Madison James

What improvements would you recommend to make the proposed community development project more beneficial to residents, local businesses, and visitors while minimizing its potential negative impacts?
I am requesting that the agency carefully evaluate the potential air quality impacts of the proposed project before approving the air permit. The review should include emissions expected during normal operations, equipment startup and shutdown, and periods of increased production. The facility should demonstrate that its pollution control systems can effectively reduce emissions and meet all applicable regulatory requirements. I also encourage the agency to consider the potential impact on schools, homes, and other sensitive locations near the facility. Regular inspections, accurate emissions reporting, and timely corrective actions should be included as permit conditions. Community members should have access to monitoring data and updates regarding any compliance issues identified after the facility begins operating.

Which aspects of the proposed community project are most important to you? Select all the areas that you believe should receive careful consideration during project planning and implementation.
Environmental protection
Traffic and transportation
Community engagement
Other (please specify)
Other option

How would you describe your overall level of support for the proposed community project, considering its expected benefits, potential environmental impacts, and effects on nearby residents?
Other (please specify)
not sure

To what extent do you believe the information currently available about the proposed project is sufficient for residents to understand its objectives, anticipated benefits, and possible long-term consequences?
100- completely sufficient

Please indicate how important each of the following considerations should be when evaluating the proposed project, determining appropriate safeguards, and deciding which improvements should be implemented before the project proceeds.
Protection of local wildlife: Important
Reduction of traffic congestion: Important
Control of noise and dust: Important
Protection of water resources: Important
Transparency in decision-making: Important

Please rank the following potential project outcomes according to how important they are to you, with the highest-priority outcome ranked first and the lowest-priority outcome ranked last.
1. Addressing residents' concerns
2. Creating economic opportunities
3. Ensuring long-term sustainability
4. Improving local infrastructure
5. Maintaining public health and safety
6. Protecting the natural environment

How frequently would you prefer to receive project updates so that you can remain informed about construction progress, regulatory decisions, upcoming meetings, and changes that may affect the surrounding community?
weekly

City Plan

City of BRANDON

May 2024

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Land Acknowledgment

The City of Brandon is located on Treaty 2 land, home of the Anishinaabe, Cree, and Dene Peoples, the unceded territory of the Dakota, and the homelands of the Red River Métis.

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Introduction

Part 1

Purpose

This is Brandon's first City Plan - a unique and exciting moment in our history to reflect on who we are and set a course for who we want to be as a city and a regional service hub, over the next 30 years. The City Plan strives to reflect the diversity of voices in Brandon and encourages us to continually reflect on where we are, where we are going, and how we are going to get there. This plan is achievable when our community comes together to collaborate, celebrate, and care for one another to ensure we are a growing, moving, and healthy prairie city for all.

The City of Brandon, like other cities across Canada, is continually evolving, growing, and adapting. The next 30 years requires a plan to meet these changes head on. Planning for our future includes making sure we take care of all the elements that make up our city - our infrastructure, services, amenities, housing, and our people. This will require us to be empathetic, innovative, fiscally responsible, and flexible, as we prudently address today's challenges and think boldly about our future.

It will take the determination and cooperation of City leadership, administration, community partners, and residents to ensure we are achieving our goals. This involves City Council and Administration making decisions, either independently or through collaboration with community partners, to affect growth and change. A long-term policy direction is therefore necessary for the City to manage, coordinate, and guide Brandon's physical, environmental, economic, social, and cultural development.

Governing Structure

The City of Brandon Development Plan ("City Plan") is a summary of the City's vision, goals, and policies, prepared in accordance with the provisions of *The Planning Act* (C.C.S.M. c. P80) and the *Provincial Planning Regulation* (MR 81/2011). The City of Brandon has relied on the *Brandon and Area Planning District Development Plan,* the regional plan for Brandon and surrounding municipalities since 2013 to guide growth and change. With the dissolution of the Planning District in 2020, the City has the opportunity to develop an entirely new City Plan tailored to our unique needs and circumstances.

Development Plans are high-level plans that present the long-term vision for the community. They provide a framework consisting of strategic directions, objectives, and policies that help the community achieve its goals and realize the vision for the City. Development Plans address challenges such as housing, transportation, economic development, infrastructure, and natural and social environments. The City Plan is supported by secondary plans that provide additional policy direction for areas undergoing increased levels of growth and change. Municipalities are required to develop and regularly update their Development Plans under the Provincial *Planning Act*. The City will review the City Plan every ten years to ensure it remains on track and relevant.

Implementation of the City Plan occurs through master plans, strategies and frameworks supported by capital planning to implement the overall policy direction set forth in the City Plan and secondary plans. These master plans include servicing, movement, recreation, greenspace and much more. Alignment of implementation strategies with the overall policy direction in the City Plan and secondary plans is key to ensure the community is moving towards achieving its policy vision. The Council Strategic Plan is shorter in duration (four years) and establishes priorities that align with the term of Council.

The figure to the right identifies the planning hierarchy and how the City Plan relates to other planning and implementation within this hierarchy.

How to Read This Document

The City Plan is divided into four main sections:

- ***Our Story -*** Who we are as a city today and the process taken to develop the City Plan.
- ***Our Vision -*** Who we want to be in the next 30 years.
- ***Our City -*** How we will achieve our vision by being a Healthy, Moving and Growing City.
- ***Urban Structure -*** The physical elements of our city, how they work together, and guidance for how to adapt and change to support our vision.

The key elements of this document include:

Goal Areas

The pillars of the plan that serve as a foundation on which to build specific policy direction.

Objectives

The strategic directions to achieve the goal area.

Policies

The individual actions that can be taken to achieve the strategic direction and overall goal area.

Urban Structure Areas

Strategic Intent

The strategic direction for how the area is intended to function.

Policies

The individual actions that can be taken to achieve the strategic direction and overall intent of the Area.

BRANDO
st End
MUNITY CENTRE

Our Story

Part 2

The City of Brandon is located on Treaty 2 land, the unceded territory of the Dakota, and the homelands of the Red River Métis Nation.

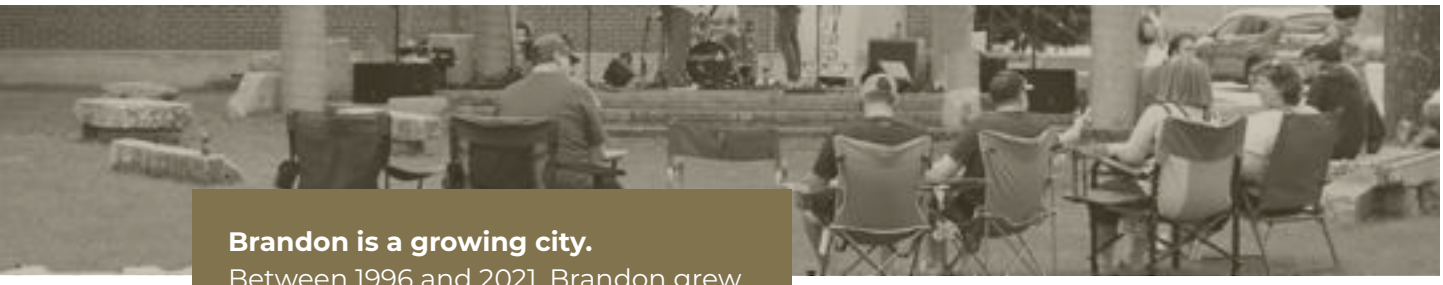
Prior to settlement, the area around Brandon was a frequent bison hunting ground and settlement area used by the Sioux, Bungay, Yellow Quills, and Bird Tails peoples. The area was a network for Indigenous trading, which was challenged by the influx of Voyageurs and settlers into what we know today as Western Canada.

In the 1880's, the Grand Valley area (on the west side of the Assiniboine River from where Brandon now sits) was established in anticipation of being a likely route for the transcontinental railway. In May of 1881, Brandon was chosen as a railway division point for the Canadian Pacific Railway and townsite, and within a year (May 30, 1882), the City of Brandon was incorporated thanks to rapid settlement after construction of the railway. Its initial population was 700, but the city grew rapidly. By 1891, Brandon boasted nearly 4,000 citizens, and by 1906 it had surpassed 10,000 people.

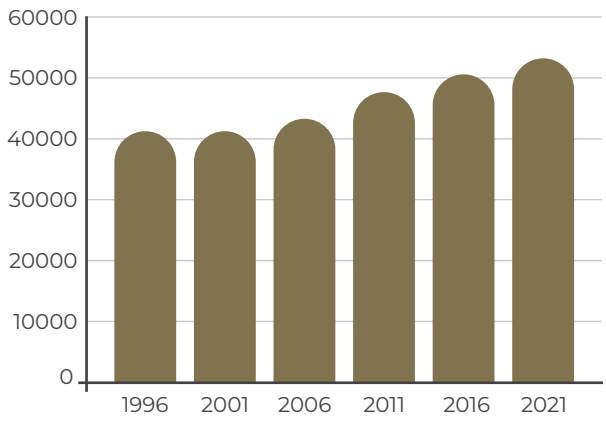
Today, the City of Brandon is Manitoba's second largest city and is a community of over 51,000 people, located in Western Manitoba along the Assiniboine River. Brandon is a unique and welcoming community having the services, amenities, education, and employment opportunities of a metropolitan city, with the benefit of a quieter, small-town feel. The city is a regional service centre for over 190,000 people in an area commonly known as Westman (Southwestern Manitoba).

Community Profile

Population



Brandon is a growing city.
Between 1996 and 2021, Brandon grew by 33% or almost 13,000 residents.



Population Change, City of Brandon Growth Strategy, 1996-2021

36.8 years old

is the **average age** of residents in the community in 2021, and has stayed relatively stable since 2001.

Brandon is an increasingly diverse community.

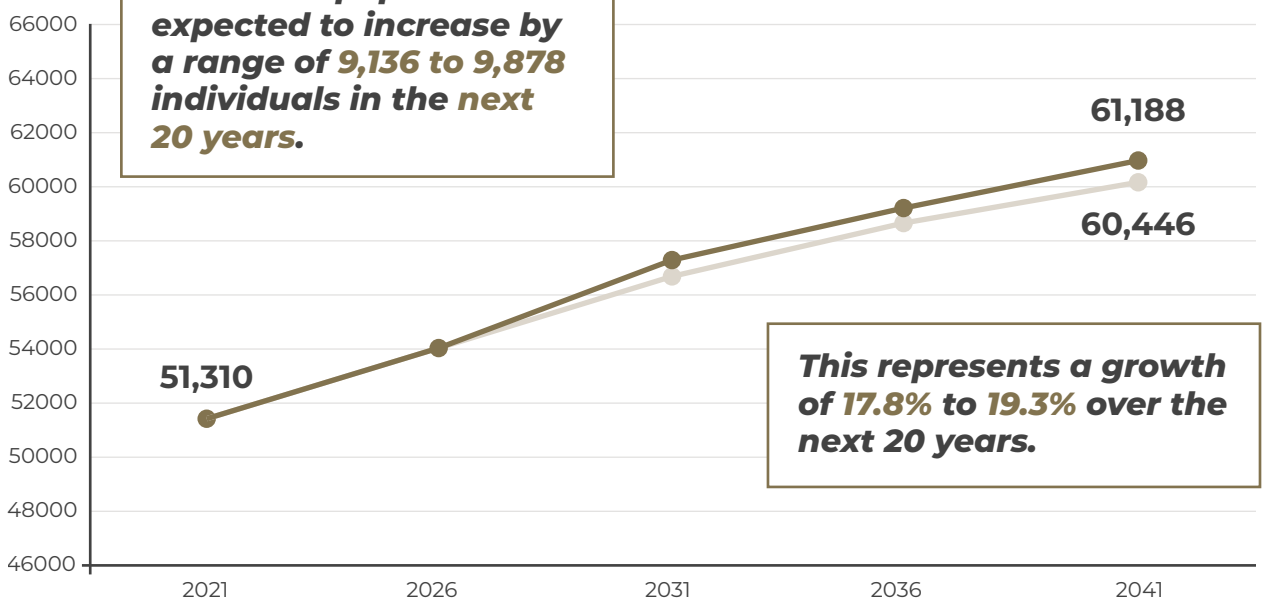
14%

of Brandon's population identify as Indigenous, the majority being First Nations or Red River Métis.

23%

of residents are immigrants.

Brandon's population is expected to increase by a range of 9,136 to 9,878 individuals in the next 20 years.

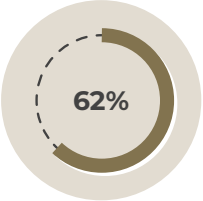


This represents a growth of 17.8% to 19.3% over the next 20 years.

Population Projections, Adapted from Brandon's Market Analysis & Development Forecast, 2022

Income and Labour

$97,000
Average household income in the community.



of households made over **$60,000** in 2021.

In 2021, the unemployment rate was 4.7%.

Most common labour force **occupations**

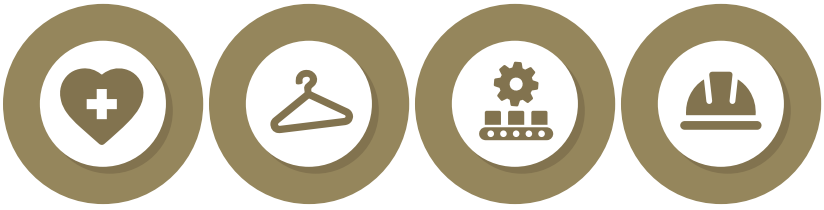
Sales & Service

Trades & Transport

Education

Law & Government

Most common labour force **industries**



Health Care

Retail

Manufacturing

Construction

By the end of 2021, over 83% of the population had completed a level of education of high school or above.

Housing Costs

The median value of dwellings in 2021 was $290,000, increasing by nearly $30,000 between 2016 and 2021.

Median rental rates increased by **15%** ($808 to $950) in 2021.

Since 2006, average home prices at the point of sale have increased by **107%**.

Community Housing

16% of all renters are currently in subsidized housing.

There are approximately

60
emergency shelter beds

2,201
transitional housing units provided by organizations outside of Manitoba Housing

In 2023, there were 417 safe and warm shelter users.

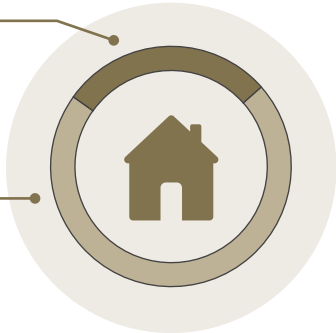
Housing Construction

Since 2001, there have been **5,355 new dwelling units** constructed.

Of those dwelling units:

20%
detached dwellings

80%
other forms (e.g. apartment, row house, duplex)



Housing Needs

Single-unit dwellings are projected to account for 26% of all new units over the next ten years.

70+ People
experiencing homelessness require emergency shelter space for support

Additional transitional housing units are necessary to stabilize people living in emergency situations and the 863 clients receiving homeless related services.

Based on growth projections, an additional

300+ renters

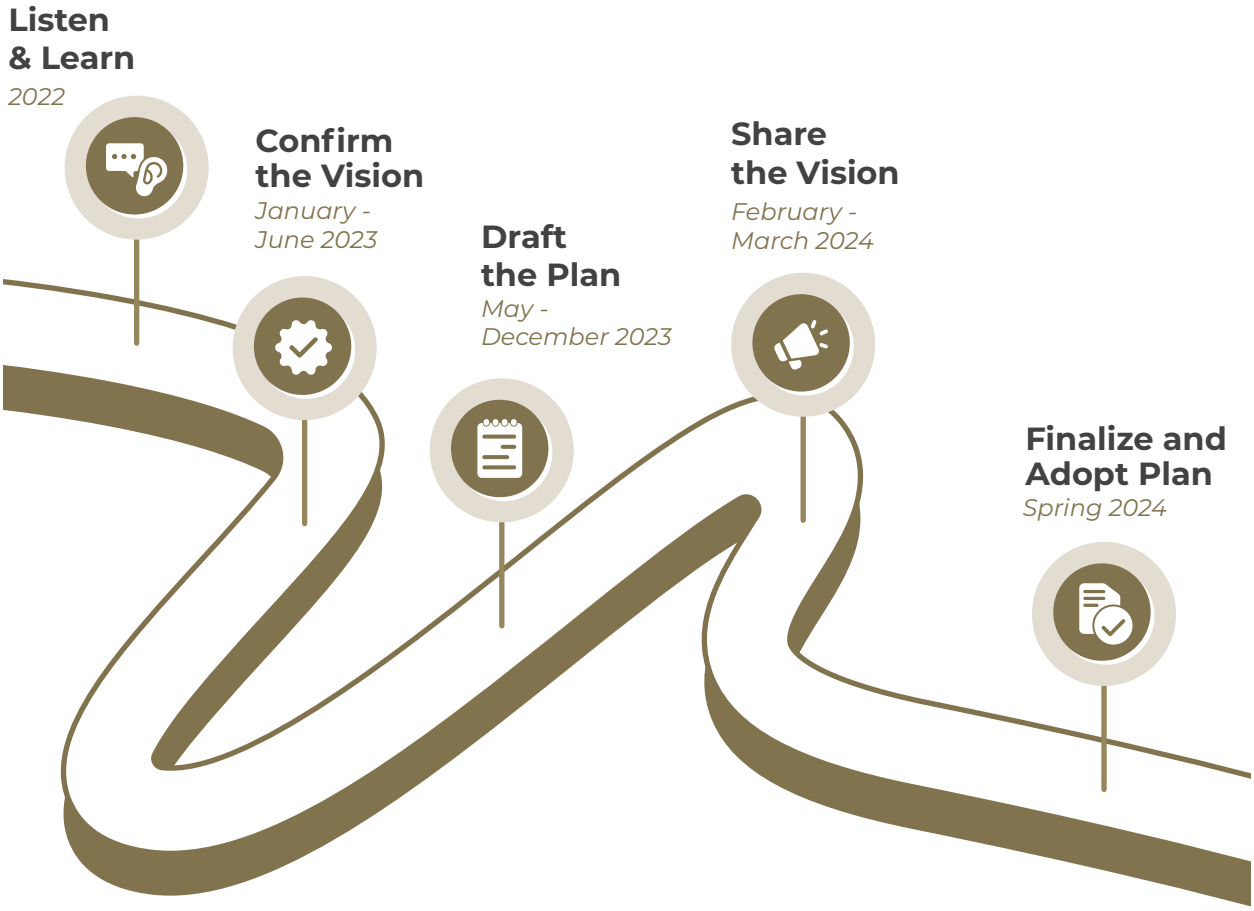
60+ owners

will be in core housing need **by 2041**

Housing Projections Adapted from Brandon's Housing Needs Report, 2023

The Process

The City Plan is a product of collaboration among residents, community partners, administration, and elected officials. To ensure that a diversity of voices were heard, a variety of public engagement techniques were used with over 10,000 project page views, over 21,000 visited social media platforms and over 80+ community meetings. The community engagement process was conducted in the following phases:



Listen & Learn

The project started with some Initial Community Engagement (February – June 2022) that was conducted through surveys, meetings, an open house event, social media, community meetings and other platforms to initiate the discussion about the vision for the city. This was followed by Community group engagement sessions (September – December 2022) in which the City reached out to several groups and released an invitation for interested parties to meet and discuss the future of Brandon.

Confirm the Vision

The feedback gathered was summarized and shared with the public through Mobile Open House (January – April 2023), Public Meetings and Community Workshops (May – June 2023), and made available online for other viewers.

Draft the Plan

Several months were spent compiling feedback, meeting with internal departments and drafting the plan.

Share the Vision

Once the draft plan was ready, it was shared with the public for confirmation before the formal adoption process.

Finalize & Adopt Plan

Following Public Hearing, the City Plan received Ministerial approval and was adopted by Council on [insert date].

Read more in Appendix B: Public Engagement Report

The community engagement involved engaging with various community groups with initial conversations focusing on high-level vision statements and desires for the city with workshops designed to gain understanding of the implications of policies. To ensure as many residents as possible participated in the project, various engagement methods were used, including surveys, open house events, workshops, a kitchen table conversations toolkit, a project website, stakeholder sessions, information at high traffic areas in the city, social media notifications, a photo contest, advertisements in the local papers and on the radio, emails, and phone conversations.

As well, the City held various community group meetings to understand existing challenges and opportunities. There was specific effort into engaging historically underrepresented groups such as youth, immigrants, seniors, people of color, and other marginalized groups.

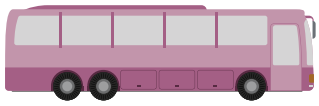
Our Vision

Part 3

The City Plan is the guiding document and the most important tool to help us realize our vision. Each strategic direction, objective, and policy recommendation in the City Plan represents an intentional choice about where we want to see Brandon in the next 30 years and how we will get there. The vision was formed in collaboration with the community, Council, and administration, and shows what we want to achieve.

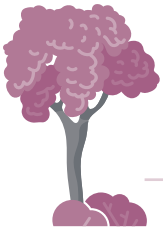
We are growing

The city continues to experience a steady growth of about 1% every year. Some of the considerations that come with city growth are neighbourhood planning and design, infrastructure efficiency, economic diversity, and waste management and diversion. We need to plan neighbourhoods that support a variety of housing types, households, incomes, and lifestyles, paired with community services and amenities that are easy to access. With growth comes increased economic opportunities for all residents. Brandon will need to promote and accommodate additional industry, institutional, and innovation uses to support a strong local and regional business ecosystem.



We care about how we move through our city

With a growing and increasingly diverse community we need to plan and build our city with transportation options that allow people of all walks of life to move within our community in a fast, safe and efficient manner. This means increasing movement options for all modes, including vehicles, bicycles, transit, and walking as we shift from a primarily single choice (private vehicle city) to a multiple choice (prioritizing all modes of transportation) community. Transitioning to a multiple-choice network will enable us to create a more equitable, safe, healthy, and sustainable community to live in.



We care about the health and vitality of Brandon

This means providing access to health and wellbeing infrastructure and programming, and ensuring safety and community supports for all residents. Environmental resilience is critical for how we build and manage our infrastructure, protect our greenspaces and water, and manage our impact on our air and land.

We care about the services we provide

Our infrastructure and staff deliver services that support the needs of all residents. This includes but is not limited to water and sewer treatment plants and pipes, roads, sidewalks, stormwater management, parks, recreation centres, police, fire, and transit. As a growing city, aging infrastructure and increased climate events put additional strain on our infrastructure, there is an additional risk to service reliability and safety. We need to manage our growth in a way that ensures we can meet and sustain the expectations of all residents and provide cost-effective and equitable service to everyone.

We care about one another

We want to celebrate our diversity and ensure a community of social and physical inclusion, where equity thrives regardless of ability, income, ethnicity, religion, sexual orientation, gender, or age.

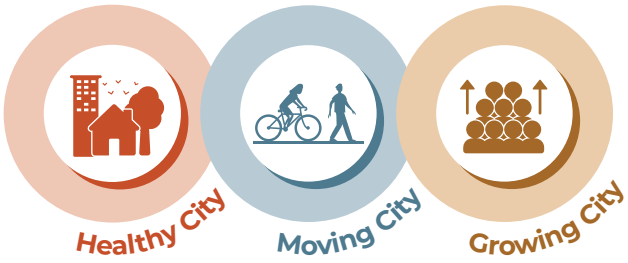
We must continue to build and strengthen relationships with Indigenous Peoples and support long-term, ongoing community healing and support efforts.

This means honouring the findings of the Truth and Reconciliation Commission *Calls to Action*, the United Nations *Declaration on the Rights of Indigenous Peoples*, and the *National Inquiry into Missing and Murdered Indigenous Women and Girls' Calls for Justice*.

We care about transparency and accountability

We strive to build trust with residents and ensure they are appropriately included in significant decision-making opportunities. This includes ongoing community engagement to bring clarity to the City's plans and policies through clear and accessible communication, information sharing, and feedback opportunities.

The following policies and directives set out how Brandon plans to grow, move and be healthy.



Jumpstart
Bon départ

Healthy City

Part 4

Credit: Sandy Black

The wellbeing and vitality of Brandon is rooted in a community where we look after one another, where we care for our land, air and water, where we find opportunities for our economy to thrive, and where we continue to strengthen our relationships through reconciliation.

- When challenges arise, we address them head on through strong collaboration. We work together to navigate pressing issues like the housing crisis, climate change, social isolation, social equity, health conditions, and addiction.
- We cherish our community spaces and places that support our quality of life and social connections, and we ensure we remain a livable community for generations to come.
- We are the economic heart of the region and the urban centre of Westman. We are rooted in a history of agriculture and innovation, bolstered by our access to rail, highways and an airport.
- We celebrate our history and our diversity and continue to work in meaningful partnership with the people who have stewarded our land for generations.

To do this, we must serve the needs of all residents by prioritizing the ***social, environmental, and economic*** health of the city.

The following policies and directives set out how Brandon will be a Healthy City.

4.1 Social

Social 1

Provide housing choices for all residents that is safe, suitable, and accessible

a. Encourage the provision of adequate housing mix with varying styles, sizes and densities, to meet the social, health, and economic well-being requirements of current and future residents of different income, age, and abilities across the housing continuum.

b. Update the Affordable Housing Strategy to continue to plan for and support the establishment of housing types and tenures at all levels of the housing continuum to meet community needs.

c. Ensure the provision of affordable and transitional housing near necessary services such as transit, active transportation, community amenities, and recreation.

d. Promote and pilot innovative solutions for the provision of affordable and transitional housing, such as land assembly, parking requirement reductions, density bonusing, and fast-tracking of vacant building development.

e. Recognize that while senior governments play the primary role in fostering, funding, and delivering affordable housing, the City may provide support through promoting technical assistance, supportive regulations, partnerships, community consultation, and project facilitation.

f. Explore partnership opportunities between the City, senior-level governments, housing providers and agencies, private developers, Indigenous communities, as well as community groups, to provide innovative affordable housing options.

The Housing Continuum

Social 2

Ensure all zoning and design regulations enable housing choices

a. Ensure inclusionary zoning in all neighbourhoods.

b. Promote the establishment of affordable housing units and universally accessible housing units be included as part of new multi-unit developments.

c. Promote age-friendly and universally accessible design that responds to the needs of older individuals, seniors aging in place, and people with disabilities, such as detached secondary suites or laneway housing.

d. Encourage age-friendly housing development within walkable and transit-accessible communities.

Social 3

Support community initiatives to address health, wellness and safety

a. Honour the lived experience and contributions to community life of all people, and encourage a local culture of inclusion, listening, and respect.

b. Support the development of programs that address mental health challenges in collaboration with the Province and local not-for-profit organizations.

c. Support efforts to achieve well-being in all dimensions of health, including physical activity and mental and emotional wellness.

d. Support access to potable water, public washrooms, and other essential services in public spaces.

e. Encourage food security in all areas of the city, with particular emphasis on lower income areas and those areas with higher proportions of less than market housing.

social 4

Ensure meaningful equity and reconciliation through relationships and partnerships with Indigenous communities

a. Acknowledge that Brandon is located on Treaty 2 land, the unceded territory of the Dakota, and the homelands of the Red River Métis.

b. Commit to ongoing respectful government-to-government relationships with local Indigenous communities that nurtures trust and resiliency.

c. Develop and deliver cultural competency training opportunities for City staff focused on the history of Indigenous peoples.

d. Explore economic and housing partnerships with all Indigenous peoples.

e. Identify opportunities to conserve, revitalize, and honour Indigenous culture and heritage under the guidance of community Elders or Knowledge Keepers.

f. Participate in efforts to address violence against Indigenous women and girls, and all gender-based violence.

g. Develop opportunities for public education and storytelling on Indigenous peoples, culture and history.

h. Address equity in delivery of programs, policy, processes, and services.

Social 5

Ensure programming, resources, and spaces are accessible and inclusive for all

a. Continue to respond to the varied cultural wants of Brandon's diverse population through programming, services, and facilities, and collaboration with community organizations servicing various cultural groups.

b. Establish equitable and universal access to community facilities, events, and resources.

Social 6

Build trust within the community through meaningful public engagement and civic processes

a. Provide the public the opportunity to engage on change processes that impact them including land use, capital, process changes, and financial impacts.

b. Adopt a public engagement policy to provide clarity on when and how public engagement processes occur.

c. Promote equity and provide opportunities for all members of the public to participate in public engagement processes.

d. Encourage relationships with community organizations to explore partnership opportunities to achieve the vision of this City Plan and inform the public on change processes.

Social 7

Embrace, encourage, and promote a vibrant and diverse arts and culture scene

a. Promote place-making efforts that incorporate local art, culture, and heritage.

b. Partner with community groups and other levels of government to provide increased opportunities for tourism and fostering a strong sense of community including encouraging festivals, cultural programming, events, arts facilities, and promoting areas of historical interest.

c. Review, update and implement the Culture Plan.

d. Encourage winter social activities through arts, recreation, events, and urban design.

Social 8

Evaluate, conserve, and protect Brandon's historic places and cultural resources

a. Support the ongoing efforts of heritage conservation through municipal heritage by-laws and programs.

b. Where areas known or suspected to be of archaeological or intangible cultural heritage significance are proposed to be developed or altered, arrangements will be made by the development proponent for the preservation or recovery of significant information and artifacts in accordance with the provisions of the *Manitoba Heritage Resources Act* and in collaboration with the Province.

c. Encourage the appropriate rehabilitation and restoration of structures with cultural or heritage significance, including public art, sympathetic to the characteristics of the original construction.

d. Protect or buffer heritage resources from incompatible development or land uses that may threaten their integrity or operation. In accordance with the provisions of the Manitoba Heritage Resources Act and in collaboration with the Province.

4.2 Environmental

Environmental 1

Support climate change mitigation and adaptation by reducing greenhouse gas emissions and preparing for projected changes

a. Support the implementation of the Climate Change Action Plan and the seven "Big Moves" outlined in the Plan:

   i. Become a carbon free corporation.
   ii. Transition to renewable energy.
   iii. Rethink transportation.
   iv. Build resilient infrastructure.
   v. Conserve and protect nature.
   vi. Prepare for emergencies.
   vii. Consume and produce sustainably.

Environmental 2

Protect Brandon's natural environment, including air, water, and sensitive ecosystems

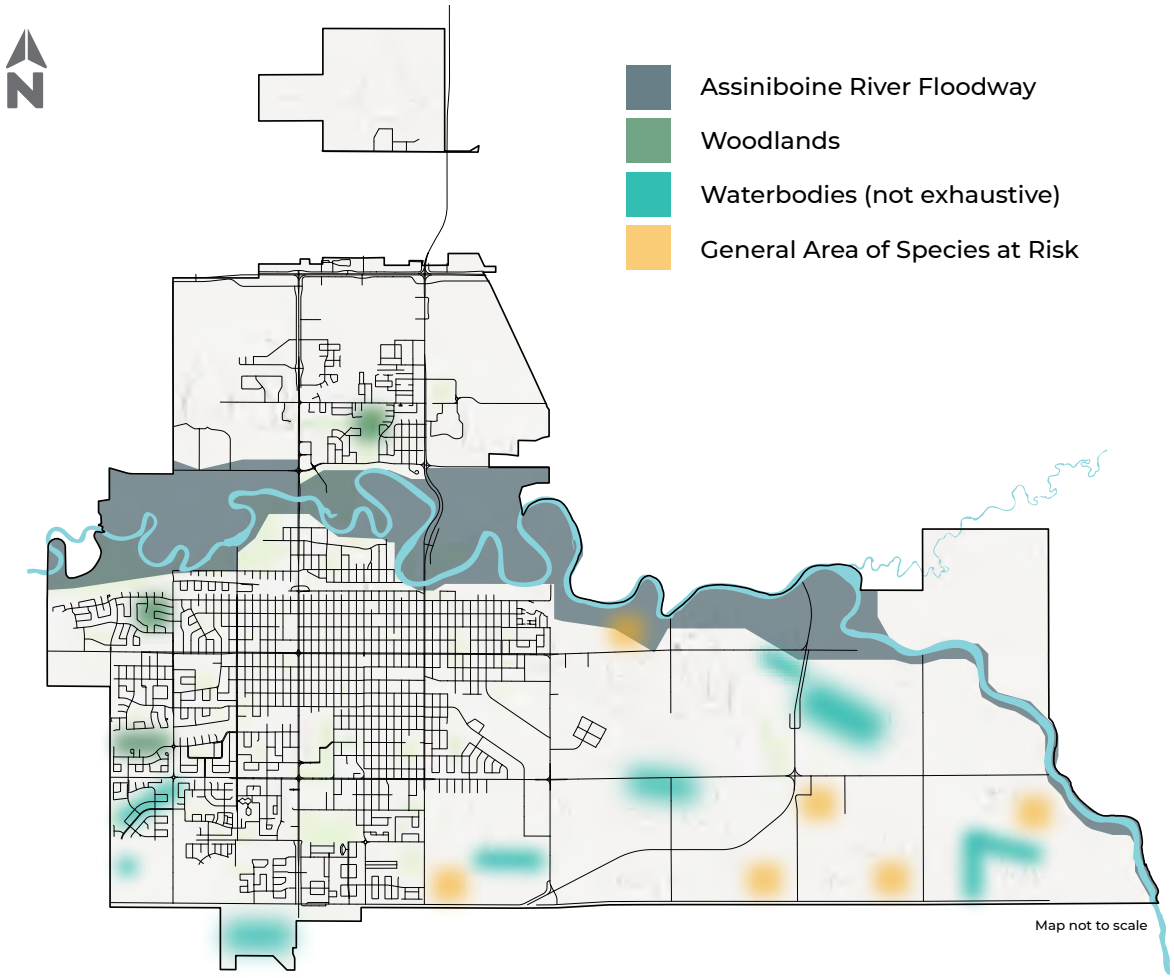
a. Under direction of provincial authorities, ensure development in ecologically sensitive areas such as shorelines of the Assiniboine River, wetlands, and habitats of species at risk (Map 1) does not create increased environmental risks and occurs in a manner that complements and is not detrimental to natural features of these areas.
b. Encourage the retention and protection of ecologically sensitive lands in accordance with Federal and Provincial protection acts.
c. Encourage development that works with existing topography and natural assets, and reflects environmental standards, low impact, low energy and water consumption, and construction waste.

d. Promote the provision and maintenance of a healthy urban forest and safeguard existing woodlots, mature trees, and other ecological features during development, as per the *Tree Protection By-law*.

e. Encourage the maintenance of surface-retaining vegetation cover along the river and discourage activities that could lead to bank instability or erosion, such as excavation, land clearing, cultivation, or excessive grazing.

f. Consider dedicating ecologically sensitive areas in proposed subdivisions or developments as undevelopable public reserve lands, as per *The Planning Act*.

g. Direct development that emits smoke, dust, harmful vapours, or other airborne particles to appropriate locations.



Map 1. Sensitive Areas

Environmental 3

Promote collaborative environmental regulation and protection

a. Work with applicable Federal or Provincial Authority having jurisdiction to ensure development has necessary environmental licenses, where applicable, or does not occur on sites considered too hazardous, natural or artificial, for development, or if there is development proposed along or near the Assiniboine River or a railway.

b. Where environmental assessments or licensing apply, the City will work with the Federal or Provincial Authority having jurisdiction and developers to ensure the proposed development may occur without compromising the environment or the health and well-being of citizens of the city and the surrounding region in accordance with *The Environment Act* and other applicable legislation and their associated regulations.

c. Work with neighbouring municipalities and organizations that cross municipal jurisdictions to protect habitat areas, sensitive areas, and water and stormwater resources.

Environmental 4

Protect valuable water and stormwater resources

a. Strive to protect ground and surface water.

b. Where developments may contaminate waterways or groundwater sources, require proponents to engage appropriate experts and applicable provincial authorities and, when deemed necessary, to take measures to prevent water contamination.

c. Protect watershed health and levels through efficient and maintained stormwater management and surface drainage design.

d. Promote water conservation through educational programs, incentives, and regulations.

e. Promote green alternatives to sod/lawns in yards, such as trees, gardens, or planting of native grasses/species (e.g. plants typically found in Prairie.)

f. Coordinate with the relevant Provincial Authority to plan around existing natural wetlands, especially in existing urban areas.

4.3 Economic

Economic 1

Demonstrate and prioritize fiscal sustainability and responsibility

a. Ensure that the City can fund existing and future service commitments by developing and periodically updating an asset management plan for long-term approach to funding capital investments as growth occurs.

b. Work with senior-level governments to identify sources of funding for infrastructure and other community needs.

c. Identify desired service levels and conduct ongoing service level reviews to ensure the effectiveness and efficiency of all City services.

Economic 2

Cultivate a thriving economy that is developed sustainably and equitably, improving resident quality of life

a. Update the Economic Development Strategy every five years to support, diversify, and encourage economic growth in the city.

b. Welcome and facilitate the creation of First Nations Development Areas in and adjacent to the city through support of the Additions to Reserve process and Municipal Development and Service Agreements.

c. Recognize the role that public amenities, programs and services have in supporting economic development

d. Engage and collaborate with local organizations, Indigenous communities, and regional municipalities to provide economic opportunities of joint interest, cohesive strategic planning, and regional development.

e. Continue to pursue opportunities to welcome and support newcomers in collaboration with community organizations.

f. Promote tourism opportunities and partnerships with community and industry groups.

Credit: Sandy Black

Economic 3

Prioritize economic development in key employment areas

a. Promote economic development in the region through expanding the unique advantages of Brandon's Employment Areas.

b. Maximize use of existing infrastructure and servicing to prioritize economic development within infill and brownfield lots.

c. Encourage the redevelopment of vacant or underutilized properties to support increased commercial, residential, and mixed-use development.

d. Develop and integrate technologies to support efficient use of infrastructure, and community access to information.

e. Promote Downtown as a primary location for economic activity and prioritize local and regional investment to advance its status as an economic driver for the City.

Economic 4

Provide opportunities for local business to grow and thrive

a. Consider provision of programs, tools, information, and incentives to support local entrepreneurs to start or retain businesses within Brandon.

b. Work with local industrial and commercial parties of interest to support new development opportunities, mixed-use facilities, business retention and expansion, and tourism opportunities.

c. Collaborate with local businesses and organizations on people attraction and retention strategies.

d. Create opportunities for residents to participate in civic opportunities such as advisory committees and stakeholder groups and collaborate with industry stakeholders to facilitate business retention, expansion, and attraction.

4.4 Public Safety

Public Safety 1

Prepare for Disasters and Emergencies

a. Prevent, mitigate, and respond to environmentally harmful events to minimize the impact to the community.

b. Establish and maintain and emergency operations center.

c. Provide support locally, and, where and when required, regionally, in times of emergency and disaster.

d. Partner with Brandon Emergency Support Team (B.E.S.T.) members to continue to provide Emergency Preparedness education to all residents based on current and future risks.

e. Develop and maintain early warning systems to notify and support residents respond to emergencies/disasters.

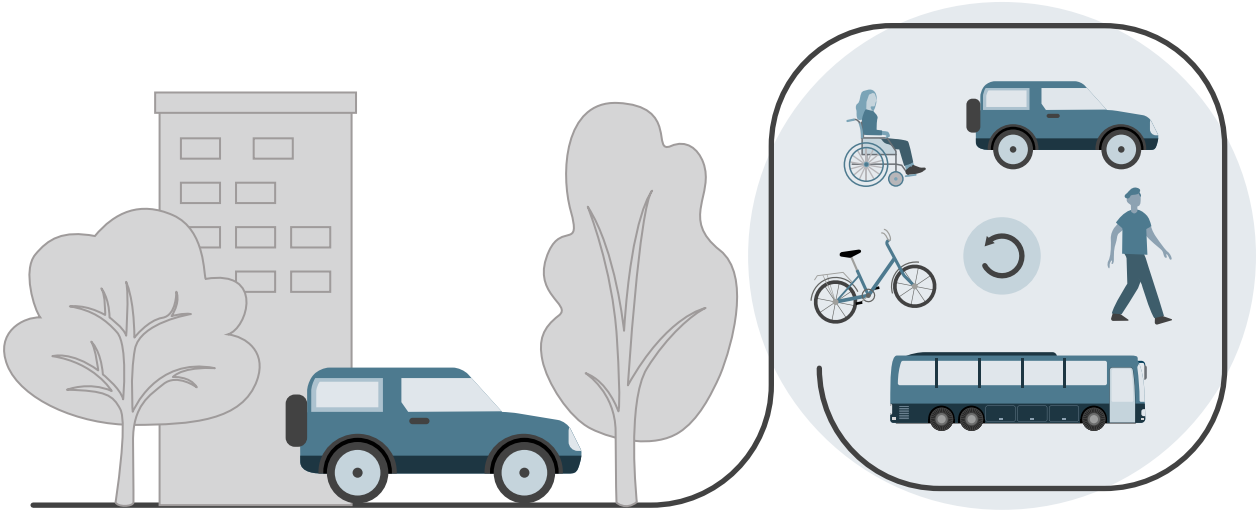
Credit: Ken Frazer

Credit: Sandy Black

Moving City

Part 5

The way we move through Brandon is rooted in a community where we can easily connect to the places, people, services and amenities we need, where we have the option to choose from a variety of modes of travel and where we ensure all ages and abilities can move efficiently and safely through the city.



Single Choice **Multiple Choice**

- We like the streets, sidewalks, paths, and bike routes we travel on to be well designed and connect us to the places we are going.
- We value an efficient and affordable transportation system that provides a range of options to get around or for movement.
- We value safety so that everyone feels comfortable getting around their community.

To do this, we must shift from a ***single-choice to a multiple-choice transportation system*** that serves all residents and is coordinated, balanced, connected, comfortable, and innovative.

The following policies and directives set out how Brandon will be a Moving City.

5.1 Balanced

Balanced 1

Plan for a transportation system that balances the needs of all users

a. Conduct transportation planning to ensure equitable movement options within the City.

b. Develop a Movement Plan / Strategy to establish a framework for transportation planning for walking, cycling, rolling, and driving. Plan should also include strategic direction for public transit that is safe, accessible, efficient, convenient, inclusive, cost-effective, and user focused.

c. Support shared mobility options, such as bike and car share.

d. Promote parking alternatives and exemptions that consider the provision of bicycle parking and car share parking, and proximity to transit.

Balanced 2

Design streets that accommodate all modes of transportation

a. Consider all modes of transportation in City standards.

b. Adopt design standards for streets that accommodate multimodal forms of transportation, and consult with other levels of government for roadways under their jurisdiction.

c. Promote all transportation facilities that follow universal accessibility design standards.

d. Identify priority streets to integrate active transportation facilities, such as multi-use paths and on-street bike lanes.

e. All new developments should consider active transportation facilities. Existing neighbourhoods should be retrofitted with active transportation facilities.

5.2 Coordinated

Coordinated 1

Ensure consideration of land use and urban form in all transportation planning

a. Determine timing, location, and design of major transportation infrastructure through concept planning that considers current and long-term land use (e.g. Growth Strategy).

b. Encourage a mix of land uses and higher densities along Corridors (section 7.4) to support provision of high quality, high-frequency transit service.

c. Consider urban form (physical characteristics, like built environment and how people will use the spaces)when planning and designing streets.

d. Design street networks in small blocks to support connectivity, walkability, and circulation even during phasing of projects and development.

Coordinated 2

Integrate transit planning with land use planning

a. Prioritize transit routes along Corridors (section 7.4), including arterial and collector streets.

b. Locate new transit stops and routes within walking distance of services and amenities, with particular emphasis on higher-density residential, mixed use, Downtown, commercial areas, Employment Areas, schools, seniors housing and facilities, major institutions, and greenspaces.

Coordinated 3

Promote efficient, well-designed and flexible parking requirements

a. Consider parking maximums to reduce oversupply of on-street and off-street parking spaces.

b. Review and explore reductions and removal of parking minimums to promote efficient land use and other movement forms.

c. Discourage development of surface parking areas where frequently accessible public transit and safe active transportation options are available.

d. Consider shared parking arrangements to discourage the development of large surface parking lots.

e. Implement parking design guidelines for all city development.

f. Ensure parking, loading, and service areas include safe and efficient internal vehicular circulation and appropriate traffic control measures to access sites.

g. Promote creative and alternative built-form solutions that incorporate covered or decked parking options.

Coordinated 4

Ensure safe and efficient highway planning

a. Limit development that may adversely affect the capability of a Provincial highway to move traffic safely and efficiently.

b. Permit development in the vicinity of and along PTH No. 1 and No. 1A, PTH No. 10, and the Eastern Access Route PTH No. 110, as defined in any functional design study or other applicable studies, only if, after consultation with the Provincial authority having jurisdiction, the development will not affect future improvements or the safe and efficient operation of those routes.

c. Work with the Province to confirm the future long-term status of highways, along with any associated studies, within city limits and in close proximity to the city to better plan future development in the vicinity of and along such highways.

d. Not permit development that may negatively affect plans for road widening or expansion, unless provisions are made to accommodate future widening or expansion.

e. Work with the Province to not permit development that may have a detrimental impact on the operation, safety, function, or expansion of Provincial highways, unless appropriate mitigating measures can be incorporated into the development.

Credit: Sandy Black

5.3 Connected

Connected 1

Promote an efficient, well-connected, and fully integrated street network

a. Plan for a network that supports all users and goods to get around the city and between neighbourhoods.

b. Ensure the interconnectivity of streets, sidewalks, multi-use paths, cycling paths and transit routes.

c. Integrate parking facilities with pedestrian, cycling, and transit facilities including bike connectivity, linkages, and provision of bike parking.

Connected 2

Support regional transportation connectivity

a. Support the Province's recommendations to accommodate regional, provincial and national traffic flows around the city fringes, in General Urban Areas, and areas under Provincial jurisdiction.

b. Ensure the movement of goods through and out of the city with connections to regional routes.

c. Engage in regional transportation planning activities and shared infrastructure investments with neighbouring municipalities.

d. Coordinate with the Province and Keystone Planning District on the development of regional cycling and trail infrastructure.

5.4 Comfortable

Comfortable 1

Prioritize safety of all

a. Adopt a Vision Zero Strategy and leadership task force to prioritize safety improvements to our movement networks including speed reductions and traffic calming with the intent to reach and maintain zero annual traffic fatalities and serious injuries.

b. Prioritize the implementation of traffic calming measures and reduced speed limits in school zones, residential areas, playgrounds, Downtown, and other areas with high pedestrian and cycling traffic.

c. Ensure that sidewalks take universal accessibility into consideration on both sides of the street by incorporating accessibility features such as curb ramps, and tactile paving.

d. Incorporate street lighting that provides high visibility for non-vehicle traffic, especially at conflict points such as crosswalks and intersections.

e. Provide safe and legible crosswalks along known pedestrian connections that clearly convey crosswalk locations.

Comfortable 2

Manage and maintain transportation infrastructure to prioritize comfort and safety

a. Ensure maintenance and replacement plans are in place for all transportation infrastructure.

b. Allocate adequate funding and resources to ensure that infrastructure is well-maintained and repaired in a timely manner.

c. Sidewalks and active transportation infrastructure should be well maintained and kept free of ice and snow during the winter.

d. Maintain with the Province a system of truck routes at appropriate locations to enable goods movement in the city, and coordinate the proposal of new truck routes as needed as the city grows.

e. Minimize traffic hazards and nuisance factors of noise and dust in residential areas.

f. Ensure parking, loading, and service areas are highly functional under all weather conditions and do not put strain on the storm drainage system.

Comfortable 3

Ensure the provision of secure and convenient amenities

a. Install benches, trees, signage, wayfinding, and other pedestrian amenities.

b. Promote the provision of secure and convenient active transportation amenities, such as bike racks, lockers, and shower facilities in private and public buildings.

c. Ensure that all transit stops and stations are designed using universal design principles and provide adequate shelter, signage, wayfinding, and furnishings.

5.5 Innovative

Innovative 1

Incorporate natural systems into the design of transportation infrastructure

a. Design streets that promote urban resilience and ecosystem health, such as capturing, filtering, and infiltrating stormwater.

b. Incorporate greenery into streets to improve air quality, provide shade and beautification, and provide additional natural features, especially where access to parks is limited.

c. Coordinate green infrastructure projects with other street design, renewal, and replacement projects.

Innovative 2

Respond to trends, innovations, evolving modes of transportation

a. Encourage electric vehicle charging and parking infrastructure be distributed throughout the city and coordinated across public and private properties.

b. Support the implementation of technologies to improve traffic management.

c. Support shared micro-mobility initiatives such as car sharing and e-bike share.

d. Periodically review and adjust Municipal Servicing Standards based on growth, innovations in technology, and changes in public priorities.

e. Monitor movement by conducting regularly scheduled vehicle and non-vehicle traffic counts to ensure that road capacity design and timing of capital improvements can accommodate changes in traffic due to population growth, increased density, and new development.

Credit: Sandy Black

Growing City

Part 6

Credit: Sandy Black

The City projects to have a population between 63,000 and 65,000 people by 2050. It is expected that this growth will occur in both our established areas (areas already built up and served with existing infrastructure) and emerging areas (areas generally at the edge of the city requiring newer infrastructure). Growing in both emerging and established areas enables opportunities for increased types of both residential and employment uses to meet market demands.

Over the past ten years, the City has been a leader in growing our existing built-up areas, seeing approximately 30% of all new residential units constructed in established areas and 70% in emerging areas. The City is planning to continue this growth pattern as we enable development within our existing neighbourhoods with a focus on our busiest streets and our Downtown, while facilitating planned and orderly growth around the edges of our community.

- We coordinate infrastructure and land use to accommodate growth in key areas of the city.
- We align planning and construction of infrastructure with the direction and speed of growth to be efficient and cost-effective.
- We value collaborative planning of fringe areas to allow for future growth of the city.
- We ensure new developments further our vision for growth for the city through planning tools and policies.

To do this, we must identify where, when, and how we grow to plan improvements to our infrastructure and services in alignment with growth, which in turn ensures efficient use of public infrastructure and funds.

Refer to Subsection 6.1(6) under this Part.

Credit: Sandy Black

6.1 How We Grow

1 *Projecting Growth*

a. The City shall prepare growth projections for the Emerging, Established and Employment areas to coordinate the alignment of infrastructure with the direction and speed of growth.

b. The growth projections shall be used as a baseline for the planning of core infrastructure (e.g. water, wastewater, drainage, transportation) and community services (e.g. fire, police, recreation, transit) to service growth.

c. The projections should be updated annually to compare actual vs projected growth with comprehensive reviews completed every five years in alignment with the federal census.

d. Development projections should be responsive to market demands.

2 *Planning Growth*

a. Master plans, including servicing, movement, greenspace/recreation plans and supporting capital budgets should be established and updated in alignment with the direction and timing of growth outlined in the City Plan and the supporting projections.

b. The City shall plan capital infrastructure in alignment with the growth projections to accommodate 20 years of growth in each Growth Area.

c. The City shall endeavor to “right time” infrastructure planning and investment to allow development to proceed as per the capital plan for growth.

d. The City should consider both the City and industry’s capacity to manage, administer, and construct capital works to support growth when determining the capital plans to support growth.

3 *Paying for Growth*

a. The timing, direction, and phasing of growth infrastructure should consider borrowing costs, and ongoing operating and lifecycle costs of maintaining new infrastructure.

b. The City shall endeavor to achieve a "growth pays for growth" model to limit the financial impact of growth infrastructure on existing tax and rate payers.

c. Development Charges shall be reviewed and updated periodically to align with updated capital plans to support growth.

4 *Servicing Growth*

a. Development in Emerging and Established Growth Areas should connect to the public water and wastewater service collection systems as per Master Plans, Municipal Servicing Standards, and by-laws.

b. Development in the employment Growth Area will be serviced with both connections to the public water and wastewater collection systems and on-site systems as set forth in the East Brandon Industrial Area Secondary Plan.

c. Developers may be required to oversize infrastructure required to support City growth and/or alleviate the existing infrastructure network external to their development area.

5 *Approving Growth*

a. Prior to designating and/or considering new areas for development, the following shall be considered:

   i. Alignment of location with all policies in City Plan, master plans, or any other city planning strategy framework or by-law.

   ii. Servicing capacity should be confirmed, or have upgrades planned to increase capacity to accommodate the new development.

   iii. Location of existing servicing corridors for water, wastewater, drainage, utilities.

   iv. Emergency services.

   v. Vehicle and active transportation connectivity to surrounding areas.

   vi. Surrounding land uses and amenities, including industrial, schools, commercial areas, parks, and greenspaces.

   vii. Major highway or railway corridors and approval of lands on side of corridors where majority of development exists.

   viii. Hazardous conditions, including floodways, former landfill sites, severe topography and riverbanks.

   ix. Environmentally sensitive areas, including wetlands, natural drainage channels and endangered species.

   x. Soil and groundwater conditions and impacts on groundwater quality should be suitable for development.

Credit: Sandy Black

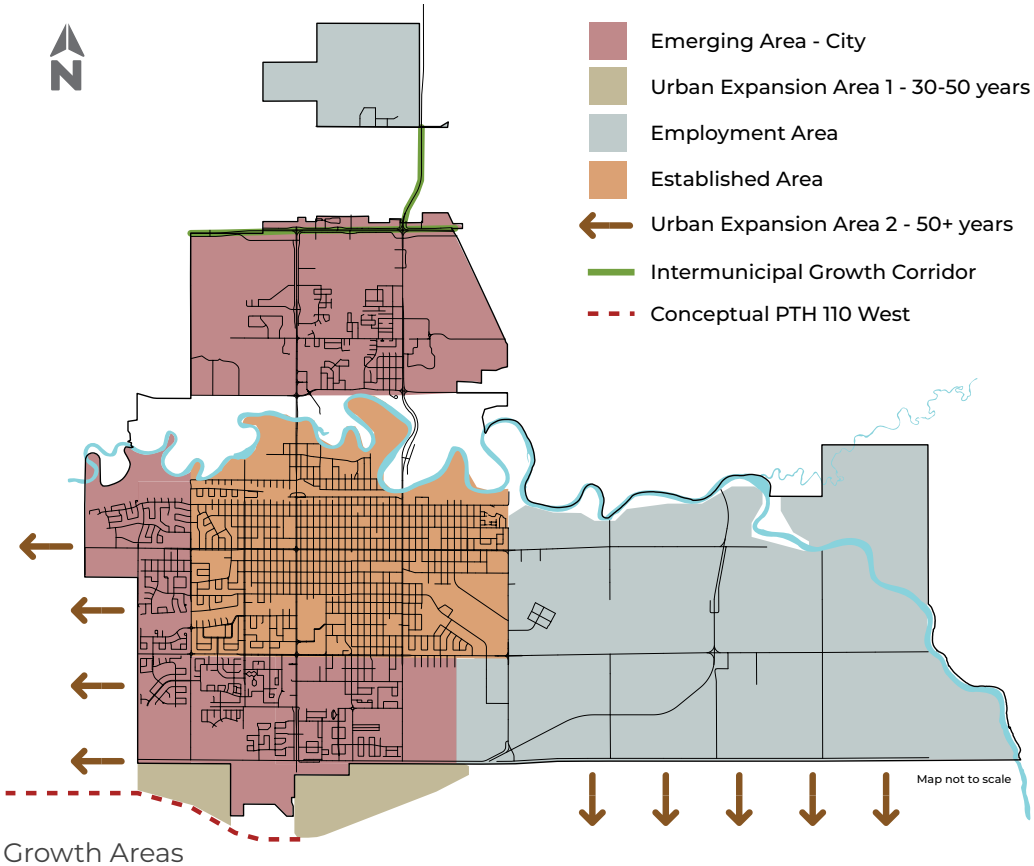
6 Determining Growth Areas

For the purposes of growth planning, the city is divided into three Growth Areas (Map 2):

Emerging: Lands located at the edge of the city that include new development areas that may require improvements to network infrastructure prior to development.

Established: Lands centrally located that are primarily fully developed and that existing infrastructure networks can serve.

Employment: Lands located in the eastern portion of the city for development as employment uses, predominantly industrial with a variety of servicing options, including full service, partially serviced and un-serviced lands.



Map 2. Growth Areas

6.2 Emerging Area Growth

The Emerging Area Growth Strategy (Appendix A) identifies population, residential and non-residential projections, and land inventories for each Emerging Growth Area within the city. The Emerging Area Growth Strategy anticipates the majority of Emerging Area Growth to occur in the South Growth Area as enabled by the capital plans to support growth.

1 *Emerging Area Growth Policies*

a. To grow the Emerging Growth Area in a financially responsible manner, the City will prioritize infrastructure improvements in the 20 year capital plan for growth to service the south Growth Area with incremental improvements planned for the north and west Growth Areas as outlined in the Emerging Area Growth Strategy.

b. Proposed development in Emerging Areas without existing or planned network infrastructure capacity may be considered under the following:

   i. The developer is willing to front end the cost of the infrastructure.

   ii. The development of the area does not infringe on buildout of other areas zoned or planned for development.

   iii. Ongoing operational and lifecycle costs of new infrastructure is acceptable to the City.

c. Phasing of development within Emerging Areas should occur contiguous to existing developed areas and connect directly to adjacent existing transportation and servicing networks. “Leapfrog” development may-be considered pending additional servicing, transportation, and financial analysis acceptable to the City.

d. The City shall endeavor to maintain a 20 to 30 year supply of land that aligns with the 20-year capital infrastructure plan for growth.

e. The City will prepare and implement secondary plans as a framework to guide development in all Emerging Areas.

f. Secondary plans shall be prepared by the City prior to development occurring in accordance with the requirements of the General Urban Area Policies section.

g. Developers will prepare neighbourhood plans as outlined in secondary plans to identify more detailed planning for their lands within the secondary plan area. Neighbourhoods plans shall be consistent with the applicable secondary plan and approved by resolution of Council.

6.3 Established Area Growth

The Established Area Growth Strategy will be completed in the future to support the growth projections and the policy direction for growth as set forth in the City Plan. Established Area Growth should occur throughout the city with emphasis on the Downtown, around major institutions, along collector and arterial streets, and Corridors (section 7.4)

1

Established Area Growth Policies

a. The City shall prepare an Established Area Growth Strategy and capital plan for growth to support the policy direction in the City Plan and ensure areas planned for intensification are supported by required infrastructure upgrades.

b. The City should plan to accommodate a minimum of 20% of all growth in the established area, with a focus on intensifying the Downtown, around major institutions, along arterial and collector streets, Corridors, and other areas and sites meeting the criteria outlined in section 7.1.5.

c. The City will prepare and implement secondary plans as a framework to guide development in Established Areas where substantial development and change is anticipated, such as the Downtown, or areas that must transition, such as through rezoning, to become generally consistent with the City Plan, such as the Assiniboine Gardens area.

d. In addition to the requirements outlined in 7.1.5, secondary plans for Established Areas should also identify areas for intensification/densification.

6.4 Employment Area Growth

The East Brandon Industrial Area Secondary Plan (Schedule 5) provides growth management direction for the Industrial lands, including full serviced, partially serviced and un-serviced development nodes for industrial growth in the short, medium and long term.

6.5 First Nation Development Area Growth

1

First Nations Development Area Growth Policies

a. The City shall support the establishment of First Nations Development Areas in the city or within the Fringe Areas through the Federal Additions to Reserve process when in alignment with the City Plan, the capital plan for growth, and other City by-laws, standards and frameworks guiding development.

b. The City shall adopt a First Nation development and service sharing policy for land within the city to provide clarity on the terms for these agreements.

6.6 Fringe Area Growth

The intent of the Fringe Area is to plan for lands outside the city limits (as identified in the Keystone Planning District Development Plan). These lands include areas for potential future urban expansions. Map 4 of the Keystone Planning District Development Plan identifies Fringe Area lands both within the City of Brandon and within the Keystone Planning District.

The Fringe Area Growth policies:

- Identify land supply outside city limits for future urban development.
- Provide staged conversion of undeveloped land to urban uses.
- Prevent fragmentation and incompatible development of urban expansion lands as urban development occurs.
- Minimize conflicts between urban and rural uses.

1 *Fringe Area Growth Policies*

Joint Planning

a. Both the City and the Keystone Planning District shall notify and consult with each other for any future rural residential development, including farm related subdivision and isolated rural residential lots, but excluding existing Rural Residential Areas designated and subject to a secondary plan at the time of the adoption of the Keystone Planning District's first Development Plan, and commercial and industrial development within the Fringe Area.

b. Prior to any development or redesignation of land within the Fringe Area that is deemed to significantly increase traffic or alter traffic use on the municipal roads in either planning area, the City and the Keystone Planning District may recommend a Traffic Impact Study completed by a qualified professional engineer to identify potential infrastructure upgrade needs. Where new development is deemed by the TIS to require road infrastructure upgrades, a cost sharing agreement may be required.

c. Where a large-scale development is proposed within the Fringe Area, the City or the Keystone Planning District may recommend a secondary plan be prepared by the proponent and adopted by the appropriate planning area prior to a zoning by-law amendment or subdivision application enabling the first of such development after the adoption of this City Plan.

d. Any conflicts or disagreements between the City and the Keystone Planning District should be brought to the attention of the joint planning committee, the intermunicipal group established to coordinate planning discussions between the City of Brandon and the Keystone Planning District.

Compatibility

a. Within the Fringe Areas, development approval decisions involving the re-designation of lands, issuance of development permits, approvals of conditional use orders, or approvals of subdivision applications, will, in addition to the other policies of this Plan, take the following into consideration:

   i. The compatibility of adjacent land uses with urban development (e.g. industrial uses adjacent to existing and planned residential uses).

   ii. The impact of the existing and future Provincial highway system, particularly PTH No. 1, PTH No. 10, and PTH No. 110.

   iii. The integrity of agricultural designated land parcels as large land holdings to ensure no significant impedance to any future land assembly.

   iv. The ability to service the areas with appropriate infrastructure.

   v. The planning of development in a manner that does not impede the city's orderly expansion.

Credit: Sandy Black

Land Uses

a. Existing land uses will continue to operate in Fringe Areas identified for urban expansion until development occurs.

b. The establishment or expansion of livestock operations shall be subject to Provincial regulations, such as minimum distance separation rules.

c. Fringe Areas planned for future urban expansion should be left largely undeveloped until development occurs and remain generally in large parcels (80 acres) to support existing agricultural uses until these lands are considered for future urban uses.

6.7 Urban Expansion Area Growth

1 *Urban Expansion Area Growth Policies*

a. The existing and conceptual Provincial highway extensions (PTH 110) to the south of the city shall serve as the planning boundary for future urban development and urban expansions to the south.

b. Urban expansion is planning for the designation, servicing and development of lands in the Fringe Area for future urban uses. The Emerging Area Growth Strategy and Map 2 identifies two priority Urban Expansion Areas within the Fringe Area.

c. Urban Expansion lands adjacent to the south of the city are the highest priority potential lands for urban expansion as supported by new infrastructure planned in the 20 year capital budget to support growth.

d. Urban Expansion lands adjacent to the west of the city have moderate potential for urban expansion as development would need to be accommodated within the capacity of existing adjacent infrastructure networks.

Land Supply

a. Urban expansion should be generally based on the principle that the City requires a minimum 20- to 30-year supply of designated land in secondary plans for residential and non-residential uses as per the Emerging Area Growth section.

b. Any urban expansion should be supported by analysis demonstrating the ability for the lands to be serviced within existing or planned infrastructure networks.

c. Urban expansions will be prioritized towards Urban Expansion Areas adjacent to the south of the city, but may occur in Urban Expansion Areas adjacent to the west of the city if development is supported by existing infrastructure networks.

Phasing

a. The phasing of Urban Expansion lands will be driven by existing and planned servicing capacity.

b. Initial phasing could include lands with direct connections to wastewater lift stations, including lands to the south of the 34th Street lift station and lands directly to the east of the 18th Street lift station.

c. Large scale regional retail will be prioritized to the east of 18th Street (PTH 10) as these are the only lands within the Urban Expansion areas adjacent to the south of the city that have direct frontage on the major arterial and lend itself to accommodating this type of use.

d. Secondary phasing could include lands that currently have no direct connection to the wastewater network (i.e. require connection through lands within the city or within initial phase.)

Annexation

a. Any annexation request should be undertaken in collaboration with the impacted Rural Municipality and in accordance with Provincial legislation.

b. Considering the length and complexities of an annexation process, annexations should endeavor to include a minimum additional 10 year land supply.

c. Larger annexation requests beyond the designated land supply target in Appendix A may be considered if supported by the impacted Rural Municipality.

6.8 Intermunicipal Corridor Growth

Intermunicipal economic development corridors are identified on Map 2 and located along major transportation corridors (e.g. Trans-Canada Highway and PTH 10 between Brandon and the Municipal Airport).

1 *Intermunicipal Corridor Growth Policies*

a. Intermunicipal economic development corridors may provide the opportunity for mutually beneficial industrial or employment uses that due to the location and/or size of land holdings provide opportunities for development not available within city limits.

b. Pending the availability of servicing capacity, intermunicipal service sharing agreements may be considered to facilitate the growth and development of intermunicipal economic development corridors.

c. The City shall adopt an intermunicipal service sharing policy to provide clarity on the terms for service sharing agreements for intermunicipal economic development corridors and other Fringe Area lands not identified for urban expansion.

Credit: Sandy Black

6.9 Infrastructure

The City has a responsibility to provide municipal infrastructure and services in an efficient and cost effective manner. The City will adopt master plans to outline the plan for infrastructure. Growth Strategy outlines where to support new development, the master plans lay out the timing of new infrastructure to be constructed to support new growth.

Infrastructure includes sanitary wastewater collection and treatment, water treatment and distribution, stormwater collection and storage, solid waste management and utilities (provided by other parties) such as electricity, natural gas and telecommunications.

1 *Infrastructure Policies*

a. The City will undertake and implement comprehensive master plans for its infrastructure and establish budget priorities that ensure servicing and maintenance levels.

b. Infrastructure and utilities shall be extended in a logical and economically practical manner having regard to the available capacity and the growth management policies of this Plan.

c. The City will undertake periodic reviews of its infrastructure governance documents to ensure they accommodate sustainable land use and servicing practices.

d. The design of water, wastewater and stormwater systems in the city shall have regard for long-term maintenance requirements and ease of future servicing and infrastructure replacement.

e. Utility easements and rights-of-way should be located in a manner that respects the natural environment, optimizes space utilization, and enhances the opportunity for the rights-of-way to complement the open space system.

f. As much of the city was developed with limited stormwater retention, specific consideration must be given to the increase in runoff from developments, including consideration given to mitigating stormwater impact, including rain gardens, onsite retention, permeable surfaces and decreasing lot coverage.

g. Infrastructure shall generally be located within the street rights-of-way, as per the City's Municipal Servicing Standards.

h. The domestic sewer system shall be separate from the land drainage sewer system. Storm water, surface drainage, roof run-off, weeping tile drains, sumps and other means of controlling surface or sub-surface water shall not be directed to the domestic sewer system. Existing combined sewer systems should be transitioned to separate domestic sewer and land drainage sewer systems when opportunities arise, and/or funding is available.

i. Developers shall be responsible for developing on-site improvements, including, but not limited to roadways, sidewalks, multi-use trails, greenspaces, storm water conveyance and retention ponds, water and sewer mains, and lighting.

j. Residential and non-industrial development will be planned for and occur in areas of the city in accordance with existing and planned servicing (water, wastewater, land drainage) upgrades.

k. Private servicing systems (e.g. bareland condominium development, modular home park) may connect to public systems in accordance with City by-laws and Municipal Servicing Standards.

l. Where the quality of wastewater from a use is expected to generate challenges for wastewater collection or treatment systems, an engineered report may be required, along with specialized pre-treatment requirements.

m. Industries with distinct requirements for water supply and wastewater disposal, such as large volumes of water or unique waste characteristics, may be allowed to develop onsite water supply and wastewater disposal systems, subject to any Provincial approval that may be needed.

n. Development in all Growth Areas must consider the impact on existing infrastructure systems and be designed in compliance with master plans and governance documents to manage post development demands and discharges.

o. All development must accommodate either private or public solid waste or recycling collection in accordance with City by-laws and standards.

p. Development must plan for connections to shallow utilities, including electrical and telecommunications.

q. All development must consider emergency service and sanitation access and circulation.

Credit: Sandy Black

Urban Structure

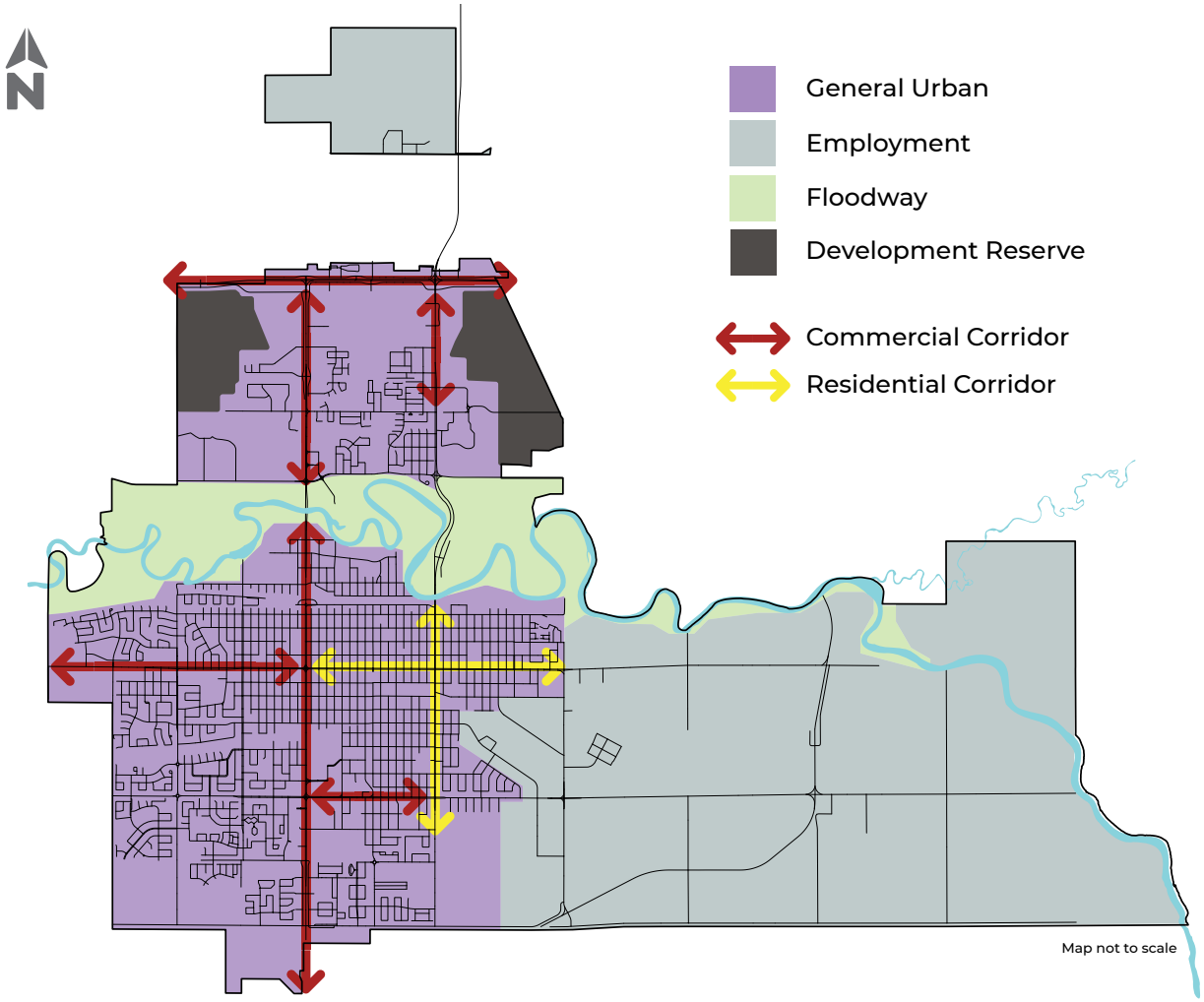
Part 7

The way a city is structured contributes to the quality of life of the residents. The desire is for Brandon to continue transitioning to densification of built-up areas, from separation of uses to a mix of uses and from one primary mode of transportation to a multimodal transportation city.

This Urban Structure section provides overall guidance on general built form across the city, ensuring development supports and complements the City Plan's vision.

Brandon has a diversity of neighbourhoods providing various living options for residents. As well, the city has a diversity of recreational, industrial, commercial and institutional development that support and contribute significantly to the city's growth and livability. Strategic planning of the city's urban structure can improve quality of life by retrofitting existing neighbourhoods, designing new neighbourhoods to accommodate all residents, and supporting economic development.

The urban structure consists of General Urban Area, Employment Area, Development Reserve, Corridors and the Floodway (Map 3).



Map 3. Urban Structure

7.1 General Urban Area

The General Urban Area consists of neighbourhoods that are diverse for several reasons, such as the age of the first developments, the prevalent types and intensities of land uses, and the presence of different neighbourhood- and city-scale community amenities such as parks, schools, and post-secondary education institutions.

This area also includes areas subject to secondary plans such as the Downtown, Assiniboine Gardens, Southeast, and Southwest areas (Map 4) that provide specific guidance on development due to unique factors affecting development in those areas.

The General Urban Area policies guide growth and change that provides all residents with opportunities to live, move, work, play, and shop.

1 *General Urban Area Policies*

a. The General Urban Area shall support existing and future residential, commercial and institutional development in the city.

b. Direct commercial development and growth that is in line with the Downtown vision to the Downtown and balance with other supporting uses.

c. Ensure land use planning minimizes the need for new vehicle transportation infrastructure and promotes greater use of public transportation and active transportation.

d. Promote resident interactions and health, by including amenities such as community gathering spaces, public art, and play areas.

e. Incorporate existing natural features like streams, wetlands, trees and natural topography in all development.

f. Encourage winter city design through infrastructure and urban design, such as maximizing sun exposure, creating windbreaks, trees as shelterbelts, and provision of snow storage.

Credit: Sandy Black

2 *General Urban Area - Downtown*

Since the City's establishment, the Downtown has been a hub of activity and mixed uses, reflected in the higher concentration of early-city building stock and its geographic position relative to a major railway line and the rest of the city. However, a combination of continued outward urban growth, a shifting market for commercial goods, social challenges, and increased accommodation of private vehicles have brought the need to plan for change to accommodate our new Downtown reality.

Downtown General Policies

a. Reinforce Downtown as the central focus area for the City and region.

b. The Downtown Area Secondary Plan (Schedule 2) shall provide the policy framework for the future planning and development of the Downtown.

c. Support collaboration with and between local and regional interested parties to prioritize Downtown economic development initiatives and partnerships.

3 General Urban Area - Residential

Accommodating additional growth in a context-sensitive manner is a good approach to densifying existing residential neighbourhoods, and introducing new housing opportunities would have a positive impact on affordability. Additional density would also support potential infrastructure upgrades and bring different land uses and services into predominantly single-unit residential neighbourhoods to create more livable communities. Future residential neighbourhoods will also need to be sustainable, well designed, and pedestrian-oriented.

Residential General Policies

a. All residential development should be located within the serviced General Urban Area except when associated with institutional uses.

b. Encourage the provision of adequate housing mix with varying types, sizes and densities, to meet the social, health, and economic well-being requirements of current and future residents of different income, age, and abilities across the housing continuum.

c. Housing types should include secondary suites, detached dwellings, supportive housing, two-unit (semi-detached, duplex), three-unit, four-unit, mobile homes, and multiple-unit dwellings such as apartment buildings.

d. Promote residential neighbourhoods that are walkable, bikeable, rollable, transit-oriented, and allow for the necessary facilities to support all modes of transportation (e.g. bike storage and other parking or loading facilities).

e. Encourage contextually sensitive infill that considers building form, massing, and proximity to institutions and community amenities.

f. Encourage local service uses such as daycares, places of worship and assembly, libraries, small-scale retail commercial, and community support services.

g. Support appropriately scaled home-based businesses.

Credit: Sandy Black

Residential Development

a. Residential development should generally follow this typology:

Type	Examples	Height
Small Scale	Single-unit, two-unit (semi-detached, duplex), secondary suites (attached, detached), three-unit, four-unit	1-2 stories
Medium Scale	Townhouses (row or stacked), walk-up apartments, low-rise apartments	2-4 stories
Large Scale	Mid-rise multi-unit apartments	4-8 stories

b. Large Scale housing should generally be located Downtown and where compatible with adjacent land uses and sufficient water and wastewater capacity in the city networks.

c. Medium Scale housing should generally be located on arterial and collector streets where compatible with adjacent land uses, on corner lots, and within walking distance (approximately 400 m) to major institutions such as learning and healthcare institutions, and near transit and community amenities.

d. Small Scale housing should generally be located along local and collector streets.

e. Prioritize intensification of residential development on Corridors (section 7.4).

f. Support development of an Established Area growth strategy to guide context-sensitive infill development.

g. Encourage affordable and below-market housing to be located close to amenities, schools, services, parks, and transit.

4 General Urban Area - Commercial and Institutional

Commercial and institutional development are integral to the city's economic health. The City should promote economic development and prosperity, and support development that meets the needs of the community, retains existing businesses, and attracts new investment to the community.

Commercial and Institutional General Policies

a. Provide opportunities for a diversity of commercial and institutional activities in appropriate locations throughout the General Urban Area.

b. Support both the city and broader region with commercial and institutional options for residents of Brandon and the surrounding area.

c. Maximize commercial and institutional employment opportunities within walking distances to residential neighbourhoods.

d. Commercial and institutional infill development should consider impacts on surrounding residential development through consideration of the intensity of use, traffic impact, location of parking, site access, exterior illumination, and additional landscape buffering.

e. Commercial activities and particular uses (e.g. drive-thru) that may generate higher traffic volumes should be directed to Commercial Corridors (section 7.4).

f. Larger-scale developments and intensification may require additional studies, such as traffic impact, concept plans/master plan/neighbourhood plan and market analysis, as needed.

g. Consult with the local partners such as school divisions to determine the need for new schools, associated sports fields, and day care facilities, as required, to serve the community.

Credit: Sandy Black

Commercial Development

a. Commercial development should generally follow this typology:

Type	Priority
Mixed-Use Sites	Uses that meet residents' daily needs and serve multiple neighbourhoods, including a mix of retail, services, office, and small-scale institutional uses.
Highway Commercial	Vehicle-oriented commercial uses that typically cater to the use of the Provincial Trunk Highway network and serve the travelling public and transportation industry, and uses that generate significant volumes of traffic.
Large Scale Commercial	Larger scale retail and commercial uses, such as developments that cater to the travelling public (e.g. motels, restaurants, service stations) and those types of commercial development that require large properties for the display and/or storage of merchandise (e.g. automotive dealerships).
Neighbourhood Commercial	Small-scale retail uses and services that primarily serve the local neighbourhood and meet residents' daily needs, such as convenience stores and personal services.

Mixed-Use Sites

a. Mixed-Use Sites should accommodate a broad range of commercial and institutional uses, along with, over the longer term, pedestrian-oriented activities such as specialty retail, civic, arts and cultural uses, entertainment, professional services, and offices.

b. Mixed-Use Sites may be located at appropriate locations in Brandon, such as in the vicinity of major institutions.

c. Mixed-Use Sites should be walkable by:

   i. Providing pathways and pedestrian connections throughout larger-scale commercial areas.

   ii. Promoting multimodal access along Corridors (section 7.4) provide clear pedestrian linkages, and reduce barriers.

   iii. Prioritizing wayfinding, lighting, and seating to improve pedestrian experiences.

   iv. Encouraging uses that attract pedestrian activity.

d. Standalone residential development may be considered in Mixed-Use Sites if integrated with other appropriate uses or subject to a site plan review.

Credit: Craig D

Highway Commercial

a. Development of lands along and near major highways must consider long-term needs of the Province to fulfill its mandate of enabling efficient and safe vehicular movement of people and goods.
b. Development immediately adjacent to the Trans-Canada Highway within city limits will be limited to a mix of low intensity commercial and industrial uses that generate significant volumes of traffic and traveling public uses.
c. The City will take into consideration relevant studies from the Province when reviewing development proposals within such areas.
d. The City will work with the Province to ensure development may occur without compromising the safety of users and traffic operations of the Provincial Trunk Highway and Provincial Road network, as well as future network requirements.

Large Scale Commercial

a. Direct auto-oriented commercial uses (such as those that cater to the drive-by or travelling customer, or require outdoor storage or sales) to higher-volume arterial streets.
b. Direct higher-density and intensity large-scale commercial uses to Commercial Corridors, in accordance with section 7.4.

Neighbourhood Commercial

a. Commercial activities that may generate higher traffic volumes should be directed to Commercial Corridors.
b. The City may support conversion of residences for small-scale commercial use.
c. Prioritize neighbourhood commercial development on corner lots.

Industrial Uses

a. Wherever possible, existing industrial uses and developments located at inappropriate locations (such as the Floodway or Downtown) should be relocated to more suitable locations in the Employment Area.

b. Low intensity industrial uses having minimal nuisance effects may be considered in parts of the city not within the Employment Area. Uses such as manufacturing goods produced for sale on the same site as an associated commercial/retail use (e.g. bakeries) may be located where commercial uses are supportable in the General Urban Area.

c. New industrial developments not within the Employment Area must be designed to:

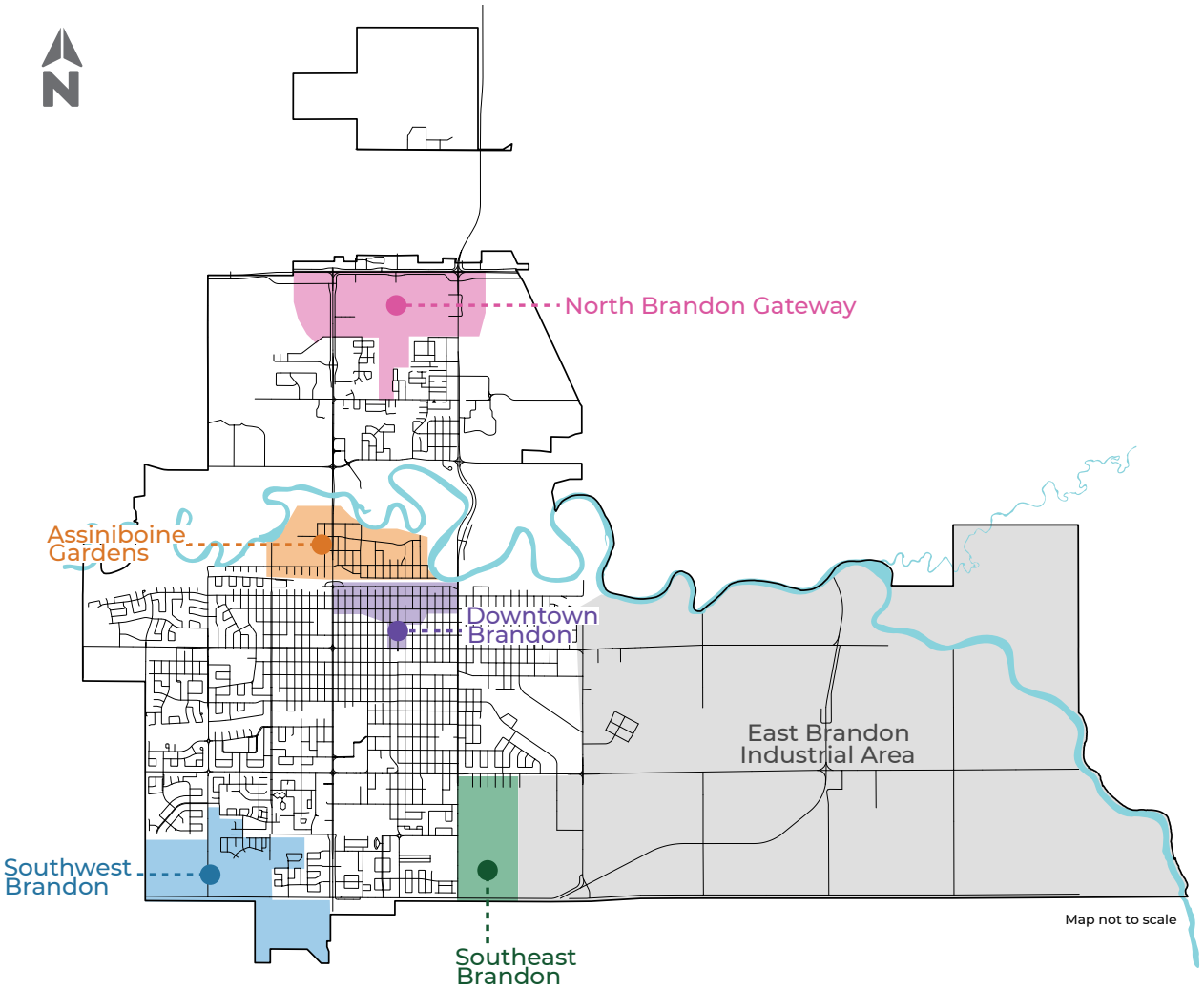
    i. Ensure connectivity to transit and multiple forms of transportation infrastructure including sidewalk and pathway connectivity.

    ii. Encourage a high standard of design along major roads through buffering, landscaping, fencing, and architectural elements and minimizing visual impact of loading, storage, and surface parking areas.

Credit: Sandy Black

5 General Urban Area - Secondary Plans

The city has several areas, mostly in the Emerging Area (Part 6), with opportunities for significant development throughout the lifetime of this City Plan. These areas, however, also face challenges to accommodate development, mostly due to infrastructure limitations. Secondary plans for these areas will provide more area-specific policy directions guiding development in these areas. Map 4 shows areas of the City subject to secondary plans.



Map 4. Secondary Plan Areas

Secondary Plan General Policies

a. All new areas of development are required to set out the overall pattern for future development.

b. At a minimum, secondary plans shall address the following:

   i. Vision, objectives, and policies in alignment with the City Plan.

   ii. Site design considerations including topography, connectivity, accessibility, and environmental.

   iii. Proposed land use designations, including public/school reserve areas.

   iv. Conceptual layouts, connections and phasing for collector and arterial roadways, active transportation routes, pathway connections, and transit routes/stops.

   v. Conceptual layouts, connections and phasing for all primary servicing including water, wastewater, and land drainage systems.

   vi. Greenspace and recreation amenities.

   vii. Supporting assessments and studies including servicing studies, traffic impact studies, environmental assessments, and heritage resource impact assessments.

   viii. Supporting projections for population, density, employment, and dwelling units by type.

c. Secondary plan policies intend to be more specific to their respective areas compared to, but still be generally consistent with, this City Plan. Where a policy in a secondary plan conflicts with a policy in this City Plan, the policy in the secondary plan will prevail.

d. The City may add more lands regulated under a secondary plan, whether by creating a new secondary plan or expanding an existing one's area. The City will update Map 4 without going through a development plan amendment process if Council adopts a new or amended secondary plan in accordance with the secondary plan provisions of the *Planning Act*. The City must go through a development plan amendment process if Council considers reduction or elimination of a secondary plan area.

e. All secondary plans are attached as appendices to the City Plan for convenience. However, secondary plans are not considered to be part of a development plan, regulated instead under the secondary plan provisions of the *Planning Act*, including the process of adopting secondary plans.

6 General Urban Area - Master Plans

Master Plan General Policies

a. Higher intensities may be considered for uses subject to master plans, and the uses should be compatible if not complementary to surrounding uses when located in the General Urban Area.

b. Master plans should indicate not only the proposed development on site at full build-out, but also address potential impacts to nearby neighbourhoods, their contribution to make nearby neighbourhoods more vibrant and complete, and high-level technical issues such as servicing and traffic.

Keystone

The Keystone Centre is a unique facility in the city, providing spaces for both recreation and events that attract large numbers of people.

a. The City will support initiatives that enable Keystone Centre to grow and develop in accordance with a master plan the Keystone Centre may initiate in consultation with the City.

b. The City may adopt a secondary plan for the area surrounding Keystone Centre to better coordinate and integrate development and infrastructure investments.

Credit: Provincial Exhibition

Brandon Regional Health Centre

Being the largest hospital in the Westman Region, the Brandon Regional Health Centre, also known as Brandon Hospital, is a major medical facility that serves both the city and the Westman Region. Its campus has grown steadily over the years, providing specialist medical services such as cancer care. The facility is undergoing a significant expansion as of 2023.

a. The City will support initiatives that enable Brandon Regional Health Centre to grow and develop in accordance with a master plan Prairie Mountain Health may initiate in consultation with the City.

b. The City may adopt a secondary plan for the area surrounding Brandon Regional Health Centre to better coordinate and integrate development and infrastructure investments.

Brandon Municipal Airport

Brandon Municipal Airport has its origins from the Second World War and the British Commonwealth Air Training Plan. The City has been the stewards of the Airport lands since 1946. In 2013 the Airport saw the return of consistent regular passenger service under a major airline. As of the drafting of this Plan, the City was drafting a new master plan for the airport.

a. All development in and around the airport will be in accordance with the Brandon Municipal Airport Master Plan and subject to restrictions protecting airport operations and airspace as set out by Transport Canada.

b. The City will not support any residential uses not associated with airport activities in areas with a Noise Exposure Forecast or Noise Exposure Projection of at least 30.

Assiniboine Community College

Assiniboine Community College is one of two significant post-secondary educational institutions in the city. It is unique in having two campuses in the city known as the Victoria Avenue East Campus and the North Hill Campus, with the North Hill Campus being the site of the former Brandon Mental Health Centre. The North Hill Campus has a master plan adopted in 2016, envisioning the consolidation of all its functions in the city at that site.

a. The City will support initiatives that enable ACC to grow and develop in accordance with the Assiniboine Community College North Hill Campus Master Plan, and any long term plans the college may develop for the Victoria Avenue East Campus.

Source: www.assiniboine.net

Credit: Sandy Black

Brandon University

Brandon University is one of two significant post-secondary educational institutions in the city. In 2017, Brandon University commissioned a 30-year master plan that Council subsequently adopted in support. The campus is unique in that it covers multiple blocks and straddles several public streets, yet its built form differs from the predominantly residential areas surrounding it.

a. The City will support initiatives that enable Brandon University to grow and develop in accordance with the Brandon University Campus Master Plan.

b. The City may adopt a secondary plan for the area surrounding Brandon University to better coordinate and integrate development and infrastructure investments.

7.2 Employment Area

The city's Employment Area, the location of most of Brandon's Industrial land, is an important contributor to Brandon's economic sustainability. Maintaining a long-term supply of marketable employment land will support economic growth. As a regional centre, the city is well-positioned to maintain a strong employment land base by retaining existing industries and businesses, and supporting new growth.

The East Brandon Industrial Area Secondary Plan (Schedule 5) shall provide the policy framework for the future planning and development of the majority of the Employment Area in the city.

7.3 Floodway

The Assiniboine River is a significant natural feature coursing through the city. The river is an asset for the city, being the community's source of potable water and a natural and potential recreational corridor within an urban area. The river also poses a risk to the city due to the potential for flooding. The City Plan aims to protect the Assiniboine River area and residents by assessing risk and permitting predominantly low-density development in city dike protected areas. The Assiniboine Gardens Secondary Plan provides direction for development in a significant area of the floodplain in the city, and the Assiniboine River Corridor Master Plan provides guidance for recreation around the floodway.

1 *Floodway Policies*

a. Support the implementation of the Assiniboine Gardens Secondary Plan and the Assiniboine River Corridor Master Plan.

b. The boundaries of the Floodway area shall coincide with the city's dike system. Where there is no city dike system, the Floodway area shall include areas at risk of flooding under applicable Provincial regulations or standards.

c. Consider downstream impacts of diking and further strengthening of existing dikes as necessary.

d. Support the natural and cultural conservation and rehabilitation of the Assiniboine River, its riparian areas, and lands at risk of flooding within the Floodway Area.

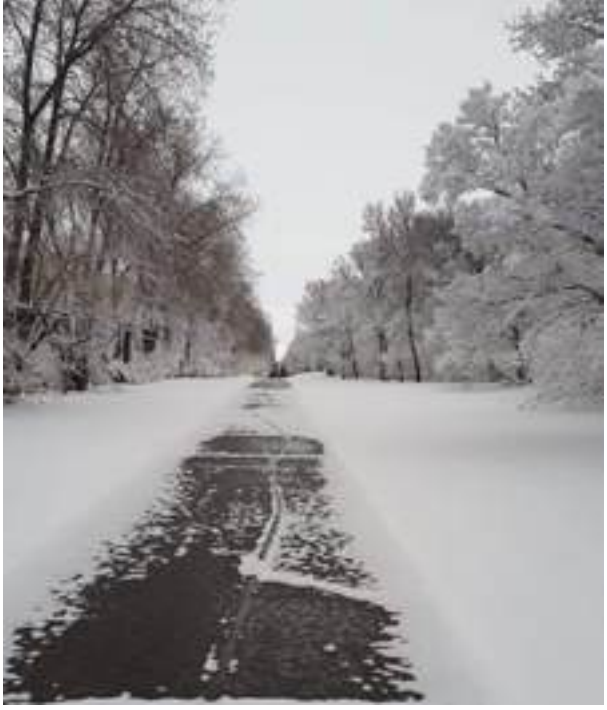
e. Consider infrastructure developments in the Floodway Area involving flood protection or services benefiting the community.

f. Restrict development within the west side of the diked flood protection area to natural space, public open space, recreation areas and sports fields.

g. Consider location and existing conditions elevation and (such as groundwater/drainage issues) and approved visions for the area (such as Assiniboine Gardens Secondary Plan) when reviewing development within the diked flood protection area.

7.4 Corridors

Corridors are major transportation and movement routes that enable efficient use of infrastructure and accommodate a concentration and higher residential densities and essential commercial uses in the General Urban Area. Corridors should be multi-use livable urban spaces that improve connectivity and prioritize multimodal access to main transportation routes and services that residents may need such as jobs, support and community services, entertainment, and recreation.



1 *Corridor General Policies*

a. Support higher-density and intensity residential, commercial, institutional, cultural, and recreational uses and developments relative to the General Urban Area.

b. Land uses should serve users of multimodal transportation options and residents of adjacent neighbourhoods.

2 *Corridor Development*

a. Corridors as shown on Map 3 should generally follow this typology:

Type	Examples	Uses
Residential Corridors ↔	Key collector streets, such as 10th and 26th Streets, and Maryland Park Avenues, which include higher density residential development.	Predominantly residential uses with opportunities for stand alone neighbourhood commercial or neighbourhood commercial uses as part of a mixed use development.
Commercial Corridors ↔	Key arterial streets, such as 1st and 18th Streets, and sections of Victoria and Richmond Avenues, which typically include commercial development.	Predominantly commercial uses with the potential for residential on the upper storeys.

b. Additional streets could be deemed Corridors based on the following criteria:

i. Moderate- to high-volume roadway.

ii. Transit route.

iii. Block pattern conducive for street-oriented development and higher-density development.

iv. Built on existing concentrations of jobs/services/populations.

3 *Corridor Design Considerations*

a. Encourage small-scale, fine-grain, neighbourhood-scale commercial developments.

b. Support the movement of people of all ages, abilities, and levels of mobility by providing safe and universally accessible facilities and design interventions such as wider sidewalks, barrier-free building entrances, pedestrian crossings, and signage.

c. Provide multimodal connections to the surrounding streets and open spaces.

d. Contribute to a visually appealing, active and enjoyable public realm through unique landscaping features, lighting, signage, seating, public art, public open spaces and four-season design elements.

e. Promote high-quality building design and materials.

f. Encourage minimum building setbacks and consistent building alignments to create a strong street edge.

g. Generally limit direct vehicle access to developments in the rear or side of a site, and accommodate parking in the rear or side, below buildings, or screened from street view.

h. Consideration should be given to the transition from Corridors to existing adjacent lower-density neighbourhoods.

i. Larger-scale retail development adjacent to arterial streets should occur in a cluster fashion along Commercial Corridors.

j. Promote visibility of commercial uses through appropriate entrance features, signage, and landscaping along Commercial Corridors.

7.5 Greenspace and Recreation

Parks, recreation, and open spaces are essential public amenities to create livable, urban communities. These community facilities create opportunities for safe physical activity, social interaction, and places of rest and recreation that improve quality of life. The City has a Greenspace Master Plan and a Recreation and Community Facilities Master Plan with details about the City's vision for greenspace and recreation. As well, the City has an Assiniboine River Corridor Master Plan to guide plans around the Assiniboine river corridor.

1 *Greenspace and Recreation General Policies*

a. Support the City's Greenspace Master Plan and Recreation and Community Facilities Master Plan to ensure Brandon keeps the vision for recreation.

b. Recreational spaces and facilities should provide opportunities for all residents in promoting a higher quality of life.

c. Ensure neighbourhoods are connected through shared greenspaces, open space, naturalized areas, and recreational areas to provide access for all residents.

d. Promote small recreation/green spaces such as pocket parks, public patios, and public art, on underused or vacant lots.

e. Support implementation of the Assiniboine River Corridor Master Plan to provide enhanced riverbank experience and encourage connectivity north and south of the river.

f. Collaborate with community groups such as school divisions for provision of educational spaces and community opportunities.

2 *Greenspace and Recreation Design Considerations*

a. Design safe, sustainable, public spaces that maintain universal accessibility within and between neighbourhoods and community facilities, such as parks and recreational trails, ensuring safe routes for all modes of movement and abilities.

b. Ensure all open spaces are publicly accessible by multiple modes of transportation and multiple access points, and within proximity to residential and amenity rich areas, and Commercial and Residential Corridors.

c. Encourage environmentally sensitive practices such as native and seasonal planting, xeriscaping, and rain gardens in the development of greenspaces, and the avoidance of chemical fertilizers and pesticides in maintenance.

d. Explore opportunities to create green spaces that reduce the urban heat island effects.

3 *Greenspace and Recreation Dedication*

a. Acquire land through land dedication or cash-in-lieu of land dedication for subdivisions of all land use types and for residential rezonings to support the development of community recreational amenities and facilities.

7.6 Development Reserve

Development Reserve lands are areas not serviced or planned to be serviced in the time frame of the City Plan. These lands will be held idle until needed to accommodate development.

1 *Development Reserve General Policies*

a. To ensure there is an abundance of land within the city boundaries to address any fluctuation in supply and demand trends for the various land uses.

b. To protect these lands from premature fragmentation until a more intensive use has been properly planned for development.

Implementation

Part 8

The City Plan document was formed by input from internal groups, external agencies, government agencies and community groups. It will take the joint efforts of all these parties to implement the vision successfully. The completion of Brandon's City Plan document is only the first step of implementing the City's long-term vision, objectives, and policies. The next step is ensuring citywide alignment. Tracking city-wide key indicators will allow the City of Brandon to document community-wide changes, identify trends and priorities, and report results in a consistent and transparent manner.

Implementation Policies

An Implementation Plan organized by the three themes of the plan with each of the corresponding implementation actions will be used to track and communicate progress of the City Plan. The implementation of the plan requires all departments to:

- Establish and report on key indicators, performance targets, and priority actions for each policy area to report on quarterly/annually to Council.
- Increase awareness and understanding of City Plan intent and applicability to City operations.
- Review existing and adopt new plans, policies, by-laws, and business plans that align with the City Plan.
- Adjust service delivery methods, and operational and capital budgets to align with the City Plan.
- Identify inter-jurisdictional, interdepartmental, agency and community partner roles and responsibilities to determine the best solutions to achieve the goals.

Interpretation

- Words and expressions used in the City Plan have the meanings ascribed to them in *The Planning Act* and the Provincial Land Use Policies, unless the context requires otherwise.
- Where there is development that does not currently comply with the long-range policies reflected in the land use concepts, these areas may still be zoned in the Zoning By-law according to their present use in order to avoid the creation of non-conforming uses, provided that the overall intent of the plan is maintained. Zoning applied to a property may conflict with the City Plan designation to accommodate existing uses until such time as the property is redeveloped in alignment with the objectives and policies of the City Plan. In these cases, subdivision and development proposals must be consistent with City Plan policies. Zoning By-law boundaries may differ slightly from the City Plan; however, in no case should the difference be contrary to the intent of the City Plan.
- Interpretation of the land use maps and policy intent of this City Plan is at the discretion of the Director of Planning & Buildings or their designate.
- In cases where the word “may” is included in a policy, it is provided as a guideline or suggestion toward implementing the intent of the policy.
- In cases where the word “should” is used in a policy, the policy is intended to apply to a majority of situations. However, the policy may be deviated from in a specific situation where the deviation is necessary to address unique circumstances that would otherwise render compliance impractical or generate substantial hardship, and to allow an acceptable alternate means to achieve the general intent of the policy.
- In cases where the words “shall” or “will” are included in a policy, the policy is considered mandatory. However, where actual quantities or numerical standards are contained within a mandatory policy, the quantities or standards may be deviated, provided that the deviation is necessary to address unique circumstances that will otherwise render compliance impractical or generate substantial hardship, and the intent of the policy is still achieved.

Definitions

Part 9

Accessible - Designed in a manner that allows ease of reach or ability to participate in activity or opportunities, including access to goods, services, buildings, places, and spaces.

Areas - Distinct parts of the City distinguished by their unique physical features and development patterns, as identified in the Urban Structure.

Active Transportation - Any mode of transportation by which people use their own energy to power their motion including walking, rolling, running, cycling, cross-country skiing, skateboarding, snow-shoeing, and use of a manual wheelchair.

Asset - Any resource, facility, infrastructure, or property that is owned by the City of Brandon.

Asset Management Plan - A planning tool for managing existing and new municipal assets in order to maximize benefits, reduce risks, and provide satisfactory levels of service to a community in a sustainable manner.

Barrier-Free - The ability for a person with a disability to use a space, system, or object without facing any physical, attitudinal, information/communication, or systemic barriers.

Built Environment - People-made places and spaces designed and constructed to serve their social, economic, and environmental needs.

City - Where capitalized as the "City of Brandon" or the "City", refers to the City of Brandon as a municipal government, or corporation. Where written in lower case as "the city" or as "Brandon", refers to the physical area of the municipality.

Corridors - Linear areas that connect neighbourhoods, transport people, goods, and services, and contain a mix of street-oriented uses that incorporate retail, employment, and residential uses, developed at overall greater densities, as identified in the Urban Structure.

Density - Population density is a measurement of population per unit area.

Developer - The individual or group undertaking an activity defined as development herein.

Development - The construction of a building on, over, or under land; a change in the use or intensity of use of a building or land; the removal of soil or vegetation from land; and the depositing or stockpiling of soil or material on land and the excavation of land.

Drinking Water System - A system used to pump, store, treat, and distribute drinking water, and includes the facilities and services used in the provision of drinking water.

Erosion – Land that, within a 50-year period, may be eroded away or become unstable due to the action of water contained in an adjacent water body.

Flood Mitigation - Measures taken to permanently protect individual buildings or other developments from flood damage.

Floodway - The portion of a flood risk area where flood waters are the deepest, fastest, and most destructive.

Hazard Lands - Lands subject to flooding, ponding, erosion, bank instability, flowing wells, high susceptibility to groundwater pollution, and poor subsoil characteristics for building purposes.

Hazardous Uses - Facilities or development, exclusive of railways and highways, that manufacture, handle, store, or distribute hazardous materials.

Heritage Resource - Heritage sites, heritage objects, and work or assembly of works of

nature or of human endeavour that is of value for its archaeological, palaeontological, pre- historic, historic, cultural, natural, scientific, or aesthetic features, and may be in the form of sites or objects of a combination thereof.

Heritage Object - As defined in Part IV of The Heritage Resources Act (1986). Objects can include archaeological, heritage, paleontological, natural heritage and designated objects.

Heritage Site - A site designated as a heritage site under Part I of The Heritage Resources Act (1986). Important features of (a) the historic or pre-historic development of the province or a specific locality within the province, or of the peoples of the province or locality and their respective cultures; or (b) the natural history of the province of a specific locality within the province; may be designated a heritage site by the minister.

Higher Density Residential - Development that includes medium scale and large scale housing development types such as townhouses (row or stacked), four-plexes, walk-up apartments, low-rise apartments, and mid-rise multi-unit apartments.

Infill - The development of vacant parcels within previously built areas. These areas are usually already serviced by existing public infrastructure, such as transportation, water, wastewater, and other utilities.

Infrastructure - The physical assets developed and used to support the city's people and activities. The City's infrastructure inventory includes such assets as drainage, roads and right-of-way infrastructure, parks and green spaces, buildings, fleet vehicles, transit facilities, buildings, traffic control devices, recreation facilities, computer networks, library, etc.

Intensification - The development of a property, site, or area in an existing neighbourhood at a higher density than currently exists. Intensification can be achieved through redevelopment, infill, development of vacant/underutilized lots, or through the conversion of existing buildings.

Livestock Operation - A permanent or semi-permanent facility or non-grazing area where livestock is kept or raised either indoors or outdoors, and includes all associated manure collection facilities.

Lower Density Residential - Residential development that includes small scale and some medium scale housing development types such as single-unit, two-unit (semi-detached, duplex), secondary suites (attached, detached), townhouses (row or stacked), four-plexes, walk-up apartments, and low-rise apartments.

Massing - The way in which a building's gross cubic volume is distributed upon the site, which parts are higher, lower, wider, or narrower.

Medium Density Residential - Residential development that includes medium scale housing development types such as townhouses (row or stacked), four-plexes, walk-up apartments, and low-rise apartments.

Micro Mobility - A range of small, lightweight devices operating at speeds typically below 25 km/h (15mph) and is ideal for trips up to 10km. Includes electric scooters, e-bikes, and similar options.

Mixed-Use Building - A building that can include residential, commercial, cultural, and institutional uses.

Mixed-Use Sites - An urban area that can include residential, commercial, cultural, and institutional uses, and where those functions are to some degree physically and functionally integrated.

Municipal Servicing Standards - Standards that are intended to provide specific guidelines to assist the City and developers in the design, preparation, and submission of plans and specifications for construction of municipal improvements and systems (e.g. roadways, water distribution systems, sewer systems, storm water facilities).

Natural Assets - Parts of the natural environment, such as the river, creeks, and urban forest, that contribute to the provision of one or more engineered municipal services. (e.g. fresh water provision, stormwater management, flood mitigation)

Open Space - An area of outdoor land or water that is publicly owned or publicly accessible, including municipal parks, civic spaces, provincial or federal parkland, institutional campuses, and other public spaces.

Park - Any land acquired, developed, or used by the City as a public park, sports field, playground, recreational area, or cemetery, title to which is vested in the name of the City.

Placemaking - Involves the planning, design, management, and programming of shared use spaces to help define a community's cultural, economic, social, and ecological identity.

Redevelopment - The creation of new units, uses or lots on previously developed land in existing neighbourhoods.

Renewable Energy - Energy that is collected from renewable resources, which are naturally replenished on a human timescale, such as sunlight, wind, rain, watercourse, and geothermal heat.

Safe & Warm - Emergency shelter designated for adults (18+) who experience occasional homelessness.

Scale - The height, width, and length of a building in relation to its surroundings.

Secondary Plan - A statutory plan as defined by the Planning Act that directs the future land use patterns, transportation and utility networks, and sequence of development in specific areas of a community.

Setback - The distance between a building or development and a property line.

Site - An area, place, parcel of land, building, structure, or an exterior or interior portion or segment of a building or structure, whether it is privately owned, owned by the City or owned by the Crown or an agency thereof.

Streetscape - All the elements that make up the physical environment of a street and define its character. This includes paving, trees and vegetation, lighting, building type and style, setback, pedestrian, cycle and transit amenities, street furniture, etc.

Sustainability - An approach that focuses on meeting the needs of the present without compromising the ability of future generations to meet their needs. It is composed of the three pillars of economic, environmental, and social.

Traffic Calming - The process and measures applied to address concerns about the speeding behaviour of motor vehicle drivers traveling on streets.

Universal Design and Accessibility - The design and composition of an environment so that it can be accessed, understood, and used to the greatest extent possible by all people regardless of their age, size, ability, or disability.

Urban Forest - The trees located within city limits, whether planted or naturally occurring. All trees found in a city, whether in parks, roadways, natural areas, or on private property are part of the urban forest.

Urban Form - Physical patterns and structural elements that define a cityscape, such as size, shapes, and configuration of buildings, open spaces, corridors, and facilities. Features can include materials and facades or housing types, layout, and density.

Urban Reserve - Expansions to reserve lands undertaken by recognized First Nations, typically within an urban area.

Vision Zero - A traffic safety approach and strategy to eliminate traffic fatalities and serious injuries.

Visitable Housing - Accessible design that allows social visits by people using a mobility device.

Walkability - The extent to which the built environment allows people to walk to get to everyday destinations. Walkability can be affected by street connectivity, mix of land uses, destinations, and pedestrian infrastructure.

Wastewater Management System – A system that is used to collect, store, treat, and dispose of wastewater, and includes the facilities and services associated with the management of wastewater.

Watershed - A land area that channels rainfall and snow melt to creeks, streams, and rivers.

Zero Emission Vehicle - Battery electric vehicles (BEV) or plug-in hybrid electric vehicles (PHEV) that have the potential to produce no tailpipe emissions.

Schedule 1

Downtown Brandon Secondary Plan

Schedule 2

North Brandon Gateway Secondary Plan

Schedule 3

Southwest Brandon Secondary Plan

Schedule 4

East Brandon Industrial Area Secondary Plan

Schedule 5

Assiniboine Gardens Secondary Plan

Schedule 6

Southeast Brandon Secondary Plan

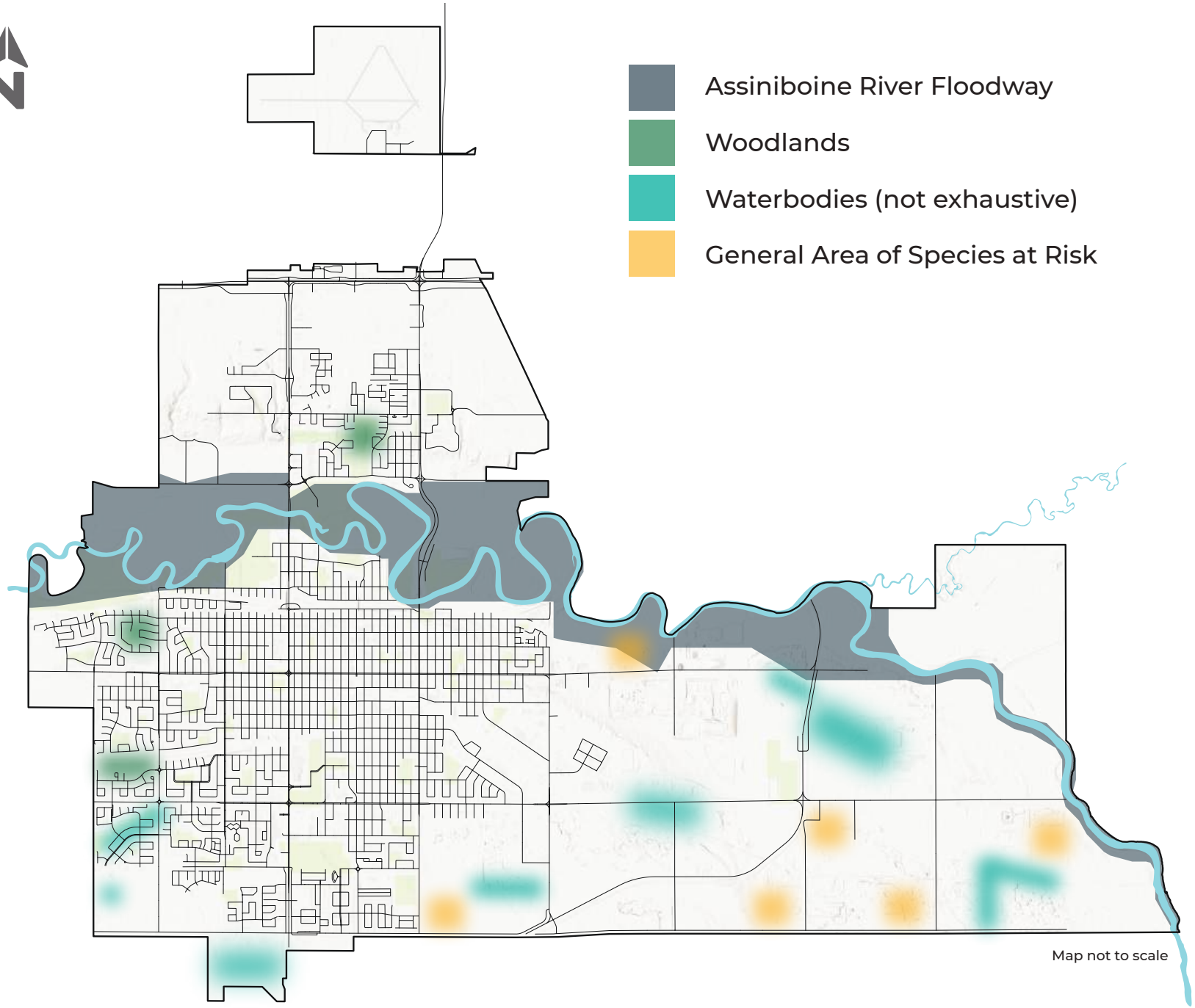
Appendix A

Emerging Area Growth Strategy

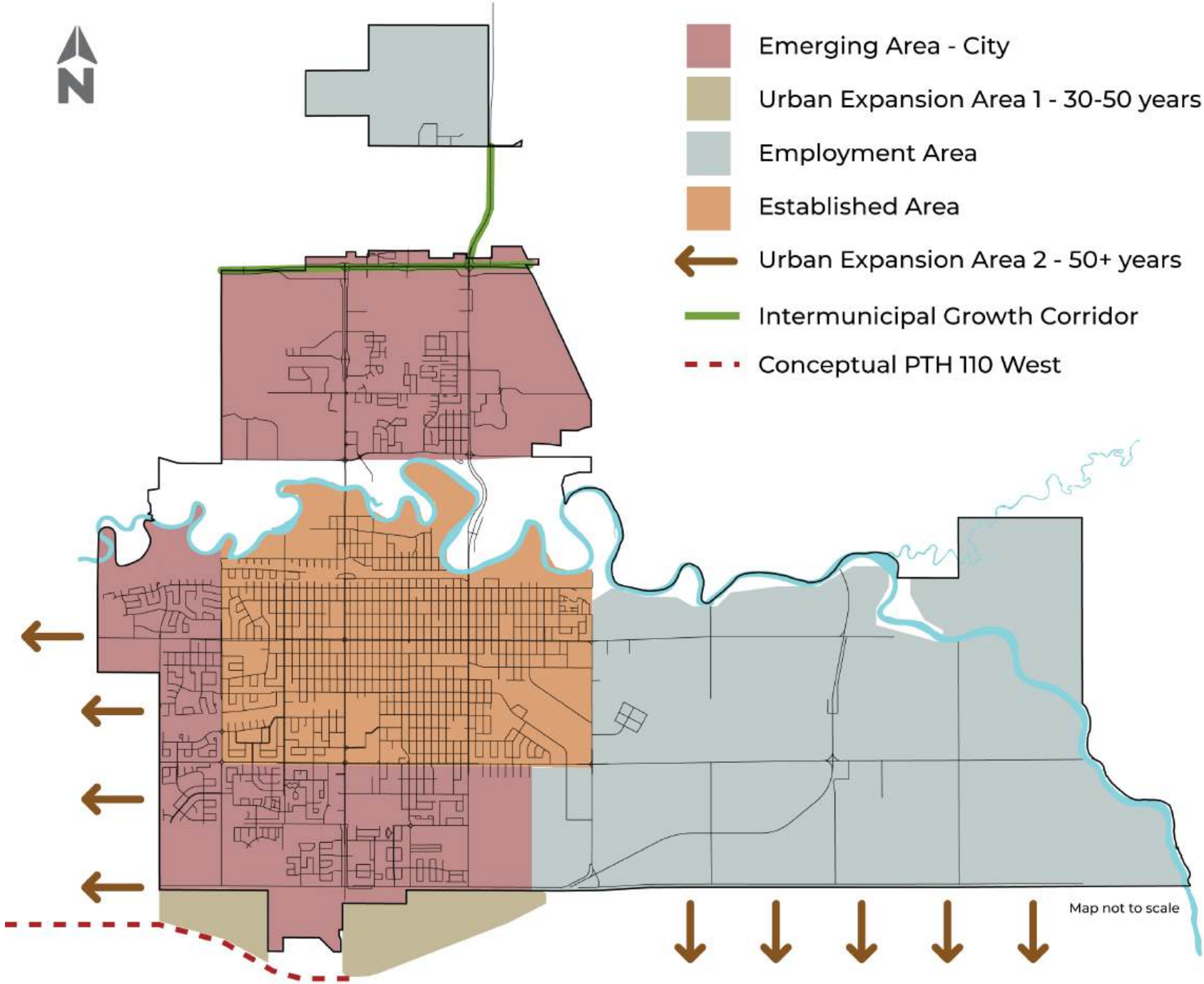
Appendix B

Public Engagement Report

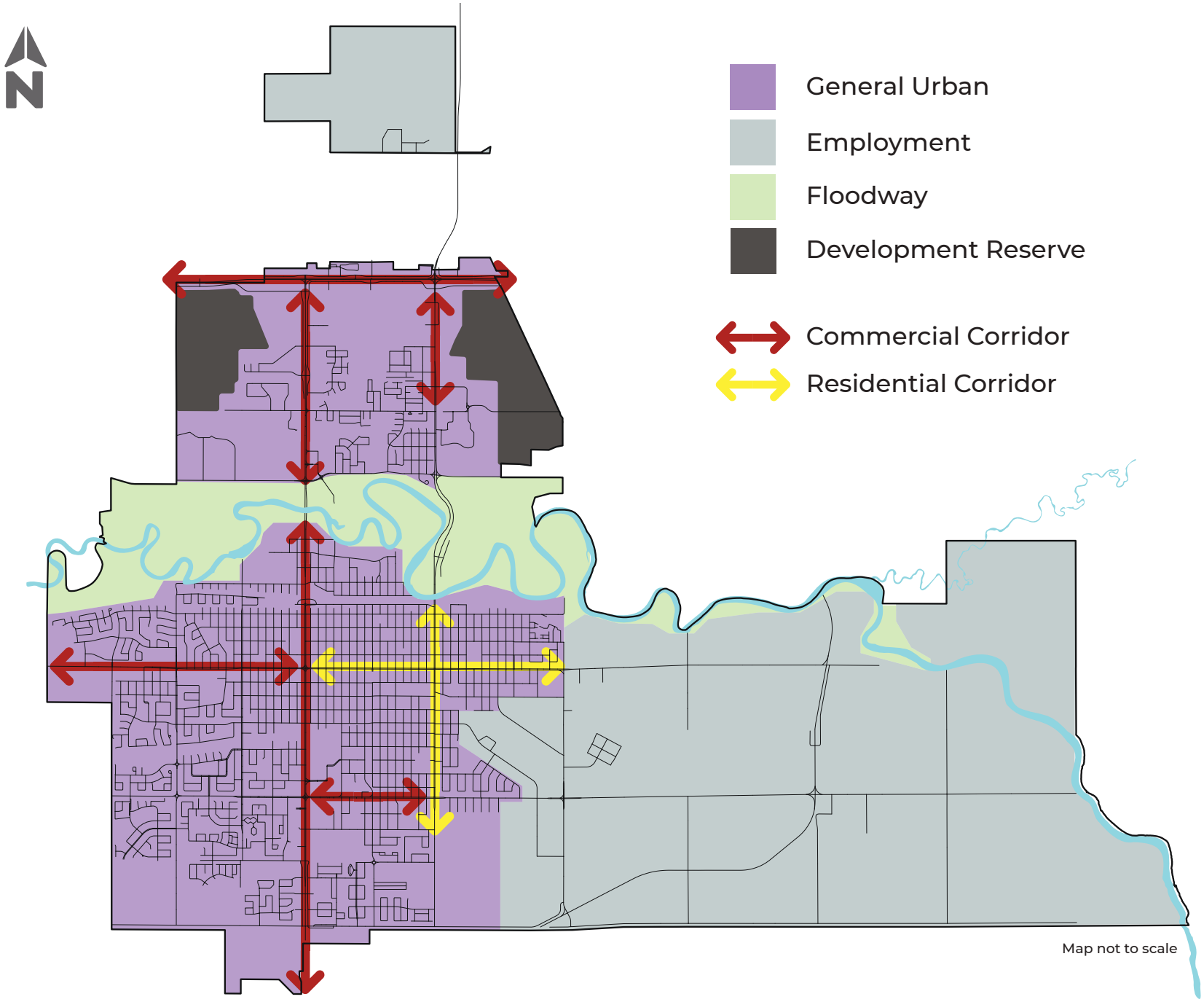
City of
BRANDON



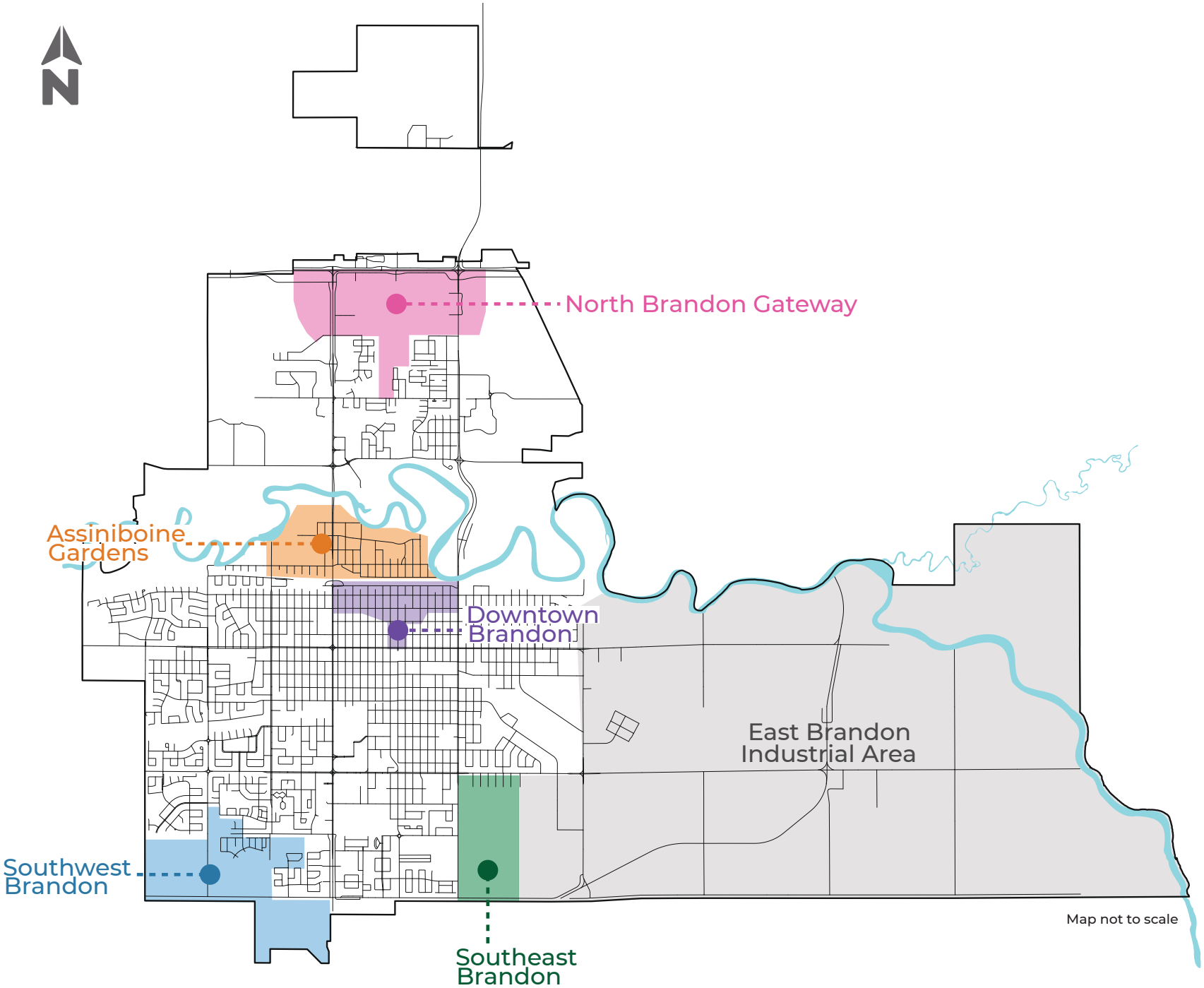
Map 1. **Sensitive Areas**



Map 2. **Growth Areas**



Map 3. **Urban Structure**



Map 4. **Secondary Plan Areas**

Box plots & t-tests

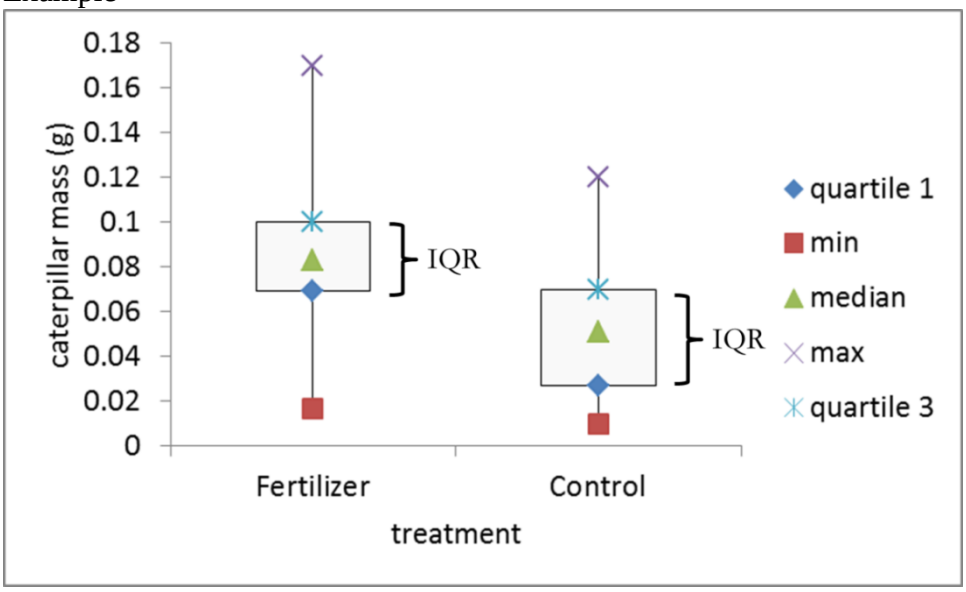
Box Plots

Box plots are a graphical representation of your sample (easy to visualize descriptive statistics); they are also known as box-and-whisker diagrams. Any data that you can present using a bar graph can, in most cases, also be presented using box plots. A box plot provides more information about the data than does a bar graph.

Things to know about box plots

- Your sample is presented as a box.
- The spacings between the different parts of the box help indicate the degree of dispersion (spread) and skewness in the data, and identify outliers.
- A box plot shows a 5-number data summary: minimum, first (lower) quartile, median, third (upper) quartile, maximum.
- The box is divided at the median.
- The length of the box is the **interquartile range** (IQR).
- The 1st quartile is the bottom line.
- The 3rd quartile is the top line.

Example



Quartiles divide frequency distributions

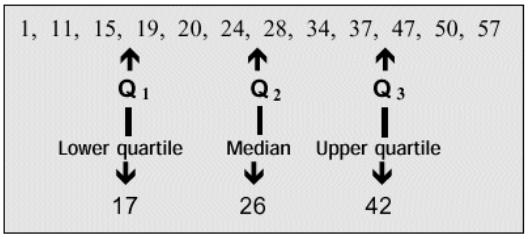
- Q_1 :1st or lower quartile: cuts off lowest 25% of the data
- Q_2 :2nd quartile or median: 50% point, cuts data set in half
- Q_3 :3rd quartile or upper quartile: cuts off lowest 75% of the data (or highest 25%)

Q_1 is the median of the first half of your data set.
Q_3 is the median of the second half of your data set.
The difference between the upper and lower quartiles is called the **interquartile range.** The interquartile range spans 50% of a data set, and eliminates the influence of outliers because the highest and lowest quarters are removed.

Example:
A biologist samples 12 red oak trees in a forest plot and counts the number of caterpillars on each tree.
The following is a list of the number of caterpillars on each tree: 34, 47, 1, 15, 57, 24, 20, 11, 19, 50, 28, 37

Calculate the median, 1st and 3rd quartile.
Step 1: Arrange the values in ascending order
1, 11, 15, 19, 20, 24, 28, 34, 37, 47, 50, 57

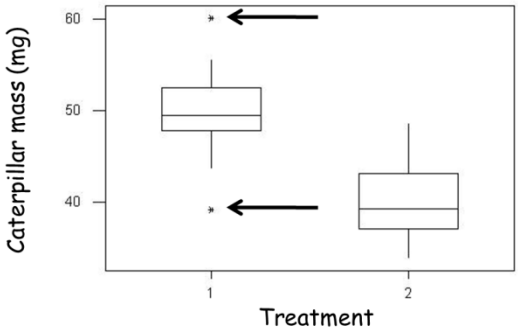
Step 2: Calculate the median
Median = (24 + 28)/ 2 = **26**



Step 3: Determine Q1
Lower quartile = value of middle of first half of data
Q_1 = the median of 1, 11, 15, 19, 20, 24
= (3rd + 4th observations) ÷ 2
= (15 + 19) ÷ 2 = **17**

Step 4: Determine Q3
Upper quartile = value of middle of second half of data Q_3
= the median of 28, 34, 37, 47, 50, 57
= (3rd + 4th observations) ÷ 2
= (37 + 47) ÷ 2 = **42**

Outliers
Observations that are 1.5 x IQR greater than Q3 or less than Q1 are called *outliers* and are distinguished by a different mark, e.g., an asterisk. The actual symbols used don't matter as long as you are consistent and you explain your symbols in the figure legend. In the figure below the arrows are pointing to the outliers.



Do not remove outliers from the dataset unless there is good reason to do so. A good reason could be that the outlier is a typo, for example a student records a caterpillar mass of 10 grams instead of 0.10 grams. Or if the equipment used to measure the observation failed, for example if the balance measures a caterpillar as 10 grams. Don't remove outliers just because you want to make your dataset look "prettier". Outliers can point us to interesting patterns or let us know that we may need to increase are sample size.

How do you determine if there are any outliers in your sample?

1. Calculate IQR x 1.5
2. Add this value to Q3. Are there any values greater than Q3 + (IQR x 1.5)? If so, then these values are outliers.
3. Subtract this value from Q1. Are there any values smaller than Q1 – (IQR x 1.5)? If so, then these values are outliers.

Whiskers
The two vertical lines (called *whiskers*) outside the box extend to the smallest and largest observations within 1.5 x IQR (interquartile range) of the quartiles. If there are no outliers, then the whiskers extend to the min and max values.

Comparing populations using *t*-tests

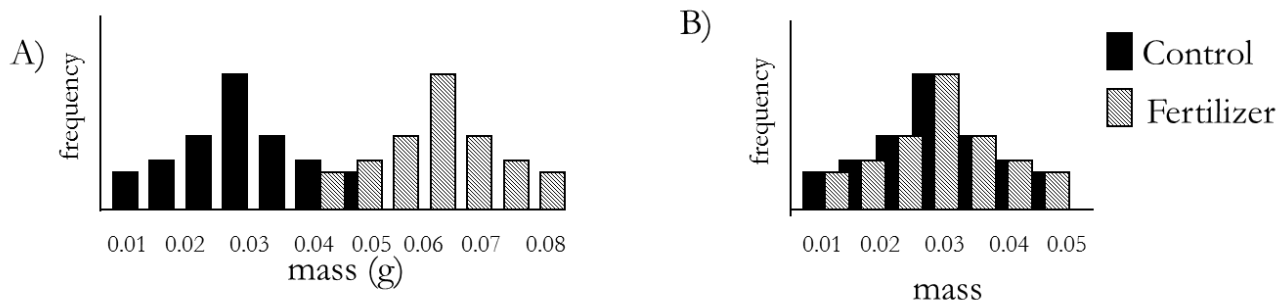
The t-test is a parametric test for comparing two sets of continuous data. It is used for comparing two sample means. For example, we want to know if the average mass of the caterpillars fed leaves from plants receiving the fertilizer treatment is larger than the average mass of caterpillars fed leaves from plants receiving the control treatment. A t-test allows you to determine if there is a statistically significance difference between the two treatments. When you are comparing two samples, then you use a t-test. A t-test doesn't work if you are comparing more than two samples. For example, if you were comparing caterpillars fed leaves from a high, low, and control fertilizer treatments, then you would not be able to use a t-test. The two-sample t-test is a hypothesis test for answering questions about the mean when the data are collected from two random samples of independent observations, each from an underlying normal distribution.

H_1: The means are the two samples (or treatments) are different.
H_0: (null hypothesis): The samples are from the same populations = the means are equal.

A t-test uses 3 pieces of information

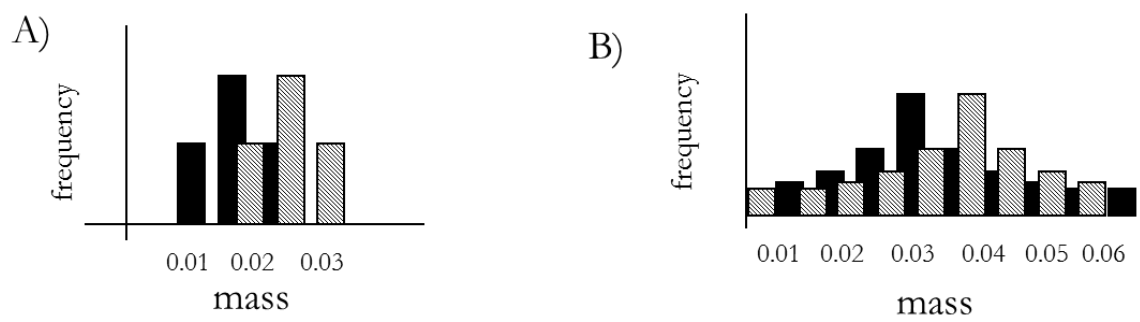
1. Sample size = the number of replicates in each sample.

2. The difference between the two means



The figures above show frequency histograms of hypothetical caterpillar mass data. The difference between the two means is greater in figure A). These data will produce a more significant t-test.

3. The variance of each sample



The figures above show frequency histograms of hypothetical caterpillar mass data. The difference between the two means is equal; however, the two samples in A) are more clearly distinguishable because of their smaller variances. The data in sample A) are more likely to produce a significant t-test. Variance is represented by s^2. Variance is a measure of data scattering around the mean. Variance is a way to measure how variable or dispersed the data are. Variance is equal to the standard deviation (standard deviation = s) squared.

Types of t-tests

The type of t-test that you decide to use depends on your hypothesis and methods used to collect your data. This handout provides background information about the t-test and explains how you could calculate it by hand. However, I strongly recommend that you use EXCEL or another statistical software package to do t-tests. The point of doing one by hand is so that you understand what goes into a t-test. If you have to do multiple t-tests, then doing it by hand is tedious.

A **paired t-test** compares two different measures taken from the same individual. For example, I could compare your scores on the ecology pretest with your score on the final to test the hypothesis that you learned something about ecology this semester.

A **t-test for independent samples** compares the averages of two samples. For example, I could compare your scores on the ecology final to the scores from last year's class to test the hypothesis that changes made in the class this year improved student learning. We call this an independent test because the individuals in first sample are not connected to the individuals in the second sample, i.e. the samples are independent of one another.

Additionally, a t-test can also be **one-tailed** or **two-tailed**. This distinction depends on your hypothesis. If your hypothesis is directional, then you would do a one-tailed test. For example "I hypothesize that students in this year's class will score higher on the final than students in last year's class." A one-tailed test completely disregards the possibility of testing for significance in the other direction.

If the difference between the two samples could go in either direction (sample A could be greater than B or sample B could be greater than A) then you would do a two-tailed test. For example "I hypothesize that there will be a difference in exam scores between this year's class and last year's class."

Only use a one-tailed test when you have a very good reason to expect that the difference between the two samples will be in a particular direction. If the difference between the two samples could go in either direction, then do a two-tailed test.

t-test assumptions

- The data in each sample are normally distributed.
- The data in each sample have approximately equal variances. The t-test is fairly robust with regard to this assumption, but if there is a large difference between the variances in each population then you can also do a t-test that assumes unequal variance.

A t-test is fairly robust to deviations from normality; this means that is it usually still OK to do a t-test even when your data do not have a perfect normal distribution. In this class, because of time constraints, we are going to assume that the data are normally distributed without first testing this assumption. However, if you are collecting data for "real" research purposes then you need to test this assumption first.

How to conduct an independent t-test

There are two parts to a t-test: the t-statistic and the p-value. First, you calculate the t statistic and then you determine the p-value that goes along with your t-statistic.

t – statistic:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{(s_1^2 / n_1) + (s_2^2 / n_2)}}$$

In English: The mean of sample 1 minus the mean of sample 2 divided by the square root of the variance of sample 1 divided by the sample size of sample 1 plus the variance of sample 2 divided by the sample size of sample 2.

You also need to calculate the degree of freedom (df) for the t-test:
Degree of freedom = $n_1 + n_2 - 2$

Example

You are researching the impact of urbanization on robin populations. You conduct point-counts in urban and rural settings. From these point-counts you are able to estimate robin density (# of robins per hectare). You conduct 15 point-count surveys in each setting.

The first step is to establish the specific hypotheses we wish to examine.
H_0: Null hypothesis is that the difference between the two groups is 0. **There is no difference in robin density between the urban and rural settings.**
H_1: Alternative or research hypothesis - the difference between the two groups is not 0. **There is a difference in robin density between the urban and rural settings.** This hypothesis would be tested using a 2-tailed t-test. Or you could make a directional prediction – I predict that robin density will be higher in the rural environment. This hypothesis would be tested using a 1-tailed t-test. For this example, we are going to use the 2-tailed hypothesis.

The data

Sample A - Urban	Sample B - Rural
15.6	15.6
19.2	22.8
15.4	23.9
14.9	14.9
25.1	18.4
28.4	19.4
19.5	17.9
29.9	22.1
10.9	20.1
17.9	20.4
17.7	20.7
23.2	20.2
22.6	19.6
28.6	14.6
28.6	21.7

Information you need for a t-test (calculated from the data):
Sample size of a = n_a = 15
Sample size of b = n_b = 15
$Mean_a$ = 21.17
$Mean_b$ = 19.49
$Var_a = s_a^2$ = 35.64
$Var_b = s_b^2$ = 7.79

Degree of freedom: 15 + 15 – 2 = 28

If you plug these numbers into the above t-stat formula, then you will calculate t = 0.988. Is this a high or low value?
Now you need to consult a statistical table to determine the significance of the t-statistic. There is a copy of part of a statistical table included at the end of these notes – additionally, if you have taken a statistics class previously and still have your textbook, then there is probably a copy of the table at the end of the book.

1. First, look down the left hand column to find the degrees of freedom that matches the one you calculated. Then, reading across that row, compare your t-value with the number in the second column. **The number in the chart is the critical value of t for p = 0.05**
2. If your calculated t-statistic is smaller than the p = 0.05 t-critical value, then your two samples are NOT significantly different. You must accept the null hypothesis that the two samples came from the same population. There is no difference between the means.
3. If your calculated t-statistic is larger than p = 0.05 t-critical value, then the difference between the means **is statistically significant**. You can reject the null hypothesis with no more than a 5% error rate and accept the alternative hypothesis.
4. The next column in the table presents the t-critical values for p = 0.025. If your value is larger than this number, then you can reject your null with a 2.5% error rate.
5. Then compare the computed p-value to alpha

Step 5: Comparing the computed p-value to alpha

All hypothesis tests are based on the same basic principles and are setup to minimize the probability of drawing an incorrect conclusion.

Two possibilities (reality):
Null hypothesis is true.
Null hypothesis is false.

Two outcomes of a hypothesis test:
We reject the null hypothesis.
We fail to reject the null hypothesis.

Reality → / Decision ↓	Null hypothesis is true. Populations are the same	Null hypothesis is false. Populations are different
Null hypothesis is rejected	Incorrect decision	
Null hypothesis is accepted.		Incorrect decision

Two possible types of mistakes:

- Type 1 error: The null hypothesis is true but is rejected. The probability of a type 1 error is denoted by alpha (α).
- Type 2 error: The null hypothesis is false, but is it not rejected. The probability of a type 2 error is denoted by beta (β).

A p-value represents the probability, if H_0 is actually true, that random chance could produce your observed results. If you calculate $p = 0.01$, then this means that there is a 1% chance of the null hypothesis being true (no difference between the means) given your observed results. If you calculate $p = 0.57$, then this means that there is a 57% chance of the null hypothesis being true given your observed results.

To determine if you should accept your hypothesis (i.e. reject your null hypothesis), you calculate a t-statistic and p-value.
You accept your hypothesis if $p < \alpha$ (greek letter alpha)

For most scientific studies, the accepted value of α is 0.05

The data support the research hypothesis if $p < 0.05$.
There is a statistically significant difference between the two populations.
The data fail to support the null hypothesis.

The data fail to support the research hypothesis if $p > 0.05$.
There is no statistically significant difference between the two populations.
The data support your null hypothesis.

For a t-test, as the difference between your calculated t-statistic and t-critical **increases**, the p-value **decreases**.

Back to the example:
$t = 0.988$ Is this a high or low value?

By looking at the table, you can see that this value is less than the t-critical value (2.05) and therefore it is **not** significant at $p = 0.05$. Therefore, we reject our research hypothesis and support our null hypothesis. There is no significant difference in robin density between urban and rural settings.

In this example, $p > 0.05$

But what if I'm using a computer program to analyze my data?
If you are using a computer program to calculate your statistics (which is what we normally do), then you don't need to figure out the t-critical value using a table. Most computer statistical programs, including the statistics you will do in EXCEL, compute the p-value for you. In this example, $p = 0.331$. This value is much larger than the accepted p-value of 0.05. This large p-value indicates that we cannot reject our null hypothesis (another way of saying this is that we fail to support our research hypothesis).

Reporting statistics in your results section
Report the t-statistic, degrees of freedom and p-value using the following format: Sentence stating your results (t_{df} = t-stat; p-value).

Continuing with the robin example:

- If you used a table to compare your t-statistics and t-critical:
  Robin density did not differ between the urban and rural settings ($t_{28} = 0.988$; $p>0.05$).
- If you used a computer program to analyze your statistics:
  Robin density did not differ between the urban and rural settings ($t_{28} = 0.988$; $p= 0.331$).

Report your statistics, **don't discuss p-values and t-statistics.**
This is wrong: My p-value was 0.046, this is less than the accepted value of 0.05, so I can reject my null hypothesis and accept my alternative hypothesis.

In the results section you just state the results (including the statistics). In the discussion section, you interpret and explain your results.

Don't ignore your statistical results.
In this example, average robin density was higher in the urban setting (21.19 robins per count) than in the rural setting (19.49 robins per count). However, these means are NOT significantly different. So you cannot make any statements about differences in robin density between the two environments. It is **incorrect** to say that robin density was higher in the urban setting.

Practice problems with answers

Problem 1 – Brown trout box plots

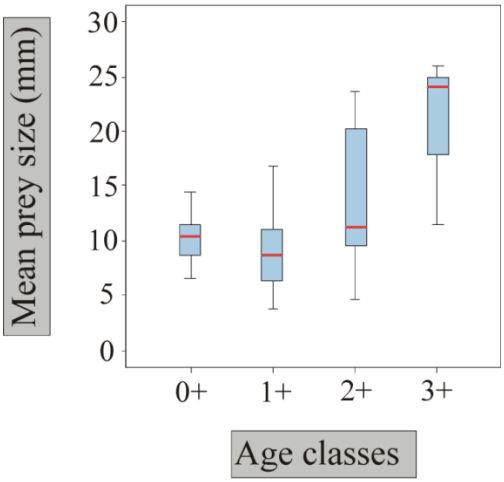


Figure 1: Brown trout eat a variety of freshwater invertebrates and the size of the food that they eat can vary with trout age. This figures shows box plots of the age-related variation in prey size of *Salmo trutta*, brown trout, in the Furelos River (NW Spain) during summer. From: Ontogenetic Dietary Shifts in a Predatory Freshwater Fish Species: The Brown Trout as an Example of a Dynamic Fish Species By Javier Sánchez-Hernández, María J. Servia, Rufino Vieira-Lanero and Fernando Cobo

a) What is the independent variable? What is the dependent variable?

b) Describe how prey size changes as trout age class increases.

c) Visually estimate the minimum, maximum, median, Q1, Q3 and the IQR for teach treatment.

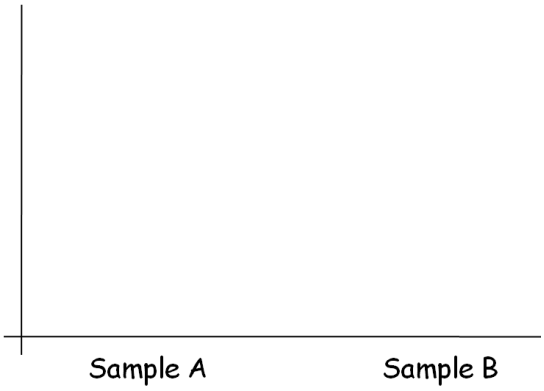
Age class	Min.	Max.	Median	Q1	Q3	IQR
0+						
1+						
2+						
3+						

d) Which of the box plots would most likely have normal? Explain your answer.

2. Creating and interpreting box plots

a) Use the data below to construct box plots of the two samples. Round to whole numbers.

Sample A	Sample B
11	14
38	16
15	17
35	20
11	11
8	13
32	17
10	16
16	22
16	15
27	13
18	13



b) Do you think that samples A and B were collected from the same population? Why or why not?

c) Which sample would you predict would have a greater standard deviation? Explain your answer.

3. A researcher hypothesized that phosphorus-fertilization of host plants will impact caterpillar growth. 8 caterpillars were reared on plants fertilized with phosphorus and 8 caterpillars are reared on plants that receive a water only (no phosphorus) treatment. The data are presented below.

Pupal Mass - Phosphorus	Pupal Mass - No phosphorus
12	8
7	7
3	4
11	14
8	6
5	7
14	12
7	5

Sample Mean		
Sample Size		
Variance	13.70	11.84

a) What would be the null hypothesis in this study?

b) What would be the alternate (research) hypothesis?

c) What type of t-test would you use?

d) How many degrees of freedom for your t-test?

e) What is your t-critical?

f) What is your computed t-statistic?

g) Is there a significant difference between the two groups?

h) Write these results up as you would in the results section of a lab report (include a statement of the results and the statistics).

i) Interpret these results as you would in the discussion section of your lab report (i.e. what do these results mean).

Answers

1. Brown trout

a) What is the independent variable? What is the dependent variable?
Independent variable: Brown trout age class
Dependent variable: Prey size

b) Describe how prey size changes as trout age class increases.
Older fish eat larger prey.

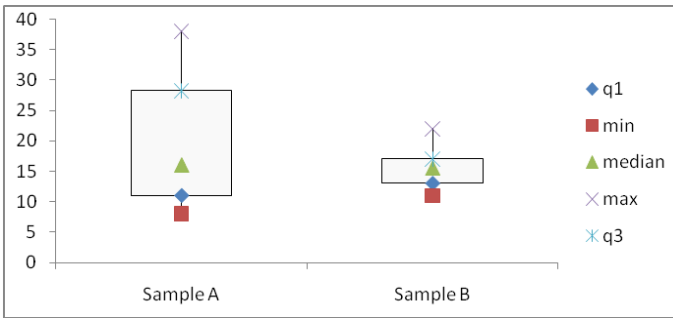
c) Visually estimate the minimum, maximum, median, Q1, Q3 and the IQR for teach treatment. (Since these are estimates, it's OK if your values are slightly different).

Age class	Min.	Max.	Median	Q1	Q3	IQR
0+	*6*	*15*	*11*	*9*	*12*	*3*
1+	*4*	*17*	*9*	*6*	*11*	*5*
2+	*5*	*24*	*12*	*10*	*20*	*10*
3+	*12*	*26*	*24*	*18*	*25*	*8*

d) Which of the box plots would most likely have normal distributions (you may want to review the pine needle handout)? Explain your answer.
The box plots for age classes 0+ and 1+ most likely were produced from data that are normally distributed. When data are normally distributed (bell curve) then the mean = median and there are approximately an equal number of replicates above and below the median (the median looks like it is in the middle of the distribution of data).

2. Use the data below to construct box plots of the two samples. Round to whole numbers.

Sample A	Sample B
11	14
38	16
15	17
35	20
11	11
8	13
32	17
10	16
16	22
16	15
27	13
18	13



a) Do you think that samples A and B were collected from the same population? Why or why not?
Answers may vary – a correct answer depends on a correct explanation. The two samples have the same median but the range of values is greater in sample A. There is much more variation within the sample A population and the mean is greater.

b) Which sample would you predict would have a greater standard deviation?
Sample A (greater range of data). If you actually calculated the values:

	Sample A	Sample B
average	20	16
stdev	10.5	3.1

Problem 2: A researcher hypothesized that phosphorus-fertilization of host plants will impact caterpillar growth. 8 caterpillars were reared on plants fertilized with phosphorus and 8 caterpillars are reared on plants that receive a water only (no phosphorus) treatment. The data are presented below.

Pupal Mass - Phosphorus	Pupal Mass - No phosphorus
12	8
7	7
3	4
11	14
8	6
5	7
14	12
7	5

Sample Mean	8.375	7.875
Sample Size	8	8
Variance	13.70	11.84

a) What would be the null hypothesis in this study?
There will not be a difference in mass between the caterpillars fed phosphorus-treated leaves and the caterpillars fed control leaves.
b) What would be the alternate (aka research) hypothesis?
There will be a difference in mass between the caterpillars fed phosphorus-treated leaves and the caterpillars fed control leaves.
c) What type of t-test would you use?
A 2-tailed t-test. In the description above, the researcher hypothesizes that phosphorus will impact caterpillar mass, so there could be a positive or negative effect of phosphorus on caterpillar mass.
d) How many degrees of freedom for your t-test?*14*
e) What is your t-critical? $t_{critical} = 2.145$
f) What is your computed t-statistic? $t_{stat} = 0.279$
g) Is there a significant difference between the two groups? *No*
h) Write these results up as you would in the results section of a lab report (include a statement of the results and the statistics).
Pupal mass of caterpillars fed phosphorus treated leaves was not significantly different than pupal mass of caterpillars fed control leaves ($t_{14} = 0.279$, $p > 0.05$).
i) Interpret these results as you would in the discussion section of your lab report (i.e. what does these results mean).
Phosphorus had no effect on caterpillar growth. Perhaps phosphorus is not a limiting nutrient for caterpillars, so adding more phosphorus to the plants did not increase caterpillar mass. Other explanations are possible. However, it is important that you don't discuss you t-stat or p-value in the discussion.

Critical values for the t-distribution

Degrees of Freedom	p=0.05	p=0.025	p=0.01	p=0.005
1	12.71	25.45	63.66	127.32
2	4.30	6.20	9.92	14.09
3	3.18	4.17	5.84	7.45
4	2.78	3.50	4.60	5.60
5	2.57	3.16	4.03	4.77
6	2.45	2.97	3.71	4.32
7	2.36	2.84	3.50	4.03
8	2.31	2.75	3.36	3.83
9	2.26	2.68	3.25	3.69
10	2.23	2.63	3.17	3.58
11	2.20	2.59	3.11	3.50
12	2.18	2.56	3.05	3.43
13	2.16	2.53	3.01	3.37
14	2.14	2.51	2.98	3.33
15	2.13	2.49	2.95	3.29
16	2.12	2.47	2.92	3.25
17	2.11	2.46	2.90	3.22
18	2.10	2.44	2.88	3.20
19	2.09	2.43	2.86	3.17
20	2.09	2.42	2.84	3.15
21	2.08	2.41	2.83	3.14
22	2.07	2.41	2.82	3.12
23	2.07	2.40	2.81	3.10
24	2.06	2.39	2.80	3.09
25	2.06	2.38	2.79	3.08
26	2.06	2.38	2.78	3.07
27	2.05	2.37	2.77	3.06
28	2.05	2.37	2.76	3.05
29	2.04	2.36	2.76	3.04
30	2.04	2.36	2.75	3.03
40	2.02	2.33	2.70	2.97
60	2.00	2.30	2.66	2.92
120	1.98	2.27	2.62	2.86
infinity	1.96	2.24	2.58	2.81

Rick Safford- Public Comments to DNR regarding SEPA File No. 24-101601

Dated: November 5, 2024

Cc: Washington Board of Natural Resources

Dear Members of the Washington Board of Natural Resources,

The ban on net-pen aquaculture should not be allowed to go through as it is another display of how Hilary Franz has and continues to use and step outside her authority to make decisions for personal interests and should be unbiased. The DNR manages state owned lands for public use to encourage and foster the use of these lands for the production of food, fiber, income and recreation and work in the interest for all the citizens of Washington state. A blanket prohibition on a preferred water dependent use is not in the publics best interests.

State law sets guidelines for DNR to use for evaluation and decision making on whether the use of publics lands makes sense for the application and in the best interest of the public. In these guidelines DNR is supposed to use the community, local, state, and federal government agencies to base their decisions. Hilary Franz has failed to work with any of these agencies and she has made unilateral decisions out of her political and personal interests, which conflict with state and federal rules and policies.

The net-pen aquaculture industry has always worked with the community and government agencies to produce high quality affordable seafoods for human consumption. This is in the best interest of the public. The industry has used third party certifications and inspections and will continue to carry out the necessary monitoring, practices and reporting to ensure environmental compliance and fish health safety. These reports are well documented and presented to the appropriate agencies on a routine basis.

Hilary has failed to utilize the agencies and the available information as a resource on which to base her decisions. She has and continues to make false accusations without providing any scientific bases for these assumptions. She proclaims that the escapement of 250,000 fish was a tragic devastation to the environment and that net-pen aquaculture has a negative impact on wild fish. If this is true, the science should be presented and the effects of the escapement in 2017 quite apparent without a doubt. There are no reports or observations of any Atlantic salmon feral populations occurring in Washington state since this accident. The fish do not survive in the wild and there are countless scientific studies and historical evidence that escaped and purposely planted Atlantic salmon are not successful colonizers in the NW. This issue is also moot anyway, as Washington state law said that only native fish species can be raised in marine net pens now. The company I worked for moved to raising native all-female triploid steelhead. Those fish did well in the net pens, were a quality food product and can be the future for increasing local seafood, creating jobs and allowing future technological innovations to occur in Washington. A managed solution is needed for the future of the people in Washington state. A prohibition is not a managed solution, it is a one side all or nothing decision that will have unintended negative consequences for our communities, small business and the environment down the road.

Around the 1980's, there was bill presented for the net-pen industry to be self-regulated to save government time and money. The industry fought this bill because it was not in the best interest of the industry being on public lands and industry wanted the government to be involved to guide the monitoring process and develop proper regulations for the health of the environment and guidance for the industry for years to come. It was to help work through or avoid times like this.

Due to the failure to renew the leases at existing marine net pens sites there was an immediate loss of income for the federal, state, local governments and the numerous small businesses my company worked with throughout the area. Also, it directly caused the direct loss of 60 to 80 jobs, loss of income for surrounding businesses, and even caused other supporting companies to close or downsize because due to this wrong decision by the Commissioner. But even more so, the greater loss is the production of locally produced, quality and affordable seafood for people in Washington. The impact of the lack of locally grown seafood on the coast requires Washington to import seafood and will continue to increase commercial fishing pressures on the wild stocks in Washington and around the world. There have been "millions" of servings of locally grown seafood that have not hit the dinner table since the lease renewal decline. The ban by DNR will only exacerbate this problem. Marine fish and shellfish aquaculture provides a future ability to grow our seafood sources for years to come.

This is not just about one company, it's about the growing demand that another 2 billion people on this planet by 2050 that will be putting immense additional pressure on the ocean capture fisheries in order to produce a vital protein source. Capture fisheries cannot sustain that pressure, and aquaculture innovation is necessary to meet this and other future challenges. That is why I strongly oppose DNR's proposed ban on commercial net-pen aquaculture. DNR has the ability to use lease conditions and other management tools to mitigate and monitor commercial fish aquaculture leaseholders and DNR needs to explain why they have not given any alternatives rather than a blanket ban on commercial net pens. It also not justifiable to allow delayed release net pens and ban commercial net pens, when they are essentially the same thing. Both are floating fish pens that feed the fish a formulated fish feed until they reach a certain size.

DNR needs to review <u>all the</u> information available to them and look at the big picture which will require them to consult with the other state and especially the federal fisheries agencies that expertise in these future trends in order to properly design management policies that will carefully manage our public natural resources for future generations. DNR's proposed rule language is not a solution and I strongly oppose it.

Thank You

Rick Safford

Pier Manager/Assistant Operations Mgr
Cooke Aquaculture Pacific
rick.safford@cookeaqua.com
206-452-8936

Bucket List

- A WARNER BROS. STUDIO TOUR HOLLYWOOD™
- B UNIVERSAL STUDIOS HOLLYWOOD™
- C THE HOLLYWOOD SIGN
- D GRIFFITH OBSERVATORY
- E HOLLYWOOD WALK OF FAME
- F THE GETTY CENTER
- G ACADEMY MUSEUM OF MOTION PICTURES
- H LA BREA TAR PITS
- I VENICE CANALS
- J WATTS TOWERS

San Fernando Valley

1. WESTFIELD TOPANGA & THE VILLAGE
2. VALLEY RELICS MUSEUM
3. THE JAPANESE GARDEN
4. GREAT WALL OF LOS ANGELES
5. HOLLYWOOD BURBANK AIRPORT
6. IDLE HOUR

Greater Hollywood

7. HOLLYWOOD BOWL
8. OVATION HOLLYWOOD
9. HOLLYWOOD PANTAGES THEATRE
10. HOLLYHOCK HOUSE
11. SILVER LAKE RESERVOIR

Downtown/LA Metro

12. ECHO PARK LAKE
13. DODGER STADIUM
14. CHINATOWN CENTRAL PLAZA
15. OLVERA STREET
16. WALT DISNEY CONCERT HALL/THE MUSIC CENTER
17. THE BROAD
18. GRAND CENTRAL MARKET
19. L.A. LIVE/CRYPTO.COM ARENA
20. LOS ANGELES CONVENTION CENTER

Mid-City

21. THE WILTERN
22. HOLOCAUST MUSEUM
23. THE ORIGINAL FARMERS MARKET/THE GROVE
24. LACMA
25. PETERSEN AUTOMOTIVE MUSEUM

Westside

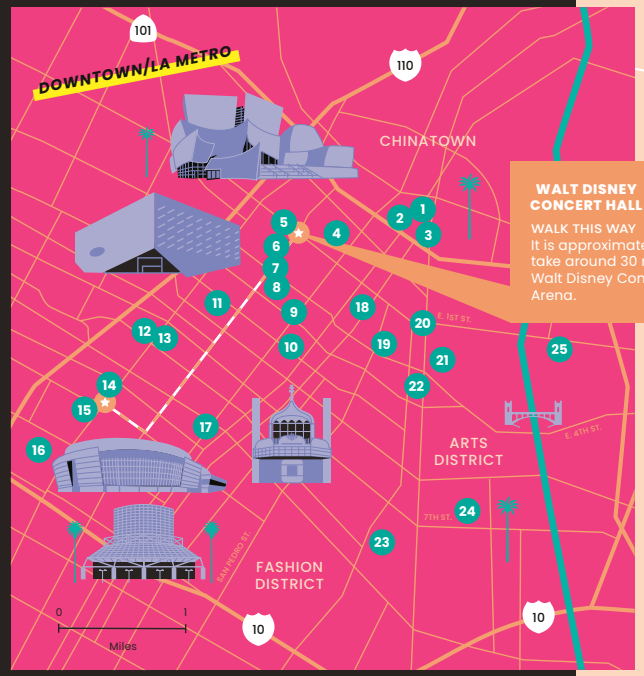
26. RODEO DRIVE
27. UCLA
28. SONY PICTURES STUDIOS
29. WENDE MUSEUM

South Los Angeles

30. KENNETH HAHN STATE RECREATION AREA
31. LEIMERT PARK VILLAGE
32. USC
33. EXPOSITION PARK:
    - CALIFORNIA SCIENCE CENTER
    - NATURAL HISTORY MUSEUM
    - CALIFORNIA AFRICAN AMERICAN MUSEUM
    - BANC OF CALIFORNIA STADIUM
    - LOS ANGELES MEMORIAL COLISEUM
34. THE FORUM
35. SOFI STADIUM

Beach Cities

36. MALIBU PIER
37. SANTA MONICA PIER
38. VENICE BEACH SKATEPARK
39. LAX
40. MANHATTAN BEACH PIER/ ROUNDHOUSE AQUARIUM
41. REDONDO BEACH PIER
42. PORSCHE EXPERIENCE CENTER
43. SOUTH COAST BOTANIC GARDEN
44. THE BANNING MUSEUM
45. BATTLESHIP *IOWA*
46. KOREAN FRIENDSHIP BELL
47. POINT FERMIN LIGHTHOUSE



WALT DISNEY CONCERT HALL ⟷ CRYPTO.COM ARENA 1.5 mi

WALK THIS WAY
It is approximately 1.5 miles and would take around 30 minutes to walk from Walt Disney Concert Hall to Crypto.com Arena.

Downtown

1. OLVERA STREET/ AVILA ADOBE
2. LA PLAZA DE CULTURA Y ARTES
3. LOS ANGELES UNION STATION
4. GRAND PARK
5. WALT DISNEY CONCERT HALL
6. THE BROAD
7. MUSEUM OF CONTEMPORARY ART
8. ANGELS FLIGHT RAILWAY
9. GRAND CENTRAL MARKET
10. THE LAST BOOKSTORE
11. CENTRAL LIBRARY
12. SEVENTH STREET/ METRO CENTER
13. THE BLOC
14. L.A. LIVE
15. CRYPTO.COM ARENA
16. LOS ANGELES CONVENTION CENTER
17. THE THEATRE AT ACE HOTEL
18. WELLER COURT
19. JAMES IRVINE JAPANESE GARDEN AT JACCC
20. JAPANESE AMERICAN NATIONAL MUSEUM
21. ANGEL CITY BREWERY
22. LITTLE TOKYO MARKET PLACE
23. ROW DTLA
24. INSTITUTE OF CONTEMPORARY ART
25. SELF HELP GRAPHICS & ART

THE GREAT WALL OF LOS ANGELES
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HOLLYWOOD
HOLLYWOOD SIGN
HOLLYWOOD HILLS
HOLLYWOOD BOWL
GRIFFITH OBSERVATORY
DOLBY THEATRE
HOLLYWOOD
HOLLYWOOD WALK OF FAME
HOLLYHOCK HOUSE
SILVER LAKE
VISTA THEATRE
BEL AIR
WEST HOLLYWOOD
GETTY MUSEUM
PACIFIC DESIGN CENTER
THE ORIGINAL FARMERS MARKET
ACADEMY MUSEUM OF MOTION PICTURES
DODGER STADIUM
HAMMER MUSEUM
CENTURY CITY
WESTSIDE
MID-CITY
PACIFIC PALISADES
SANTA MONICA BLVD.
DOWNTOWN/ LA METRO
THE COLISEUM EXPOSITION PARK
SONY PICTURES STUDIOS
SANTA MONICA PIER
CRENSHAW
BANC OF CALIFORNIA STADIUM
VENICE SKATEPARK/ BOARDWALK
SOUTH LOS ANGELES
BEACH CITIES
SOFI STADIUM
INGLEWOOD
LAX
WATTS TOWERS
101
170
134
2
405
10
1
187
110
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2
Miles

SANTA MONICA ⟷ DOWNTOWN 15 mi

The distance from Downtown LA to Santa Monica Pier is approximately 15 miles. While it can take up to 40 minutes by car, you can also make this trip by train: take the E Line.