Energy and Mines. The application contains information such as intended uses and the applicant must develop and submit a Farm Development Plan within 60 days of the application.

http://www.emr.gov.yk.ca/agriculture/agriculture_land.html

City of Nanaimo – Zoning Bylaw Amendments

In April 2012, the City of Nanaimo amended its zoning by-law to allow for urban gardens and for direct sale of produce and edible plants from ‘farm gate’ stands within residential areas. Residents who sell produce do not require a business license due to the scale of production.

The discussion and eventual amendment was initiated by the food and agricultural community. It was also acted upon due to the neighbouring community of Lantzville’s struggle with a resident’s request to farm (and with it, all the aspects of farming, in particular, mushroom manure and composting) as well as to sell produce grown on their residential lot. This story ignited media interest and discussion within nearby communities. As such, the City took initiative to make changes within their own community.

To date, the City reports no major issues with the zoning amendments, but also indicate there has been little uptake on the 'farm gate' idea and those who had urban gardens, continue to garden for their own personal interest and consumption of produce grown. The City had hoped that allowing for direct sale of produce at farm gates in residential areas would slowly increase and this would thereby increase the availability of locally grown produce within neighbourhoods. Unfortunately, this hasn't been the case (although it was noted that chickens and eggs are gaining in popularity). However, the possibility of an increase of urban farming has sparked discussion within the City to review water consumption and water consumption rate pricing. This is anticipated to become an issue, should urban farming become more popular in the future.

Details for Zoning Amendments:

- Located in Part 6 – General Regulations, (urban food garden) use is permitted in all zones
- Regulated to 600m² except where the lot size is greater than 2,400m², in which case an urban food garden cannot exceed 25% of the lot area.
- Allows for urban food gardens and the retail sale of products grown on a residential parcel (direct) through a residential 'roadside stands' no greater than 9m²
- Excludes growing mushrooms
- Restricts to 5 vehicle trips per day generated and for 60 days total
- Refers to guidelines for driveway sightlines and siting to abide by watercourse regulations
- Does not allow artificial lighting, pesticide or herbicide use
- Outlines "good neighbour" regulations and safety issues (specifically states it must not create noise, dust, vibration, odour, smoke and glare, fire hazard "to any greater or more frequent extent than that usually experienced in the applicable zone under normal circumstances wherein no urban food garden exists")

Food Asset Inventories

This section provides a *Food Asset Inventory* and *Potential Space and Infrastructure for Urban Agriculture Inventory* within the City of Yellowknife as a baseline and a starting point for evaluating gaps and future direction for urban agriculture in the City.

Inventory Criteria and Categories

Yellowknife is home to many food assets. GROW will strategically build on what assets are already established, determine where gaps exist and how to best leverage and coordinate efforts. In order for the *Food Asset Inventory* and *Potential Space and Infrastructure for Urban Agriculture Inventory* to be useful, several criteria were applied in identifying assets. Criteria included food assets that are measurable, are physically located, are within municipal jurisdiction, and assets that link directly to the scope of GROW.

Through applying these criteria, some food assets in Yellowknife are not depicted in the food asset inventory. For example, food literacy and skill building programs were not included as they change from year to year and are not necessarily linked to one physical place. Food festivals and celebrations are also filtered out for the same reason, although they are a key part of food culture in Yellowknife. Additionally, only primary food sources were included given their direct link to household food access and security. This means that many of the restaurants and food trucks were not included, although there are many.

Ultimately, both the *Food Asset Inventory* and *Potential Space and Infrastructure for Urban Agriculture Inventory*, should be considered living documents and updated as new assets and space/infrastructure opportunities emerge.

The City's food assets were identified in the following ways:

- Online research;
- Information from stakeholder interviews;
- Input from PlaceSpeak (online engagement platform for residents to provide; and input/ideas)
- Business license data provided by the City.
- Land within City of Yellowknife jurisdiction

Food asset categories include:

- Community and school gardens
- Shared kitchens
- Edible landscaping in public spaces
- Food, meal, and healing programs
- Garden and soil supplies
- Grocery stores, farmers market, direct fish sales

The City's *Potential Space and Infrastructure for Urban Agriculture Inventory* was identified through indicating current municipal land with an assessed improvement value of \$0, parcels without buildings, and City lands for sale as of September 27th, 2018 from <https://www.yellowknife.ca/en/doing-business/City-Land-for-Sale.asp>, municipal zoning, and residential areas with yard space. Data for parcels, zoning, and building footprints was acquired from the City of Yellowknife open data portal.

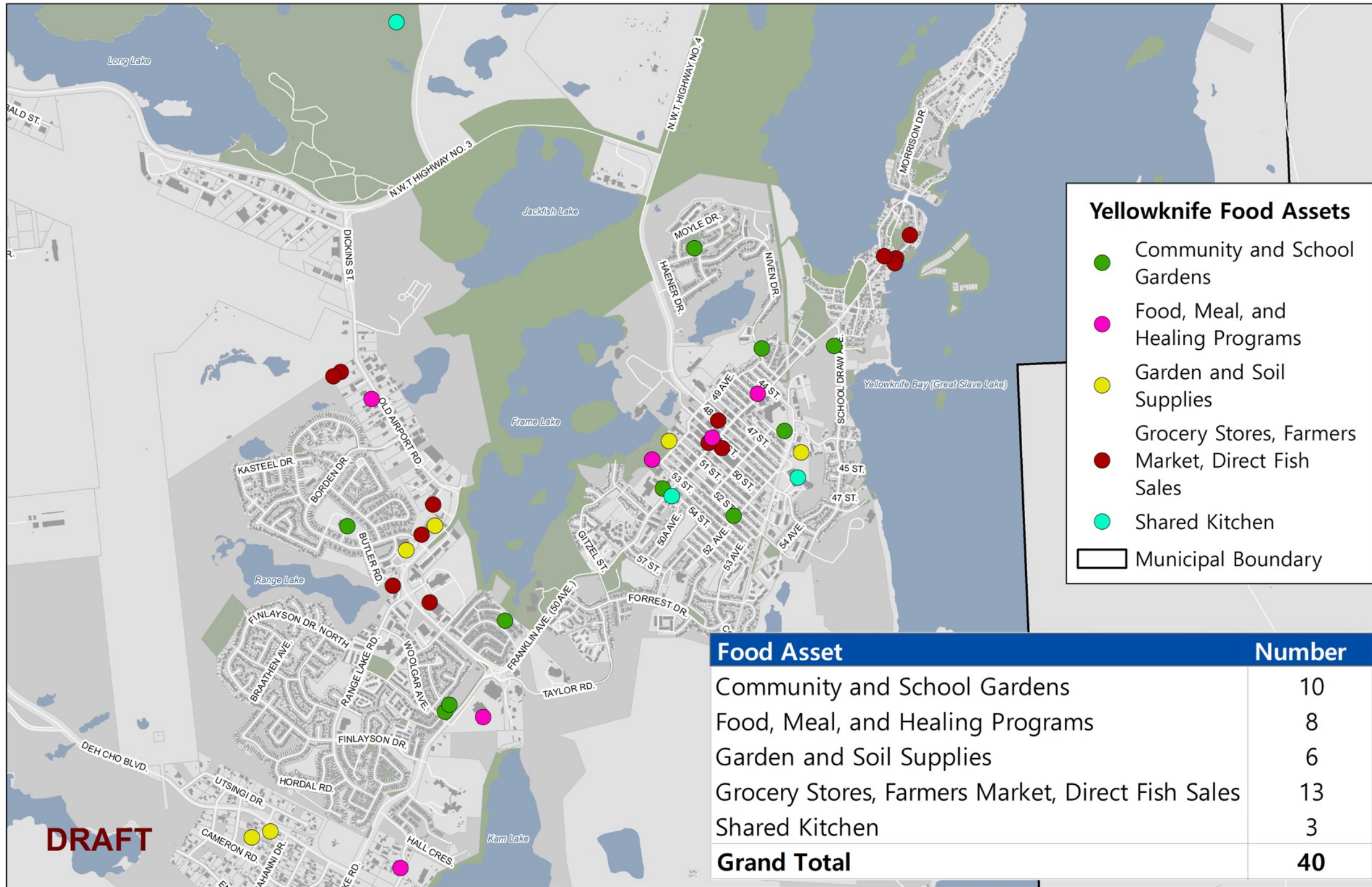
Properties that appeared to be used for storage/junk yard due to the potential environmental impact for agriculture were removed. Residential yards were identified as parcels zoned as low-density residential, manufactured dwelling, and single detached (all residential types would expect to have yards). The area of those yards was calculated by subtracting building footprints (building area) from the parcel area (i.e. area of the parcel not covered by a building will be yard and driveway).

It should be noted that this inventory provides baseline data but does not certify that vacant land is available or suitable for urban agriculture.

Figure 4 provides a starting point and offers an opportunity to focus on possible key sites or specific categories that may be suitable for developing new food assets and urban agricultural activities. Further analysis for developing opportunities in GROW may include overlays of soil information, lands for sale, infrastructure and servicing, adjacency to community assets and facilities and other related information.

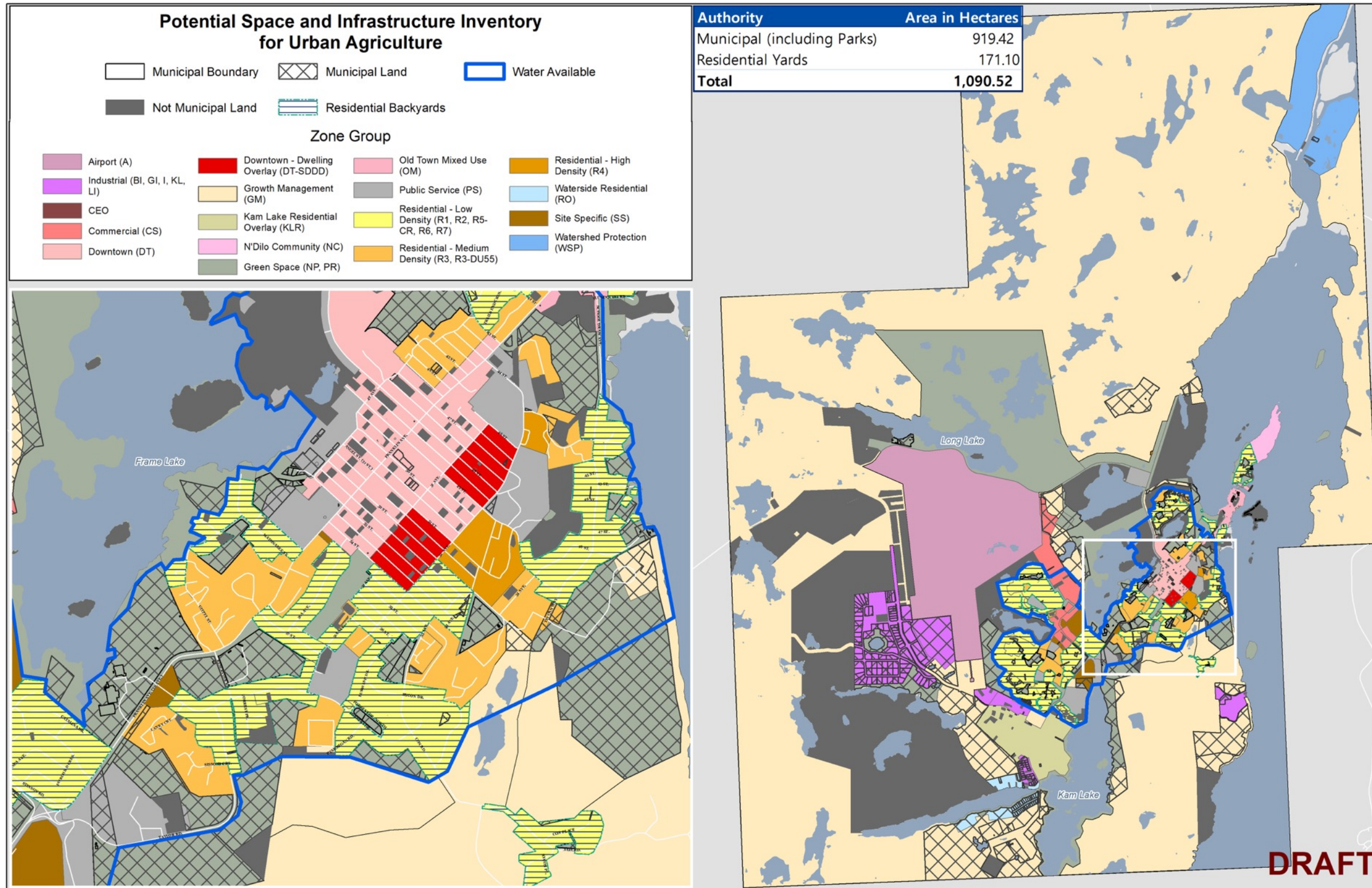
Yellowknife Food Asset Inventory

Figure 3 Yellowknife Food Asset Inventory



Potential Space and Infrastructure Inventory for Urban Agriculture

Figure 4: Potential Space and Infrastructure Inventory for Urban Agriculture



Challenges, Opportunities, and Potential Responses

This section provides a summary of the research and engagement discussed and identified in previous sections and suggests potential responses that GROW could include as goals and actionable items.

Challenges and Potential GROW Responses

Table 8: Summary of Current Challenges and Potential Grow Responses

| Challenge | Considerations and Potential Responses for GROW |
|--|---|
| POLICY (LAND USE AND HEALTH) | |
| Lack of supportive or limiting policy and bylaw to allow, enable, and encourage urban agriculture | <ul style="list-style-type: none"> • Develop Community Plan policies and Zoning bylaw regulations (Please see opportunities for detail- Table 9). • Consider including design guidelines for the Building by-law • Consider updates to the Land Administration bylaw |
| Land availability and price for urban agriculture | <ul style="list-style-type: none"> • Allow commercial urban agriculture as a permitted use in all appropriate zones (Please see opportunities – Table 9 for more detail). • Consider how the City and GNWT can incentivize commercial urban agriculture including consideration for programs available throughout the territory (e.g. business planning). |
| Lack of appropriate policies for greenhouses or agriculture (GNWT and CoY) (e.g. greenhouse required to have a septic tank as large as water tank even though being used for irrigation (i.e. not being recollected as gray water, therefore not requiring such a large septic tank) | <ul style="list-style-type: none"> • Advocate for the development of agriculture land use and health and safety regulations that are right-fitted for micro-small scale enterprise (in addition to larger scales) • Support existing GNWT initiatives to permit and lease land to agriculture on commissioner’s land. • Develop internal and external strategies to increase knowledge and appropriate policies to regulate and permit food and agriculture enterprise including greenhouse. |

Table 8: Summary of Current Challenges and Potential Grow Responses

| Challenge | Considerations and Potential Responses for GROW |
|--|---|
| <p>Environmental health and safety regulations.</p> <p>No precedence for food and agriculture enterprise</p> | <ul style="list-style-type: none"> • Advocate for right-fitted regulations and policies when it comes to permitting multiple-scales of food and urban agriculture activities in and around Yellowknife. |
| <p>There is no regulation of mobile units</p> | <ul style="list-style-type: none"> • Consider allowing sale of products from mobile units. • Determine if servicing mobile units is feasible. • Determine if there are any concerns with allowing food trucks on private property. |
| BIOPHYSICAL | |
| <p>Climate conditions</p> <p>Short growing season</p> | <ul style="list-style-type: none"> • Identify key focus areas and list crops for urban agriculture that work best for northern conditions. • Consider greenhouses (commercial and community). |
| <p>Poor soil quality and availability</p> | <ul style="list-style-type: none"> • Increase organic waste diversion and composting. Consider new sources of food waste including spend beer fibre. Consider digesters that require power but work quickly and can create organic matter for soil creation. • Ongoing soil fertility management. • Consider developing a worm wintering program to increase worm activity in soils. |
| <p>Soil and water contamination</p> <ul style="list-style-type: none"> • Challenge with reading/interpreting tests • High cost of bringing in farm inputs (including soil) | <ul style="list-style-type: none"> • Consider partnering with senior levels of government and local labs to provide free arsenic testing. • Consider working with labs to provide a results template that is clear and easy to read by the lay-person. • Consider a city-wide approach to mapping out arsenic hot spots. • Consider limiting growing to raised beds with a non-permeable base and using created or bought soil. • Consider restorative practices to determine how the land can be healed overtime. • Create a plain language guide for arsenic soil. Provide education and guidelines for how to restore soil. • Support the allowance of rainwater use for irrigation purposes. |
| <p>Lack of pollinators and earth makers</p> | <ul style="list-style-type: none"> • Consider how to provide space, information, and resources for overwintering bee colonies. |

Table 8: Summary of Current Challenges and Potential Grow Responses

| Challenge | Considerations and Potential Responses for GROW |
|---|--|
| <ul style="list-style-type: none"> • Bees • Worms | <ul style="list-style-type: none"> • Consider a pollinator demonstration program including flowering plants. • Determine if there is any risk to native insects and invertebrates from the introduction of non-native species. • Consider developing a worm wintering program to increase worm activity in soils. |
| SOCIAL | |
| <p>Loss of knowledge and culture in food</p> <ul style="list-style-type: none"> • Indigenous food systems • Self-reliance • How to grow/preserve | <ul style="list-style-type: none"> • Consider how to integrate food into existing learning environments (e.g. schools, community centres). • Consider working collaboratively with Indigenous Elders on creating an edible food plant plan for the public realm (e.g. food forest) that includes signage, description and programming that reflect indigenous knowledge. Ensure that soils have been tested to enable safe harvesting. |
| <p>People who are knowledgeable about agriculture are tired out</p> | <ul style="list-style-type: none"> • Consider hosting a series of mixer events that will draw elders, youth, and others to connect and share information on how to food garden in Yellowknife. • Consider establishing a garden mentoring program and backyard matching program. |
| <p>How to connect recommendations in GROW to communities that need healthy food the most.</p> | <ul style="list-style-type: none"> • Ensure that communities intended to benefit from activities are included and meaningfully engaged from the beginning. • Ensure that the wrap-around supports needed have been thoroughly considered to be able to achieve lasting personal and community successes in health and wellness. |
| ECONOMIC | |
| <p>Lack of food and agriculture incubator opportunities. (e.g. not being able to sell from community garden on public land)</p> | <ul style="list-style-type: none"> • Identify areas that could be used for agriculture incubators where growers would be allowed to sell product from the site and/or at the Farmers Market. • Consider a promotion strategy to encourage entrepreneurs to invest. |
| <p>Limitations to the Farmers Market</p> <ul style="list-style-type: none"> • Limited schedule • Lack of supportive infrastructure | <ul style="list-style-type: none"> • Consider working with market organizers to expand the schedule to be once during the week and once on the weekend. Also consider an indoor winter market to enable all-year round activities. |

Table 8: Summary of Current Challenges and Potential Grow Responses

| Challenge | Considerations and Potential Responses for GROW |
|---|---|
| <ul style="list-style-type: none"> Lack of storage for product Vendor costs prohibitive to some Food costs prohibitive to some | <ul style="list-style-type: none"> Consider installing handwashing stations and additional washroom facilities. Consider installing power so vendors may plug in refrigeration units. Consider providing a sliding scale for vendors based on their ability to pay. Advocate for the development of a farmers market coupon program as developed in BC to provide a subsidy for low income families to be able to shop at the farmers market. |
| <p>Lack of coordination between levels of government and departments</p> | <ul style="list-style-type: none"> Consider strategies that increase the collaborative efforts of the City and the Territorial governments. Advocate for resources and policy changes at the Territorial level that will provide predictability and clarity for local government. |
| <p>Potential for green house is limited through the zoning bylaw that only allows greenhouse in one area.</p> | <ul style="list-style-type: none"> Consider allowing greenhouses in all zones. . |
| <p>GENERAL</p> | |
| <p>High transportation costs for food and farm inputs</p> | <ul style="list-style-type: none"> Allow, encourage, enable, and support a wide-range of food and agriculture opportunities. |
| <p>Perceived resistance and lack of a framework for City Elected Officials and Staff to consider and plan food and urban agriculture</p> | <ul style="list-style-type: none"> Internal capacity building (e.g. staff and Council workshop on Yellowknife Food Charter). Further engagement of staff in developing suitable strategies. Make visible the many ways the City is already supporting food and agriculture and determine how to strengthen these approaches to generate a more strategic approach. |
| <p>Overall competition for municipal land</p> | <ul style="list-style-type: none"> Determine strategic locations for community and commercial agriculture Consider how to integrate and layer food and agriculture with existing land uses. |

Opportunities and Potential GROW Responses

Table 9 provides a summary of current approaches and food and urban agriculture opportunities that have been identified by stakeholders, research, and the expertise on the project team.

Table 9: Summary of Potential Opportunities and GROW Responses

| Opportunity and Current Approach | Considerations and Potential Responses for GROW |
|---|--|
| <p><u>Community Plan update</u></p> <p><i>Current Approach: The current Plan does not include a section on Urban Agriculture and/or Food Security. The review process will look at updating this in the new plan.</i></p> | <p>Consider ‘Food and Agriculture’ as a new section in the Community Plan (or include the content within Land Use Development Policies). Ensure that food and agriculture is balanced and appropriately integrated with other section of the plan. Consider policies that:</p> <ul style="list-style-type: none"> • Encourage and regulates the growing of food and livestock in the City on both public and private lands. • Support existing and new urban agricultural business within the City. • Promote and permit the sale of locally grown food and livestock for sale within the City. • Identify partnerships with organizations and Indigenous Government that help define and support food and urban agriculture within the City, including culturally acceptable foods • Further existing community programming and funding opportunities for food and urban agriculture |
| <p><u>Growing food and livestock production in Yellowknife</u></p> <p><i>Current Approach: There is no policy or bylaw either encouraging, prohibiting, or limiting food production and raising animals the City.</i></p> | <p>Consider supportive policy(ies) for urban agriculture: New definitions and permitted uses to be applied to existing land use designations and zoning.</p> <ul style="list-style-type: none"> • Define urban agriculture with a broad scope to capture all aspects and scales of food production, processing, distribution and celebration. • Consider an urban agriculture definition that delineates community agriculture from commercial agriculture. • Create new land use classes (personal home gardening and neighbour sales, urban |

Table 9: Summary of Potential Opportunities and GROW Responses

| Opportunity and Current Approach | Considerations and Potential Responses for GROW |
|--|--|
| | <p>commercial farms, etc.) and allow as a permitted (or accessory) use in all or specific zones based on use.</p> <ul style="list-style-type: none"> • Develop design guidelines (or add guidelines to existing development standards). <p>Consider additional bylaws and licensing to manage compatibility with other land uses. Consider both enabling policy as well as limiting bylaws in the following areas:</p> <ul style="list-style-type: none"> • Animal/livestock licensing and control bylaw (e.g. hens only, number of animals, setbacks, etc.). • Review requirements to live on site for commercial food production or greenhouse. • Specifically exclude any products regulated by the Controlled Drug and Substances Act. • Consider policy and guidelines for greenhouses (<i>as outlined in Table 8.</i>). |
| <p><u>'Food Friendly' Neighbourhoods</u> <i>Current Approach: A possible concept for neighbourhoods in the City</i></p> | <p>Explore what a 'food friendly' neighbourhood looks like for Yellowknife and how this can be applied to future subdivision development and existing communities.</p> |
| <p><u>Further support urban home gardening</u> <i>Current Approach: Many citizens grow food on their properties and the City provides seasonal workshop opportunities such as growing food in small spaces and starting your tomato plants</i></p> | <ul style="list-style-type: none"> • Consider funding for educational campaigns and workshops that promote more outdoor seasonal produce in raised beds with covers to extend growing and/or root crops year-round. • Consider how to optimize use of municipal compost for food gardening. • Partner with commercial growers to provide a small subsidy or rebate for edible plants and annual food starts for residents. • Consider amending by-laws to allow for small-scale heated greenhouse production on residential lots and regulate with guidelines. |
| <p><u>Edible landscaping</u></p> | <ul style="list-style-type: none"> • Consider operational perspectives in updating this approach to provide guidelines, options, |

Table 9: Summary of Potential Opportunities and GROW Responses

| Opportunity and Current Approach | Considerations and Potential Responses for GROW |
|--|--|
| <p><i>Current Approach: The City does not currently have a specific approach for planting edible plants in public spaces like parks, streets, and publically owned lands/ facilities, although edible plants are occasionally used in landscaping.</i></p> | <p>and ideas for how to use edible plants in public spaces (such as neighbourhood parks, streetscapes, patio planters and hanging baskets, etc.)</p> |
| <p><u>Selling food from urban farm gate stands</u></p> <p><i>Current Standards: In order to comply, people are required to obtain a business license and any sales activity would be considered as a Home Based Business</i></p> | <ul style="list-style-type: none"> • Consider an exemption for urban residential farm stands. Also consider a free, easy permit to allow the City to track and even promote the growth in farm stands. • Allow for marketing and signage on residential properties that have direct sales of produce or urban agricultural products. |
| <p><u>Food and agriculture enterprise opportunities</u></p> <p><i>Current Approach: There are existing barriers to establishing a small urban agriculture business (e.g. greenhouse production, backyard farmers, etc.)</i></p> | <ul style="list-style-type: none"> • Include a definition and licensing for urban agriculture business types. • Allow for direct sale of products (e.g. residential farm gates for produce, chickens, eggs, honey, flowers, produce to restaurants, etc.). • Consider amendments that allow for on-site sales, outdoor/indoor storage, food packaging and processing in one location. • Allow for mobile or multiple location business license (for example, production of produce and sale at multiple sites with one business license, leasing chicken tractors or coops, bee hives, etc.). • Allow for seasonal, ‘pop up’ vendors. • Consider ways to minimize costs for business owners and/or provide a ‘seasonal’ license fee for small scale agricultural business. • Review and determine servicing for designated agricultural lands and mobile units. |

Table 9: Summary of Potential Opportunities and GROW Responses

| Opportunity and Current Approach | Considerations and Potential Responses for GROW |
|--|---|
| <p><u>Farmers Markets</u></p> <p><i>Current Approach: The City leases space to the Farmers Market.</i></p> | <ul style="list-style-type: none"> • Consider supportive policy for Farmers Markets in the community plan. • Acknowledge history of the market and the community organizations who originally established the market. • <i>Please See Table 9. for additional responses for Farmers Market.</i> |
| <p><u>Food Trucks</u></p> <p><i>Current Approach: Food trucks are currently allowed in designated areas downtown and in other areas of the city.</i></p> | <ul style="list-style-type: none"> • Clarify if food trucks are allowed on private lands |
| <p><u>Community Grant Funding Policy</u></p> <p><i>Current Approach: Current policy offers grant funding for key priority areas</i></p> | <ul style="list-style-type: none"> • Include food security and urban agriculture as a priority within the grant program. • Consider adding specific neighbourhood grants for urban agricultural and food-related celebrations, rituals or events in public spaces (e.g. cultural related food practices and events, agricultural ‘fairs’, harvest festival/markets, community picnics, food preserve shares, organized peer to peer food prep shares, workshops, etc.) |
| <p><u>New food and agriculture city programs and policy</u></p> <p><i>Current Approach: Current restaurant patio program</i></p> | <ul style="list-style-type: none"> • Consider an urban agriculture policy for, or update the definition of, public parks and greenspaces or natural areas (in the case of foraging), with options for license agreement or longer term lease arrangements negotiable, depending on activities, stewardship and planning involved. • Consider seasonal pop up retail spaces and markets for urban agricultural value-added products within empty retail units, public spaces, or residential areas. • Establish monitoring indicators for urban agriculture. • Foraging in open spaces and natural areas (e.g. berries). |

Table 9: Summary of Potential Opportunities and GROW Responses

| Opportunity and Current Approach | Considerations and Potential Responses for GROW |
|---|--|
| | <ul style="list-style-type: none"> • Support the engagement of the local food community (through Farmer’s markets, programs, grocery stores, businesses, etc.) on what’s required and needed to better market/support local food. • Expand City-run workshops and learning events/ programs. |
| <p><u>Land tenure / pricing and taxes for urban agriculture use</u></p> <p><i>Current Approach: The City holds land for sale and there are a number of competing interests for available municipal land (commercial uses)</i></p> | <ul style="list-style-type: none"> • Consider tax exemptions for lands/buildings with permanent or temporary agricultural use, either for community or commercial purposes. Prioritize underutilized or vacant lots. • Evaluate the return on investment of land leases for agricultural use to include a value of local food security and whether Council could have the discretion to dispose of land below the appraised value for developments which support local food and food security. • Consider land administration by-law amendment to enable |
| <p><u>Greenhouse and Hydroponics</u></p> <p><i>Current Approach: There is currently one area of the City that allows for greenhouses but there is no servicing</i></p> | <ul style="list-style-type: none"> • Consider definition(s) for greenhouses, both commercial and personal. • Consider allowing greenhouses or other structures as ‘temporary buildings’ for urban agricultural activities in underutilized spaces (e.g. a vacant lot, underutilized parking, etc.). • Consider permit exclusions for personal use prefabricated greenhouses (that extend growing season) in residential areas, provided electric, plumbing (except irrigation hooked up to an existing source), or gas lines/propane is not required • Consider excluding community gardens from requiring a development permit for small greenhouses related to urban agriculture activities. |

Key Directions & Next Steps

This section presents seven emerging theme areas to organize and enable GROW to respond to the challenges and opportunities in the previous section.

Emerging Directions

In summary, seven key directions have emerged from the research and engagement to date. It is anticipated that these categories will form the basis of goal statements and organize actions to be developed as part of GROW.

1. Secure adequate amount of soil and water for food growing/raising.
2. Increase enterprise and personal opportunities for growing and harvesting food.
3. Support local food infrastructure (community and commercial).
4. Enable direct buying and selling of 'made in Yellowknife' foods.
5. Celebrate diverse food and agriculture customs and practices.
6. Encourage the sharing of food.
7. Expand literacy and education around food and agriculture.

Next Steps

Next steps for creating GROW: Yellowknife Food and Urban Agriculture Strategy will be to further build on what was learned and heard during the first phases of this project. This will include obtaining feedback from staff on this background report, in particular, the proposed approach and framework for the strategy, key directions (as goals and organizational categories) for actions, preliminarily identified as opportunities and potential responses within this background report.

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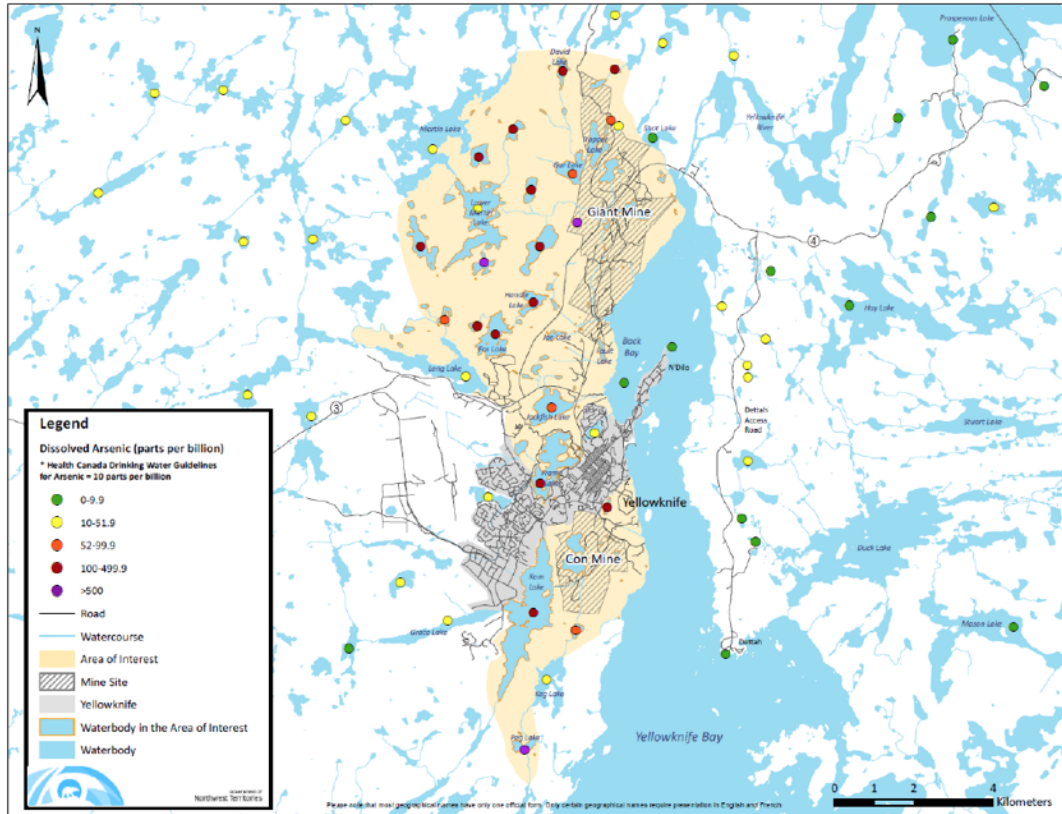
Appendices

Appendix A: Process participants to-date

| Name | Affiliation |
|---------------------------|--|
| Thea Campbell | Boreal Garden |
| Suzette Montreuil | Alternatives North |
| Tom Money | Yellowknife Farmers Market |
| Robyn Coleman | GNWT |
| Christie Barker | Alternatives North |
| Haroon Bhatti | Denesoline Corporation |
| Caroline LaFontaine | Yellowknife Farmers Market |
| Devon Vranckaert | NWT Brewing Co. |
| Dr. Nicole Redvers | Gaia Integrative Clinic |
| Franziska Ulbricht | Urban gardener |
| Donald Prince | Arctic Indigenous Wellness Camp |
| Anneka Westergreen | Fireweed Farms |
| Etienne Croteau | Flavour Trader |
| France Benoit | Farmer |
| Caihla MacCuish | Yellowknife Garden Collective |
| Craig Scott | Ecology North, NWT Food Security Network |
| Grant White, Public Works | City of Yellowknife |
| Tracey Williams | Community advocate |
| Chris Greencorn | City of Yellowknife |
| Nalini Naidoo | City of Yellowknife |
| Alan Dube, | City of Yellowknife |
| Amy Maund | Laughing Lichen |
| Deneen Everett | Chamber of Commerce |
| Jeremy Flat | Fat Fox Catering |
| Kyle Thomas | Digital Media and Tourism Services |
| Murray Jones | Murray's Treats and Eats |
| Tiffany Ayalik | Copper Quartz Media Inc. |

Appendix B: Arsenic Concentrations in Yellowknife Area (GNWT 2018b)

Map of Arsenic Concentrations Measured in Water Bodies in the Yellowknife Area with Corresponding Public Health Advice
 UPDATED: June 14, 2018



You can view a larger version of this map at www.hss.gov.nt.ca.

Lakes with green points:
 Safe for swimming and fishing.

Lakes with yellow points:
 Safe for swimming and fishing.

Lakes with orange, red or purple points:
 Avoid swimming, fishing and harvesting berries, mushrooms and other edible plants. Walking through this area does not pose a health hazard.

It is not safe to drink untreated water from any lake.

Appendix C: Urban Agriculture Typology

The following table provides an overview of spaces and related infrastructure applicable to urban agriculture within the City. This typology has been refined with Yellowknife in mind. The typology has been organized within three key categories and sub-sets:

- Residential: Front yards, backyards, balconies and roofs
- Community: Parks, schools, natural areas, streets and plazas
- Commercial: Buildings, vacant lots



Each category and sub-set provides an overview of space and infrastructure requirements, estimated output and some key design considerations.

Continuums within the typology have been envisioned to cover a range of possibilities including:



- Protein to fresh food production
- Main stream to traditional food types and practices
- Small to large spaces and ideas
- Traditional and technological practices


Where possible, the concept of universal design is incorporated.

| URBAN AGRICULTURE TYPE | REQUIREMENTS | ESTIMATED OUTPUT | DESIGN CONSIDERATIONS |
|---|---|---|--|
| Residential Use – Front yards, backyards, balconies and roofs | | | |
| <p>Heated and animal proof chicken coops for eggs</p>  | <p>10 sq ft minimum, typically 2sq.ft./bird in the coop, 4sq.ft./bird in the run</p> <p>Dry, well ventilated, home-built or commercial built insulated coop with run area.</p> <p>Construction materials – treated durable wood, insulated.</p> <p>1 nesting box per 5-6 hens. Nesting boxes should be 12'-14" square.</p> <p>Roost.</p> <p>Services - Flat panel radiant heater and/or insulated coop.</p> | <p>Number of eggs largely depends on the breed, age, environment. Average in excellent conditions:</p> <p>4 hens = 3 eggs/day</p> | <p>Security from predators.</p> <p>Wind, weather and sun protection.</p> <p>Natural light, south facing windows (to maximize warmth in cold months when there's still light)</p> <p>Compatibility with neighbouring uses (smell, noise, waste)</p> |
| <p>Honey Bee Hives / Apiculture</p> | <p>Dimensions of a typical hive box, 19 7/8" in length, 16 1/4" wide and 9 5/8" in height</p> <p>Requirements: foundation, hive stand, hive box</p> | <p>Average (given great conditions) is 14kg of honey per hive annually, however, this would be much less for</p> | <p>Winterizing bee hives, need constant 0 degree temperatures, insulated shed, censor controlled space heater</p> |



| URBAN AGRICULTURE TYPE | REQUIREMENTS | ESTIMATED OUTPUT | DESIGN CONSIDERATIONS |
|--|--|---|--|
|  | <p>and (10) frames per box.</p> | <p>bees living with longer and colder winters</p> | <p>Need flowers and plants to pollinate.</p> <p>Requires good location and shelter from elements.</p> <p>Requires some knowledge and training for home bee keeping.</p> <p>Public education on bees (bees are not wasps)</p> |
| <p>Raised garden beds</p>  | <p>Plot dimensions can vary, but typically 4x6 or 4x25 to allow for good production and accessible reach from both sides.</p> <p>Non-toxic, durable construction materials - lumber, blocks, bricks, plastic, rocks.</p> <p>Sandy clay loam soil mixed with organic matter, 8" to 24" depth depending on crop type</p> | <p>One small 4x6 garden bed can only provide supplement to an individual's diet.</p> <p>500sqft plot can support and supplement a family of 4 for a growing season.</p> | <p>Size, siting, soil.</p> <p>Maximize growing conditions.</p> |
| <p>Cold frame</p> | <p>Construction materials - wood</p> | <p>Slightly extend growing</p> | <p>Cold frames should be</p> |




| URBAN AGRICULTURE TYPE | REQUIREMENTS | ESTIMATED OUTPUT | DESIGN CONSIDERATIONS |
|--|---|---|---|
|  | <p>frames with plexi glass, old windows, polycarbonate or double thick plastic sheeting.</p> <p>Can be built as permanent or portable structures.</p> <p>Cold frames can also be built with bent plastic or metal poles covered with plastic sheeting directly over garden plots.</p> | <p>season for some crops</p> | <p>protected from high winds.</p> <p>Ideally cold frames receive direct sunlight.</p> |
| <p>Personal Greenhouse (with or without heating system)</p> <p>Attached or freestanding accessory building</p>  | <p>Variable size, commercially available and home built plans. Range from 6ft x 12ft to 10ft x12ft or 8ft x 24ft, generally a 3:1 ratio is optimal.</p> <p>Stand alone or attached to an existing house or accessory building.</p> <p>Foundation required. Steel or wood framing.</p> <p>Venting, irrigation, heating, fan.</p> | <p>Provides opportunity to supplement and provide fresh food crops – extending the growing season (or starts to ensure harvest in a short growing season)</p> | <p>Sited for maximum light (typically south facing).</p> <p>Screens for shade are ideal to protect the structure and plants inside from becoming too hot during peak summer temperatures.</p> <p>Green houses that are located on impermeable surfaces may need to consider a drainage system</p> |



| URBAN AGRICULTURE TYPE | REQUIREMENTS | ESTIMATED OUTPUT | DESIGN CONSIDERATIONS |
|---|--|--|--|
| | | | <p>during construction.</p> <p>Snow loads and roof slope.</p> <p>Glazing options with better insulation (rigid polycarbonate panels or plastic).</p> |
| <p>Farm Gate Stands</p>  | <p>Maximum floor area of 9m²</p> <p>No artificial lighting. Typically constructed from wood. Located at the driveway or lot entrance.</p> | <p>Uptake dependent on interest/ market.</p> | <p>Vehicle trips per day generated by stands.</p> <p>Number of days permitted within calendar year (seasonal).</p> <p>Sightlines from driveways.</p> <p>Signage required.</p> |
| <p>Home compost systems / soil production</p>  | <p>Typical footprint—4ft x 4ft as compost piles or manufactured bins. Indoor worm bins.</p> | <p>Supplement soil. Long term building of soil for home garden use and reduction of organic waste produced/ collected City-wide.</p> | <p>Education (Building Your Soil Guide, Ecology North, 2017)</p> <p>Testing (arsenic).</p> <p>Sourcing materials for compost.</p> <p>Smell and attracting animals or pests in residential areas.</p> |
| <p>Container gardening</p> | <p>Variable container sizes.</p> <p>Light weight soil mix.</p> | <p>Supplementary /specialty crops (fresh herbs, annuals)</p> | <p>Loading capacity if placed on balconies and rooftops.</p> |

| URBAN AGRICULTURE TYPE | REQUIREMENTS | ESTIMATED OUTPUT | DESIGN CONSIDERATIONS |
|---|----------------------|------------------|--|
|  | Irrigation required. | | Southern exposure. Screening for wind exposure. Irrigation needs and soil composition. |


Community Use – Municipal owned land, parks, schools, natural areas, streets and plazas


| | | | |
|---|--|--|---|
| <p>Local community gardens, regional allotment gardens or incubator farms (training and education)</p>  | <p>Vary in total size based on land availability. Minimum plot size of 4' x 8'</p> | <p>Similar to home/backyard garden.</p> | <p>Services (water access, compost) Accessory buildings (e.g. toolshed, picnic area) Accessibility, multi-use spaces.</p> |
| <p>School gardens</p>  | <p>Variable dependent on land available. Raised beds, containers, greenhouse.</p> | <p>Demonstration garden, learning opportunities.</p> | <p>Siting, soil, irrigation, stewardship throughout summer months.</p> |
| <p>Community greenhouse</p> | <p>Variable size. For example 4,000-10,000 sq.ft.</p> | <p>10 to 20 times more production</p> | <p>Land, capital investment, siting, lighting,</p> |




| URBAN AGRICULTURE TYPE | REQUIREMENTS | ESTIMATED OUTPUT | DESIGN CONSIDERATIONS |
|---|--|--|--|
|  | <p>Annual estimated cost of \$5,500-6,000 to operate and maintain.</p> <p>Polyethylene covered greenhouse.</p> <p>Self-funds through membership and plot rental.</p> | <p>than in the same area of field grown crops.</p> <p>Primary greenhouse crops: cucumbers, peppers, lettuce and tomatoes</p> | <p>energy system, soil, access, parking/ loading, management/ stewardship.</p> |
| <p>Indoor /outdoor farmers market</p>  | <p>Scale- 10,000sq.ft. vacant lot, public plaza, park, parking lot, building, purpose built</p> | <p>Extend market season and availability of products or value added items.</p> | <p>Outdoor market - washrooms, power, parking/loading, lighting, waste facilities, places for eating (moveable chairs, tables, lawn areas, etc.)</p> |
| <p>Community or Collective kitchens</p>  | <p>Variable. Located in community centres, neighbourhood houses, or other institutions.</p> <p>Health authority requirements.</p> | <p>Food skills, education, meal provision, food rescue, social ventures and small business, celebration and gathering.</p> | <p>Size, rentals, loading, accessory areas (dining, storage, etc.), accessibility, ventilation, management.</p> |




| URBAN AGRICULTURE TYPE | REQUIREMENTS | ESTIMATED OUTPUT | DESIGN CONSIDERATIONS |
|---|--|---|--|
| <p>Planters, hanging baskets, container gardens, arbors</p>  | <p>Variable size, scale and materials.</p> <p>Suitable for streets, plazas, patios, parks.</p> | <p>Minimal output, decorative and celebratory.</p> | <p>Movable, seasonal planters, integrate with seating or public art.</p> |
| <p>Edible landscaping, berry shrubs and public cutting gardens (herbs and flowers)</p>  | <p>Variable size (containers, hanging baskets, border planting, formal gardens, food forest hedgerows, etc.)</p> | <p>Variable. Depending on size and maintenance.</p> | <p>Access, irrigation, safety, potential for contaminants.</p> |

Commercial Use – Buildings and Vacant Lots

| | | | |
|---|--|--|---|
| <p>Urban Farming or multiple backyard farming</p>  | <p>Variable. Vehicle and portable gear. Access to servicing (water) at farm sites.</p> | <p>Proven sufficient to develop and small business in some municipalities.</p> | <p>Siting and location of farm sites for production, market, contracts,</p> |
|---|--|--|---|

| URBAN AGRICULTURE TYPE | REQUIREMENTS | ESTIMATED OUTPUT | DESIGN CONSIDERATIONS |
|---|---|---|--|
| <p>Intensive rooftop farms and/or rooftop raised beds</p>  <p><small>Rooftop Food Garden YWCA Vancouver, BC Photo: © Michael Levenston www.cityfarmer.info</small></p> | <p>Variable size, servicing required.</p> <p>Ability to withstand structural loads (both soil 25 - 100cm depth and people).</p> <p>Access (by stairs or more commonly by elevator, plus method for getting soil and equipment in place)</p> <p>Safety railings and fall protection</p> <p>Greater protection for roof membrane (from digging tools)</p> | <p>Variable. Dependent on size.</p> | <p>mobility and venue for sales.</p> <p>Siting for optimal growing condition (aspect, exposure).</p> <p>Parking, loading, access.</p> <p>Growing medium, snow protection, accessory buildings (for storage, etc.)</p> <p>Wind protection (to protect fragile food plants from the elements).</p> |
| <p>Livestock (local dairy/meat) and apiculture</p> | <p>Potential - Chickens, Rabbit, Goats, Sheep</p> | <p>Dependent on scale of operation.</p> | <p>Land use adjacency, animal welfare and needs, health and processing facilities.</p> |

| URBAN AGRICULTURE TYPE | REQUIREMENTS | ESTIMATED OUTPUT | DESIGN CONSIDERATIONS |
|--|--|--|---|
|  | | | |
| <p>Commercial or Co-operative Greenhouse with standard growing or hydroponics</p>  | <p>Suitable for vacant lots and sites.</p> <p>Typical crops - tomatoes, peppers, cucumbers, lettuce.</p> | <p>Output depending on the crop.</p> | <p>Land cost, lighting, growing and energy systems, climate control, irrigation, IPM.</p> |
| <p>Aquaculture or aquaponics</p>  | <p>Servicing – power, connection to wastewater systems.</p> | <p>Dependent on scale of operation.</p> | <p>Noise, light, truck access,</p> |
| <p>Foraging, Hunting, Wild Crafting</p> | <p>Fireweed, Bear Root Juniper berries Spruce tips, Labrador tea Wild Sage, Stinging Nettle, Yarrow</p> | <p>Dependent on type and scale of operation.</p> | <p>Responsible harvesting, education (identification and plant use), regulation.</p> |

| URBAN AGRICULTURE TYPE | REQUIREMENTS | ESTIMATED OUTPUT | DESIGN CONSIDERATIONS |
|--|--|---|--|
|  | <p>Dandelion, Chickweed, Wild Rose Petals Mushrooms, Chaga Willow, Catkins</p> | | |
| <p>Processing, storage & distribution centres</p>  | <p>Requires servicing.</p> <p>Long term centralized facility.</p> <p>Large scale cold storage should be no less than 4,000 sq ft. Commercial kitchen / processing facilities should be no less than 1,000 sq ft freezer space.</p> | <p>Supporting infrastructure to food and agricultural business.</p> | <p>Access, parking and loading.</p> |
| <p>Food trucks, food carts, patios, cafes, restaurants</p>  | <p>Varying size. Site adjacent to parks, within parks, plazas, streets, allow for seasonal parklets.</p> | <p>Current ___% of economy.</p> | <p>Cluster into districts or nodes, adjacent to public spaces and accessible to transit, parking or walkable (central business district, along greenways, waterfronts, etc.)</p> |

| URBAN AGRICULTURE TYPE | REQUIREMENTS | ESTIMATED OUTPUT | DESIGN CONSIDERATIONS |
|------------------------|--------------|------------------|---|
| | | | <p>Serve day and evening.</p> <p>Outdoor patio elements for winter months (heated outdoor enclosed areas for seating, blankets, etc.)</p> |