

City of Kelowna

Regular Council Meeting

AGENDA



Monday, June 20, 2022
1:30 pm
Council Chamber
City Hall, 1435 Water Street

Pages

1. Call to Order

I would like to acknowledge that we are gathered today on the traditional, ancestral, unceded territory of the syilx/Okanagan people.

This Meeting is open to the public and all representations to Council form part of the public record. A live audio-video feed is being broadcast and recorded on kelowna.ca.

2. Confirmation of Minutes

3 - 8

June 13, 2022

3. Non-Development Reports & Related Bylaws

3.1. 2022 Citizen Survey Results

9 - 45

To present the results of the 2022 Citizen Survey.

3.2. Recycle BC and Curbside Collection

46 - 59

To receive supplemental information regarding future responsibility for Recycling Collection in the City and to provide direction regarding the renewal of an existing Statement of Work with Recycle BC for the collection of packaging and paper products.

3.3. Lynrick Rd Culvert Replacement Project

60 - 61

To seek Council approval of additional budget for the Lynrick Rd Culvert Replacement Project.

3.4. Knox Mountain Park Management Plan Update

62 - 209

To provide an update on the Knox Mountain Park Management Plan.

3.5.	Educational Institutional Future Land Use -1205 High Rd	210 - 220
	To provide the rationale for designating the property located at 1205 High Road as Educational / Institutional as part of the 2040 Official Community Plan Process.	
3.6.	Suburban Multi Unit Future Land Use - 4998 Gordon Dr	221 - 230
	To provide the rationale for designating the property located at 4998 Gordon Drive as Suburban – Multi Unit as part of the 2040 Official Community Plan Process.	
3.7.	Climate Resilient Kelowna GHG Modelling and Targets	231 - 258
	To update Council on initiatives to support the development of the Climate Resilient Kelowna strategy, the outcomes of the GHG Modelling Study and to recommend new greenhouse gas emission reduction targets.	
3.8.	Infill Housing and UBCM Grant - Project Update	259 - 284
	To provide an update on the workplan and objectives for the Infill Options project funded by the UBCM Local Government Development Approvals Program Grant.	
4.	Bylaws for Adoption (Non-Development Related)	
4.1.	BL12344 - Amendment No. 33 to Bylaw Notice Enforcement Bylaw No. 10475	285 - 286
	To adopt Bylaw No. 12344.	
4.2.	BL12393 - General Local Government Election Bylaw	287 - 291
	To adopt Bylaw No. 12393.	
5.	Mayor and Councillor Items	
6.	Termination	



City of Kelowna Regular Council Meeting Minutes

Date:	Monday, June 13, 2022
Location:	Council Chamber City Hall, 1435 Water Street
Members Present	Mayor Colin Basran, Councillors Maxine DeHart, Ryan Donn, Gail Given, Brad Sieben*, Mohini Singh, Luke Stack* and Loyal Wooldridge*
Members Absent	Councillor Charlie Hodge
Staff Present	City Manager, Doug Gilchrist; City Clerk, Stephen Fleming; Divisional Director, Planning & Development Services, Ryan Smith*, Planner 1, Tyler Caswell*; Planner Specialist, Wesley Miles*; Divisional Director, Partnership & Investments, Derek Edstrom*; Energy Manager, Ryan Baines*; Real Estate Department Manager, Johannes Saufferer*; Water Quality & Customer Care Supervisor, Ed Hoppe*; Transit Service Coordinator, Mike Kittmer*; Event Development Supervisor, Chris Babcock*; Outdoor Events Coordinator, Sarah Semeniuk*; Community & Neighbourhood Services Manager, Mariko Siggers*; Divisional Director, Active Living & Culture, Jim Gabriel*; Deputy City Clerk, Laura Bentley*
Staff participating Remotely	Legislative Coordinator (Confidential), Clint McKenzie
Guests Present	Lance MacDonald*, Co-Chair Community Signature Event Committee; Jen Casorso*, Urban Matters
*Denotes partial attendance	

1. Call to Order

Mayor Basran called the meeting to order at 1:33 p.m.

2. Confirmation of Minutes

Moved By Councillor DeHart/Seconded By Councillor Wooldridge

Ro418/22/06/13 THAT the Minutes of the Regular Meetings of May 30, 2022 be confirmed as circulated.

Carried

3. Development Application Reports & Related Bylaws

3.1 Gallagher Rd 2570 - A22-0002 FH22-0003_Parmjeet Singh Gurm and Gurjit Kaur Gurm

Staff:

-Displayed a PowerPoint Presentation summarizing the application.

Moved By Councillor Singh/Seconded By Councillor Wooldridge

Ro419/22/06/13 THAT Agriculture Land Reserve Appeal No. A22-0002 for Lot 3 Sections 7 and 18 Township 27 ODYD Plan 2037 Except Plan 10570, located at 2570 Gallagher Road, Kelowna, BC for a Non-Adhering Residential Use Permit pursuant to Section 25 of the Agricultural Land Commission Act, be supported by Council;

AND THAT the Council directs Staff to forward the subject application to the Agricultural Land Commission for consideration;

AND THAT Council authorizes the issuance of Temporary Farm Worker Housing Permit No. FH22-0003 for Lot 3 Sections 7 and 18 Township 27 ODYD Plan 2037 Except Plan 10570 located at 2570 Gallagher Road, Kelowna, BC subject to the following:

1. Approval by the Agricultural Land Commission of Non-Adhering Residential Use Permit Application A22-0002;
2. The dimensions and siting of the building to be constructed on the land in accordance with Schedule A;
3. The exterior design and finish of the building to be constructed on the land, be in accordance with Schedule B;
4. A vegetated buffer is provided for screening adjacent property lines and between the temporary farm worker housing and active farming areas in accordance with Schedule C;
5. The applicant is required to post the City a Landscape Security deposit in the form of a "Letter of Credit" in the amount of 125% of the estimated value of the landscape buffer, as determined by a professional landscaper;
6. Registration of a Section 219 Restrictive Covenant on the Title that states:
 - a. The dwellings will be used for temporary farm workers only;
 - b. The owner will remove the dwellings if the farm operation changes such that if they are not longer required;
 - c. The dwellings will only be used for farm workers for a maximum of ten (10) months of the year;
 - d. The maximum number of accommodations permitted on this farm unit within this City sector is 60 workers: and,
 - e. The temporary farm worker housing building footprint is a maximum of 0.3 ha.

AND FURTHER THAT this Permit is valid for two (2) years from the date of Council approval, with no opportunity to extend.

Carried

3.2 DP21-0128 - 3081 Hall Rd - Mission Creek Landing., Inc. No. BC1108111

Staff:

- Displayed a PowerPoint Presentation summarizing the application and responded to questions from Council.

Councillor Sieben joined the meeting at 1:46 p.m.

Moved By Councillor Given/Seconded By Councillor Wooldridge

Ro420/22/06/13 THAT Council authorize the issuance of Development Permit No. DP21-0128 for a portion of Lot 1, Section 16, Township 26, ODYD Plan 27991 located at 3081 Hall Road, Kelowna, BC subject to the following:

1. The dimensions and siting of the building to be constructed on the land be in accordance with Schedule "A";
2. The exterior design and finish of the building to be constructed on the land, be in accordance with Schedule "B";
3. Landscaping to be provided on the land be in accordance with Schedule "C";
4. The applicant be required to post with the City a Landscape Performance Security deposit in the form of a "Letter of Credit" in the amount of 125% of the estimated value of the landscaping, as determined by a Registered Landscape Architect;

AND THAT the applicant be required to complete the above noted conditions of Council's approval of the Development Permit Application in order for the permits to be issued;

AND THAT issuance of the Development Permit be considered subsequent to the Natural Environment Protection Development Permit by the Development Planning Department Manager;

AND FURTHER THAT this Development Permit are valid for two (2) years from the date of Council approval, with no opportunity to extend.

Carried

4. Bylaws for Adoption (Development Related)

4.1 St Paul St 1310 - BL12326 (Z21-0062) - Vibona Enterprises Ltd. Inc. No BCo458875

Councillor Wooldridge declared a perceived conflict of interest as he owns a property in the immediate area and left the meeting at 1:51 p.m.

Moved By Councillor Donn/Seconded By Councillor DeHart

Ro421/22/06/13 THAT Bylaw No. 12326 be adopted.

Carried

Opposed – Councillor Given

Councillor Woolridge returned to the meeting at 1:52 p.m.

5. Non-Development Reports & Related Bylaws

5.1 CleanBC Communities Fund - Grant Application

New staff member Ryan Baines, Energy Manager, was introduced by the Divisional Director, Partnership & Investments.

Staff:

- Summarized the ClearBC Communities Grant application.

Moved By Councillor DeHart/Seconded By Councillor Donn

Ro422/22/06/13 THAT Council receives for information, the report from Building Services dated June 13, 2022, with respect to the Application for funding from CleanBC Communities Fund Intake 3, towards the H2O Adventure + Fitness Centre Energy Modernization Project;

AND THAT Council authorizes staff to apply for a CleanBC Grant - H2O Adventure + Fitness Centre Energy Modernization Project, as outlined in this report;

AND THAT Council commits to contributing up to \$894,788, the City's cost-share of eligible costs from the following funding sources:

- \$65,737 from Parking Reserve (R605)
- \$414,525.50 from H2o Reserve (R068)
- \$414,525.50 from Energy Management Reserve (R011)

AND THAT the Financial Plan be amended to include the grant and reserve funding if the application is successful.

AND THAT Council commits to cover any unexpected ineligible costs and project overruns.

Carried

5.2 Central Okanagan Small Boat Association - Non-Market Lease Agreement

Staff:

- Provided an PowerPoint Presentation summarizing the lease agreement with the Central Okanagan Small Boat Association.

Moved By Councillor Given/Seconded By Councillor Sieben

R0423/22/06/13 THAT Council approve the City entering into a five (5) year non-market lease agreement with the Central Okanagan Small Boat Association as per the general terms and conditions of the agreement attached as Schedule A to the report of the Real Estate department dated May 30, 2022;

AND THAT the Property Manager, or a designate thereof, be authorized to execute all necessary documents pertaining to the non-market lease agreement with the Central Okanagan Small Boat Association.

Carried

5.3 Water Regulation Bylaw 10480 Fine Assessments

Staff:

- Provided an the rational for the proposed penalties.

Moved By Councillor Singh/Seconded By Councillor Wooldridge

R0424/22/06/13 THAT Council receives for information, the report from Utility Services dated June 13, 2022, with regard to the assessment of Water Regulation Bylaw 10480 fines;

AND THAT Bylaw 12344, Amendment No. 33 to the Bylaw Notice Enforcement Bylaw No. 10475, be forwarded for reading consideration.

Carried

5.4 BL12344 - Amendment No. 33 to Bylaw Notice Enforcement Bylaw No. 10475

Moved By Councillor DeHart/Seconded By Councillor Donn

R0425/22/06/13 THAT Bylaw No. 12344 be read a first, second and third time.

Carried

5.5 Rutland Local Area Transit Plan

Staff:

- Displayed a PowerPoint Presentation summarizing the Rutland Local Area Transit Plan and responded to questions from Council.

Moved By Councillor Sieben/Seconded By Councillor DeHart

Ro426/22/06/13 THAT Council receives for information, the report from Integrated Transportation dated June 13, 2022, regarding the Rutland Local Area Transit Planning Study.

Carried

5.6 2022 Community-Signature Event

Staff:

- Displayed a PowerPoint presentation.
- Introduced the Co-Chairs Sarah Semeniuk and Lance MacDonald.

The Co-Chairs displayed a PowerPoint presentation regarding the proposed community signature event and responded to questions from Council .

Moved By Councillor DeHart/Seconded By Councillor Donn

Ro427/22/06/13 THAT Council receive for information, the report from the signature event committee co-chairs dated June 13, 2022, regarding the activities related to the creation of a community signature event.

Carried

5.7 Youth Services Framework

Staff:

- Displayed a PowerPoint presentation outlining the Youth Services Framework.
- Introduced Jen Casorso, Urban Matters Consulting, who continued with the PowerPoint presentation and responded to questions from Council.

Moved By Councillor Donn/Seconded By Councillor Sieben

Ro428/22/06/13 THAT council receives, for information, the report from Active Living & Culture, dated June 13, 2022, that provides an overview of the Youth Services Framework.

Carried

The City Manager confirmed staff will return with subsequent recommendations based on this afternoon's Council discussion.

5.8 2022 Election Appointments and Bylaw

Staff:

- Displayed a PowerPoint presentation regarding procedures and conduct of the 2022 General Local Election.

Moved By Councillor Singh/Seconded By Councillor Sieben

Ro429/22/06/13 THAT Council receives, for information, the report from the Office of the City Clerk, dated June 13, 2022 regarding the 2022 Election Officer Appointments and Election Bylaw;

AND THAT Council appoints Laura Bentley, Deputy City Clerk as Chief Election Officer for the 2022 General Local Election;

AND THAT Council appoints Stephen Fleming, City Clerk, Rebecca Van Huizen, Legislative Coordinator Confidential (FOI) and Suzanne Woods, Corporate Records & Information Coordinator as Deputy Chief Election Officers for the 2022 General Local Election;

AND THAT the Chief Election Officer be authorized to enter into agreements with relevant third parties for the purposes of conducting the 2022 General Local Election;

AND FURTHER THAT Council gives reading consideration to Bylaw No. 12393 being the 2022 General Local Government Election Bylaw.

Carried

5.9 BL12393 - General Local Government Election Bylaw

Moved By Councillor Donn/Seconded By Councillor DeHart

Ro430/22/06/13 THAT Bylaw No. 12393 be read a first, second and third time.

Carried

6. Mayor and Councillor Items

Councillor DeHart:

- Spoke to Okanagan College's newly constructed Health and Science building and a successful fundraising campaign of \$5.4 million dollars.
- Spoke to attendance at Kelowna Pride events.

Councillor Donn:

- Spoke to recent attendance at the FCM convention in Regina.

Councillor Wooldridge:

- Spoke to recent attendance at the FCM convention in Regina.
- Shout out to the Kelowna Pride organizers with over 2500 people attending the successful Saturday event.
- Attended Ride Don't Hide for CMHA as well as the KRLS fundraiser.

Mayor Basran:

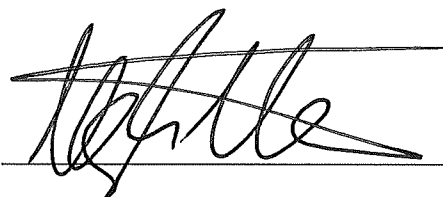
- Encouraged citizens to participate in the survey for redevelopment of Parkinson Recreation Centre. The opportunity is available until June 26th.

7. Termination

This meeting was declared terminated at 3:50 p.m.

Mayor Basran

sf/cm



City Clerk

Report to Council



Date: June 13, 2022

To: Council

From: City Manager

Subject: 2022 Citizen Survey Results

Department: Communications. Prepared as supplemental to the presentations by IPSOS

Recommendation:

THAT Council receives, for information, the Report from the Communications Manager dated June 13, 2022 with respect to the results of the 2022 Citizen Survey.

Purpose:

To present the results of the 2022 Citizen Survey.

Background:

Collecting and comparing previous survey results allows elected officials, staff and other community stakeholders to understand how citizens' attitudes and priorities are changing, identify new or emerging issues facing the community and assess the progress the City is making in addressing key issues through statistically significant methodology. The outcomes complement the ongoing engagement and conversations with citizens on a variety of initiatives throughout the year. The previous Citizen Survey was completed in October 2020.

The 2022 telephone survey was conducted through cell phone and landline methodology with the final sample size of 300 adult Kelowna residents, split 75 per cent cell phones and 25 per cent landlines. Quotas were established in order to get more representative data both geographically and demographically by establishing age, gender and postal code information. The overall survey results are accurate within + or – 5.7 percentage points, 19 times out of 20. The final data has been weighted to reflect the actual population in Kelowna according to the most recent Census data. Ipsos Public Affairs was selected to conduct the survey in order to benchmark Kelowna against other BC municipalities as part of its database of municipal norms.

Discussion:

The 2022 survey focused on seven key areas:

1. Quality of Life
2. Issue Agenda
3. Community Safety

4. City Services and Infrastructure
5. Financial Planning
6. Priority Setting
7. Customer Service

Overall results

Overall results for 2022 reflect generally positive feedback – perceptions of quality of life remain high at 90 per cent and three quarters of citizens remain satisfied with the services they receive believe they receive good value for their tax dollars. However, several indicators are lower than in previous years.

- Quality of life
- Safe community
- Satisfied with services
- Value for tax dollars
- City inclusiveness and acceptance

Perceptions of a worsening quality of life are quite pronounced this year – despite more than 90 per cent of citizens saying they have a good quality of life more than half (55%) of citizens say the quality of life in Kelowna has ‘worsened’ over the past three years. This results in a net momentum score of minus 47 points, down 34 points from 2020.

Top community issues

Open-ended responses from respondents indicate the primary issues facing the community are social issues, with affordable housing, poverty & homelessness, taking the top position once again over transportation.

- Social issues such as homeless, mental health, addiction and affordability at 57 per cent
- Transportation and traffic flow management at 23 per cent
- Crime and community safety at 12 per cent
- Municipal government services at 10 per cent

Much has been done in the past few years on each of these fronts, but there is more to do. The City of Kelowna continues to lead efforts in our community and across B.C. to improve community safety through innovation, collaboration and advocacy.

Social Issues

Social issues continue to dominate the public issue agenda with 57 per cent of citizens identifying social issues as the most important issue facing the community on an open-ended basis. Comments around housing affordability, poverty and homelessness were the most frequent.

Citizens’ increased concern with social issues continues to be something the City is working on through Journey Home and with over 50 community partners. While there are many examples of progress made, the need continues to grow for the most vulnerable in our community.

- In 2017, Council increased resources to focus on homelessness with the Journey Home strategy and expanded the amount and variety of housing being developed. Since then, even with over 300 homes with supports built to support those struggling with homelessness, demand continues to grow.

- The City is coordinating with more than 50 organizations, including hearing from those with lived experience of homelessness, to address this issue through the Journey Home Strategy. It's a complex issue that no single organization or government can solve alone.
- While Kelowna is leading the way in B.C. with progressive approaches to social issues, there is much more work to be done. The City continues to advocate with senior governments to invest more resources into Kelowna to address the causes and impacts of issues like poverty, addiction and mental health.
- For more information about the City's approach to social wellness, visit [Kelowna.ca/socialwellness](https://kelowna.ca/socialwellness) and for more information about housing, visit [Kelowna.ca/housing](https://kelowna.ca/housing)

Transportation

Overall, 23 per cent identified transportation as an important community issue, with the most frequent concerns being traffic congestion, condition of roads/streets/highways, general transportation and parking.

The City remains committed to developing a transportation network to address congestion by balancing investment in major roadway connections with increased investments in alternate transportation such as public transit, pathways and bicycle routes.

- The City's main strategies in the Transportation Master Plan call to densify urban centres, create more efficient transit links and build and promote infrastructure such as sidewalks and bike paths.
- The City continues to build on its extensive network of 467 kilometres of sidewalks and walkways, 310 km of dedicated bike lanes and 100km of shared pathways.
- The City maintains an annual Pavement Management program of approx. \$3.4 million. By regularly maintaining the infrastructure of our roads is protected, and the need for mass replacement is avoided. Monitoring and testing of roads helps to identify and prioritize sections that require updating.

Community Safety

Perception of Community Safety fell slightly with 81 per cent of residents describing Kelowna as a safe community.

While Kelowna continues to be a safe place to live, work and raise a family, decisive action is needed to reduce property crime. The City of Kelowna has been at the forefront of initiatives and actions to address community safety and other social challenges in recent years. The City has been more than a partner – we've been a provincial leader in this space.

- The City has invested in RCMP contract budget increases for years and it's become clear this cannot be the only means to promote community safety.
 - \$32 million spent to increase public safety personnel from 2016 to 2022: 47 RCMP Officers, 9 Bylaw Officers and 40 safety support staff were added
 - 84% increase to the RCMP contract budget, from \$27.9 million in 2016 to \$51.4 million in 2022
 - 35% of the average 2022 tax bill in Kelowna went to safety expenditures, the largest of any category

- Kelowna's first Community Safety Plan was recently endorsed by Council – this five-year plan is designed to generate shared ownership, vision and action among government ministries, community organizations and residents to improve community safety and the sense of safety.
- In addition to taking steps outlined in the Community Safety Plan, the City continues to advocate for changes to address the underlying root cause of crime because policing alone will not solve the issue.
- The Provincial Court of BC opened the Kelowna Integrated Court in 2021. The Court seeks to reduce crime and improve public safety by integrating health and social services with the justice system to address the root causes of criminal behaviour.
- In 2019, the RCMP piloted and launched an online crime reporting tool to make it easier for victims of property crime to report incidents.
- Residents and business can support safety by learning how to discourage crime and removing opportunities. This includes increasing visibility, securing property, and reporting suspicious behaviour.
- For more information about the City's approach to community safety, visit [Kelowna.ca/safety](https://kelowna.ca/safety)

Municipal Government Services

The services provided by the City are important to citizens and generally speaking, most citizens (80%) are satisfied with the overall level and quality of services provided by the City of Kelowna. However, this number is the lowest on record in the past 10 years. There was a corresponding decrease in satisfaction with a number of services as well.

Snow removal and traffic management flow were specifically mentioned as primary areas for improvement. This past winter, during December & January when Kelowna faced a long stretch of continuous snowfall days, the number of snow and ice related service requests increased by six times a normal season while response time actually decreased.

- The City's main strategies call to densify urban centres, create more efficient transit links and build and promote infrastructure such as sidewalks and bike paths.
- The Transportation Master Plan was endorsed by Council in 2021 and includes significant policy shifts which encourages decreasing the number of vehicle trips by using alternative transportation methods
- The City continues to focus on improving road conditions spending \$850,000 on street sweeping, \$2.6 million on snow and ice and \$850,000 surface repairs (potholes etc.). In addition, the Pavement Management program is \$3.5 million

Top investment priorities

The paired choice analysis identifies priorities for City investment. Addressing social issues such as homelessness, mental health and addiction was consistently the top priority. 80 per cent of citizens selected it as a priority when presented alongside other options.

Other priorities include having a diverse supply of housing options at different price points (73%), traffic flow management (67%), fire services (60%), drinking water (58%), road maintenance and police services (54%).

When asked about investing capital dollars into building new or renewing existing infrastructure, respondents were split with renewing at 55 per cent and building new at 41 per cent.

Value for taxes

Overall, 75 per cent of respondents think services and programs are very good to fairly good value. This is a slight decrease from the previous results. When asked about options to increase taxes to enhance or to maintain services at current levels, 53 per cent of residents preferred this approach, rather than cutting taxes or services, which is consistent with the results in 2020.

Complete results of the 2022 Citizen Survey are posted on kelowna.ca.

Conclusion:

The Citizen Survey is an opportunity to get a pulse check from the community. While residents generally feel positive about the community and the value of the services they receive from the City, there are a number of areas the City must pay attention in the coming years to maintain the quality of life offered in Kelowna. The next survey will be run in the spring of 2024.

Internal Circulation:

Director of Corporate Strategic Services

Considerations applicable to this report:

Legal/Statutory Authority:

Legal/Statutory Procedural Requirements:

Existing Policy:

Financial/Budgetary Considerations:

External Agency/Public Comments:

Communications Comments:

Considerations not applicable to this report:

Submitted by:

L. Corcoran, Communications Manager

Approved for inclusion:

[NOTE: enter the department director initials here]

cc:

2022 CITIZEN SURVEY

PREPARED FOR THE CITY OF KELOWNA BY:
Ipsos

PRESENTED BY:
Catherine Knaus, Director

June 13, 2022

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OBJECTIVES

- Gauge public satisfaction with municipal programs and services and gain insight into citizens' service priorities

METHODOLOGY

- Random and representative telephone survey with 300 adult Kelowna residents
- Conducted on both cellphones (75%) and landlines (25%)
- Fielded April 11 -27, 2022
- Final sample weighted by gender/age and neighbourhood
- MOE: $\pm 5.7\%$, 19 times out of 20
- Tracking and normative comparisons provided where possible

Survey Highlights

1

Key survey measures are positive but lower than previous years.

2

There have also been drops in satisfaction with a number of specific services.

3

While COVID-19 may be contributing to some of this year's lower scores, other factors (affordability, housing, homelessness, traffic, crime/public safety) also play a role.

4

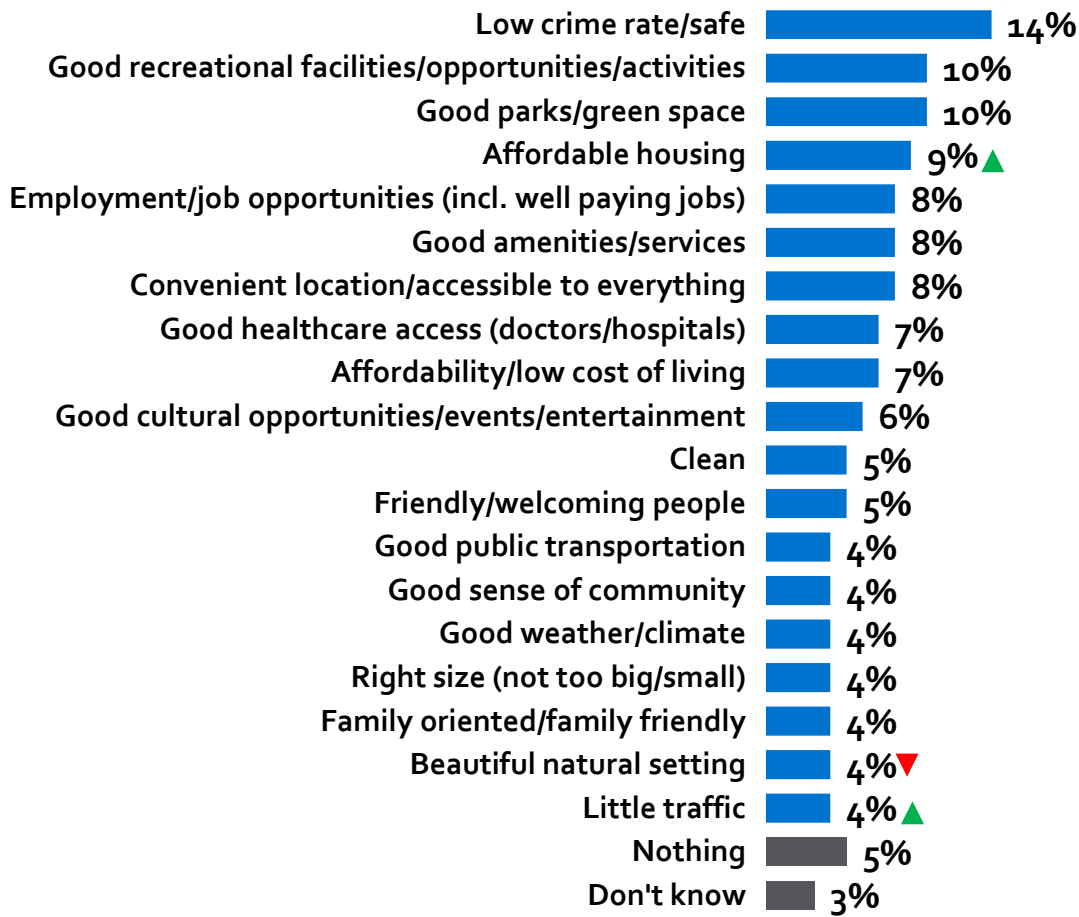
Citizens continue to prefer tax increases over service reductions.

5

Satisfaction with the City's customer service remains high.

QUALITY OF LIFE

Citizens identify a number of qualities that make a city a good place to live.



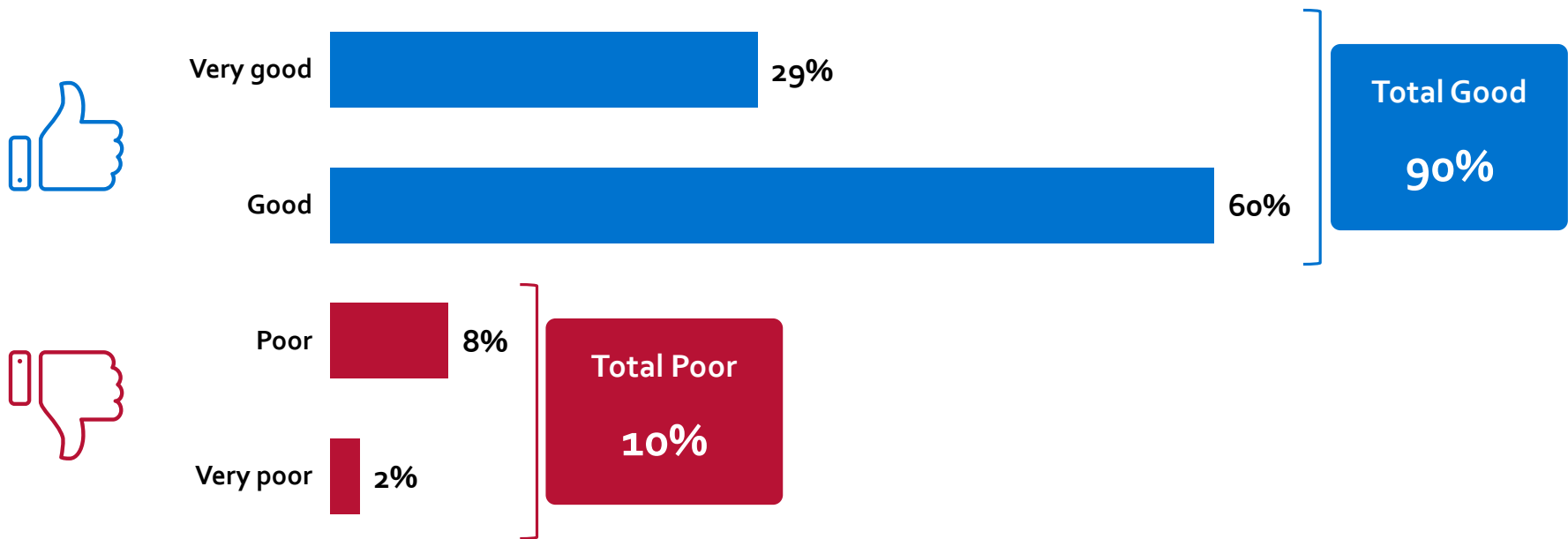
2020 Top Mentions (n=300)	
Low crime rate/safe	16%
Good recreational facilities/opportunities/activities	13%
Good parks/green space	13%
Good amenities/services	11%

Note: Mentions <4% not shown.

Base: All respondents (n=300)

Q2. There are a number of reasons why people choose to live in one city or area over another. Assuming family and weather are not factors, what qualities or characteristics make a city a good place to live? That is, what qualities or characteristics would you use to describe your ideal city? Anything else?

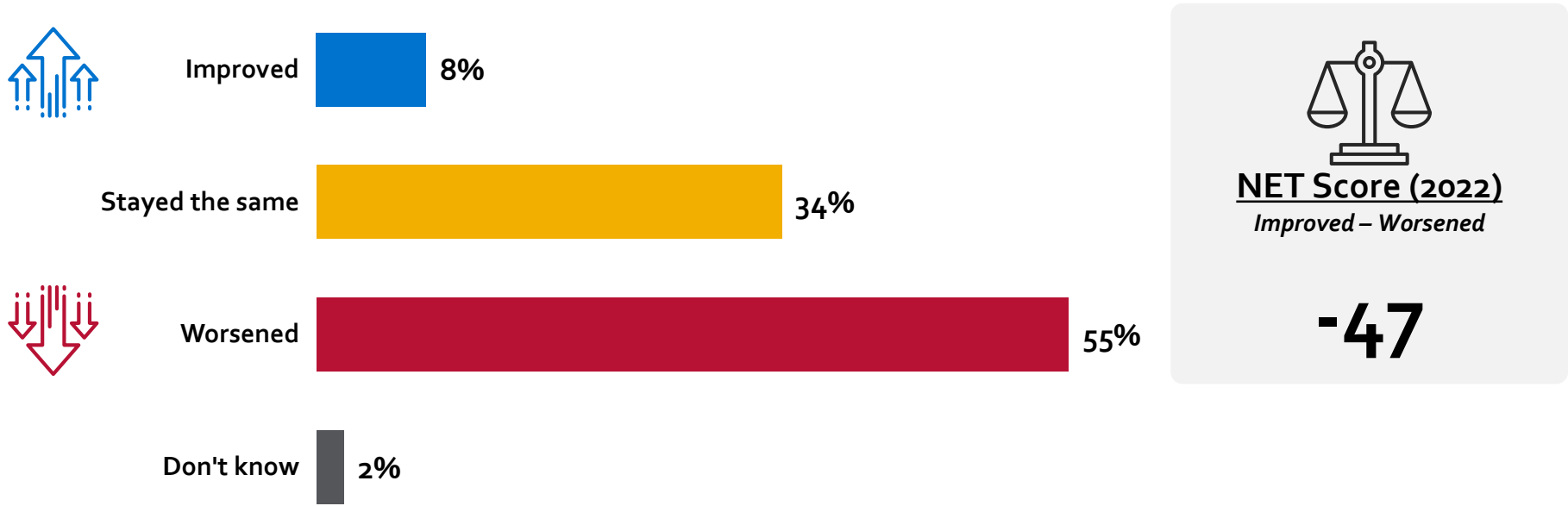
Overall perceptions of quality of life are slipping.



	2012 (n=300)	2015 (n=301)	2017 (n=300)	2018 (n=300)	2020 (n=300)	2022 (n=300)	NORM
TOTAL GOOD	96%	95%	94%	94%	92%	90%	95%
Very good	36%	40%	40%	36%	40%	29% ▼	43%

Base: All respondents (n=300)
 Q3. How would you rate the overall quality of life in the City of Kelowna today?

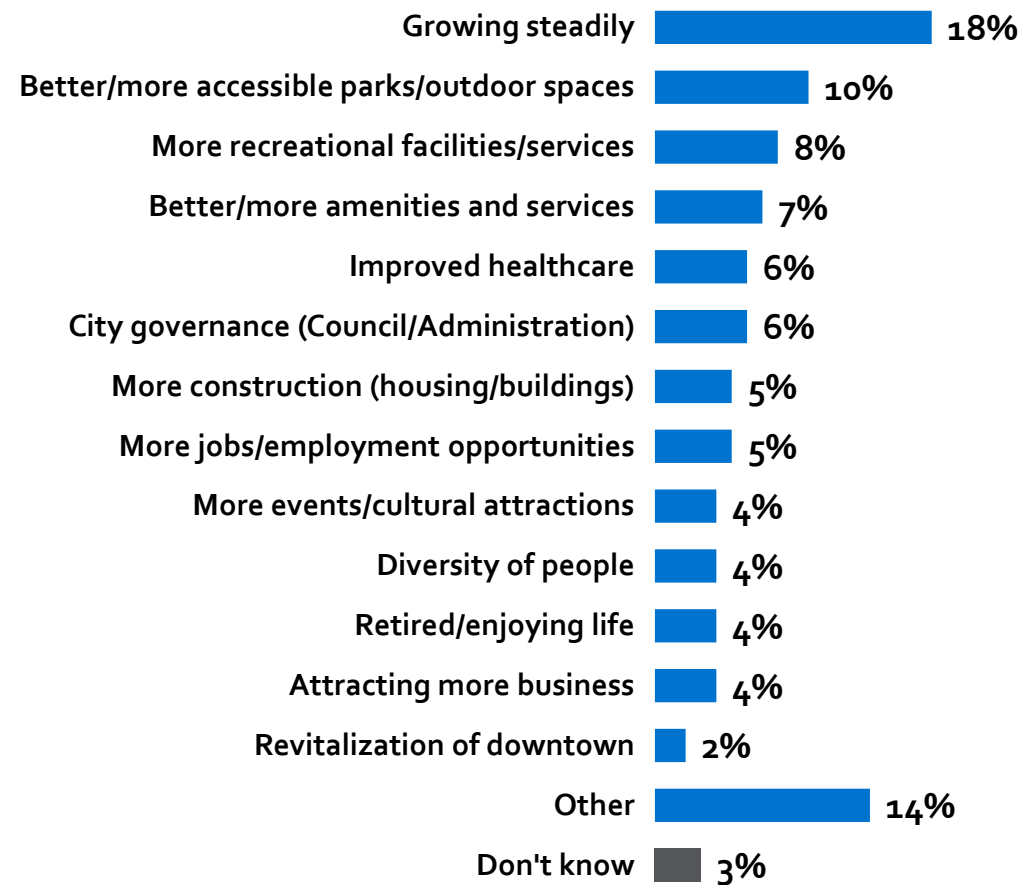
Perceptions of a worsening quality of life are exacerbated this year.



	2012 (n=300)	2015 (n=301)	2017 (n=300)	2018 (n=300)	2020 (n=300)	2022 (n=300)	NORM
NET SCORE	-5	+12	-11	-15	-13	-47 ▼	-4

Base: All respondents (n=300)
 Q4. And, do you feel that the quality of life in the City of Kelowna in the past three years has improved, stayed the same, or worsened?

Growth is contributing to perceptions of an improved quality of life.



2020 Top Mentions (n=63)*	
More construction (housing/buildings)	10%
Better/more amenities and services	8%
Well planned/developed	7%

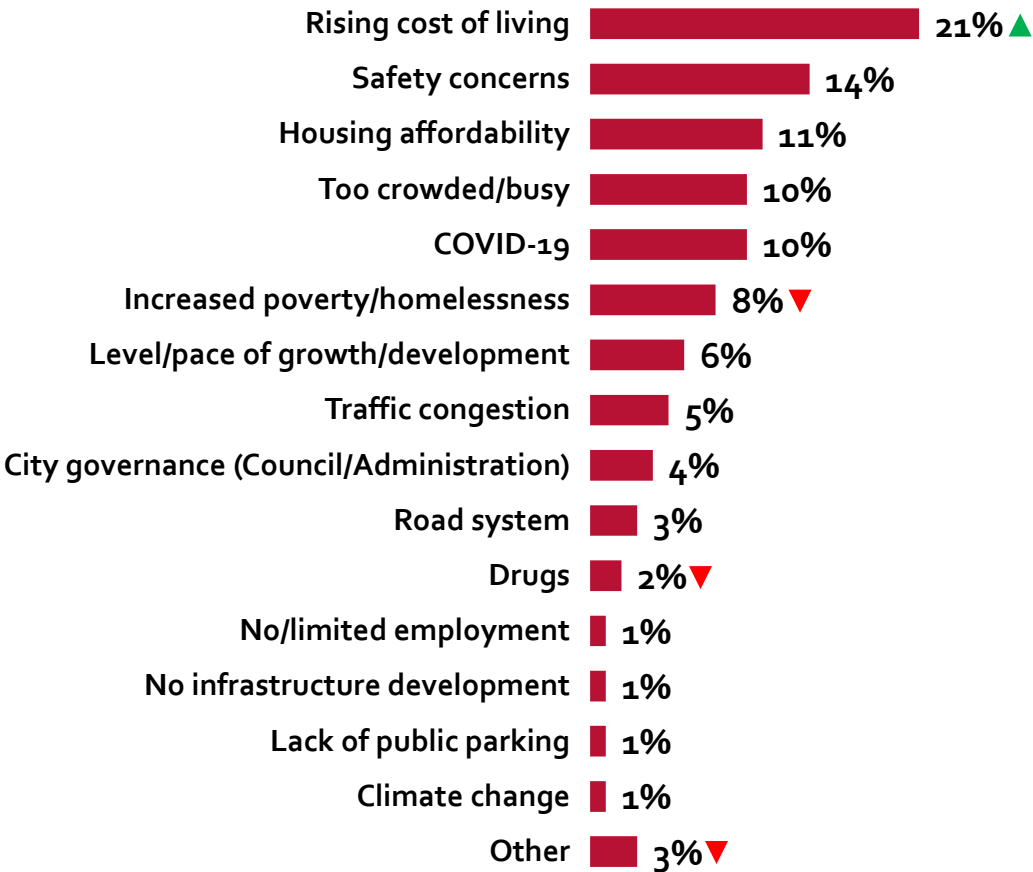
* Small base size (<100), interpret with caution.

Base: Those saying the quality of life has improved (n=23)**

Q5. Why do you think the quality of life has improved?

** Very small base size (n<50), interpret with extreme caution.

The rising cost of living is the main reason for saying the quality of life has worsened.

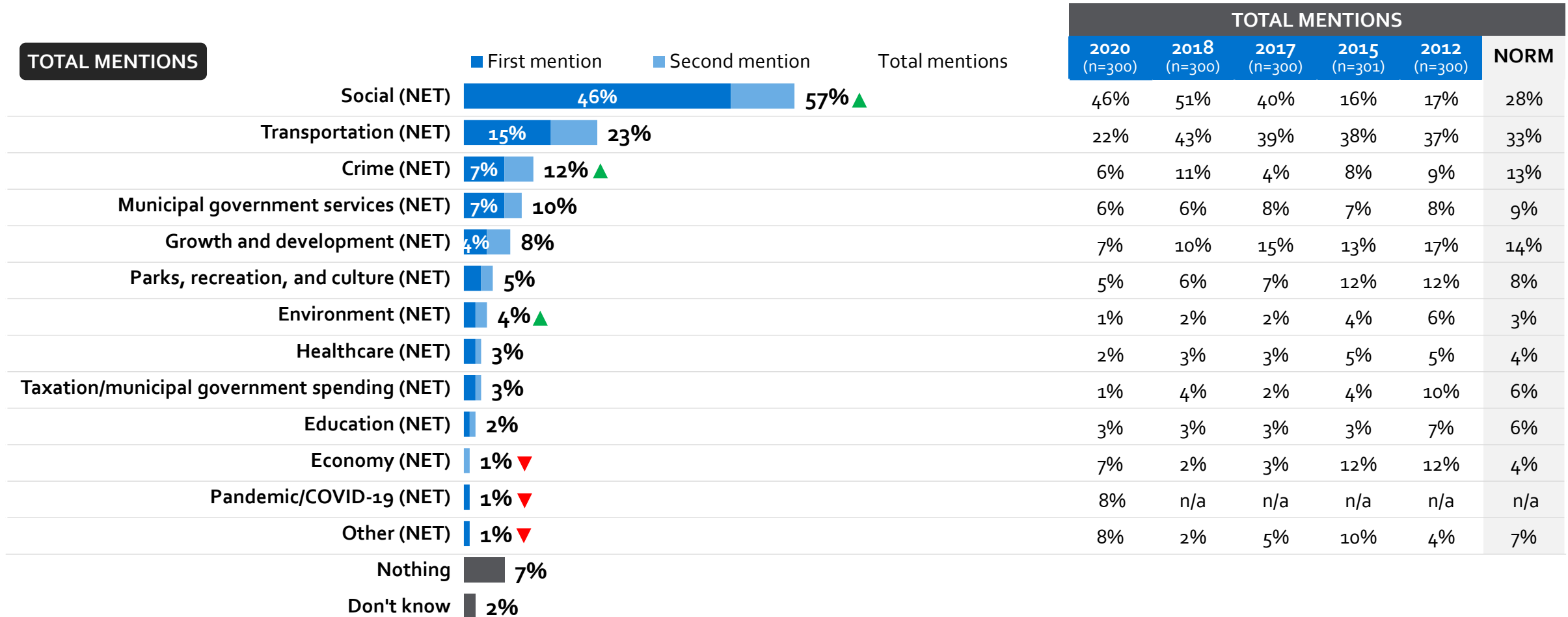


2020 Top Mentions (n=108)	
Increased poverty/homelessness	15%
Safety concerns	12%
Rising cost of living	9%
Drugs	9%

Base: Those saying the quality of life has worsened (n=169)
Q6. Why do you think the quality of life has worsened?

ISSUE AGENDA

Social issues continue to dominate the public issue agenda.

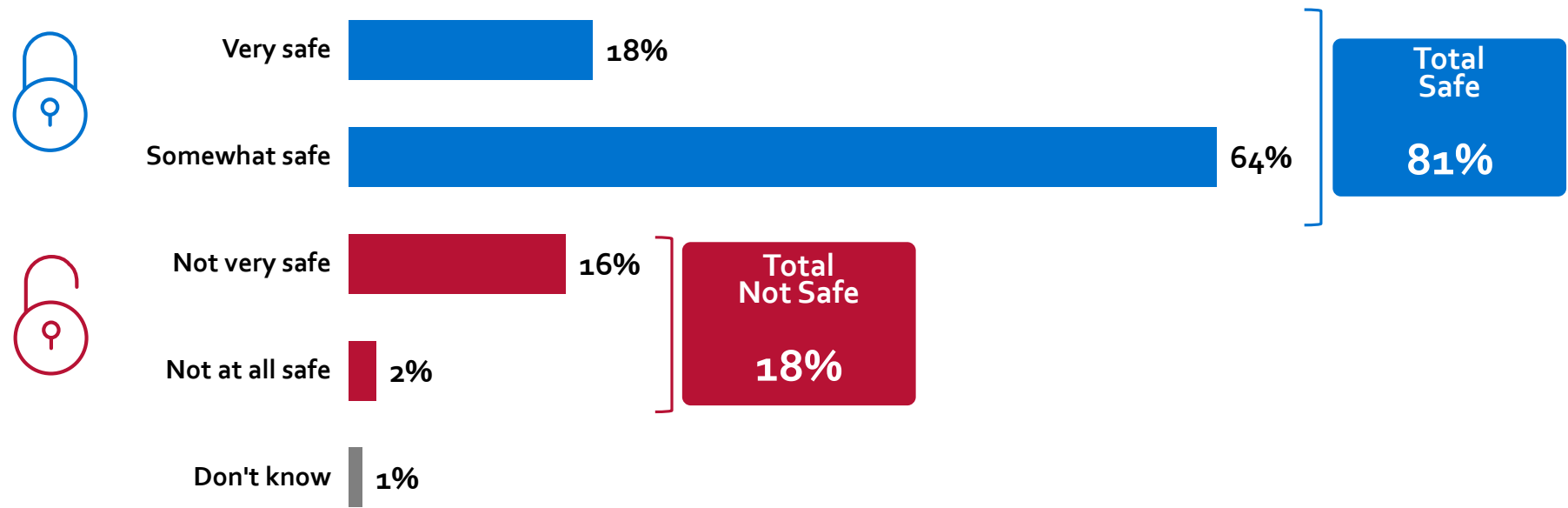


Base: All respondents (n=300)

Q1. In your view, as a resident of the City of Kelowna, what is the most important issue facing your community, that is the one issue you feel should receive the greatest attention from local leaders? Are there any other important local issues?

COMMUNITY SAFETY

Overall perceptions of community safety have declined.

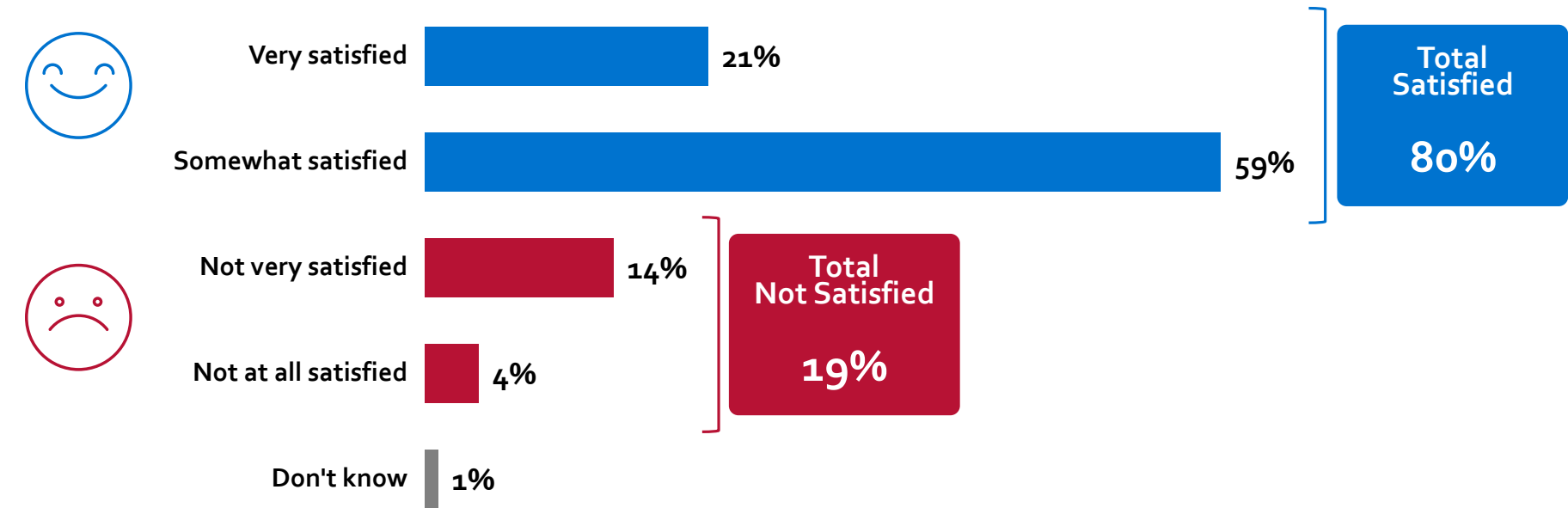


	2015 (n=301)	2017 (n=300)	2018 (n=300)	2020 (n=300)	2022 (n=300)	NORM
TOTAL SAFE	94%	90%	87%	87%	81% ▼	90%
Very safe	32%	29%	24%	20%	18%	29%

Base: All respondents (n=300)
 Q17. Overall, would you describe the City of Kelowna as a very safe, somewhat safe, not very safe, or not at all safe community?

CITY SERVICES AND INFRASTRUCTURE

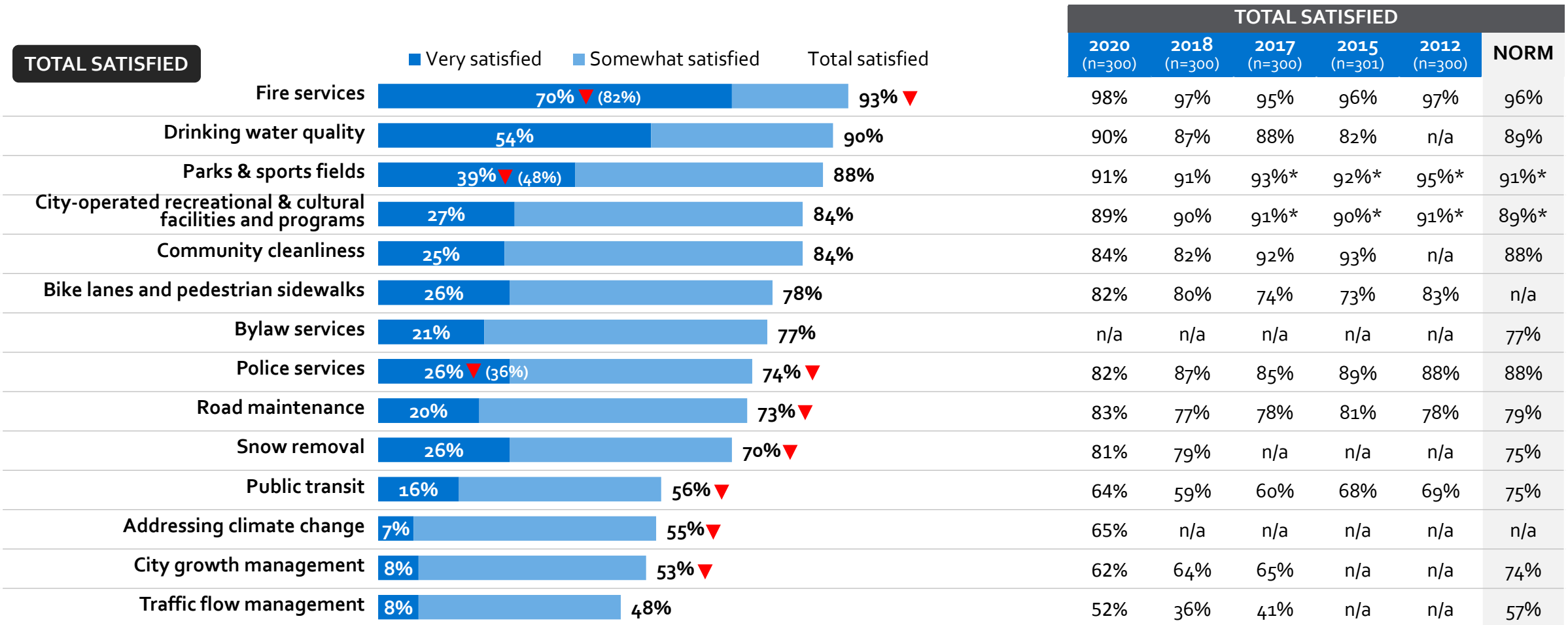
Overall satisfaction with City services has dropped.



	2012 (n=300)	2015 (n=301)	2017 (n=300)	2018 (n=300)	2020 (n=300)	2022 (n=300)	NORM
TOTAL SATISFIED	94%	94%	90%	87%	91%	80% ▼	92%
Very satisfied	23%	29%	26%	23%	29%	21% ▼	34%

Base: All respondents (n=300)
 Q7a. How satisfied are you with the overall level and quality of services provided by the City of Kelowna?

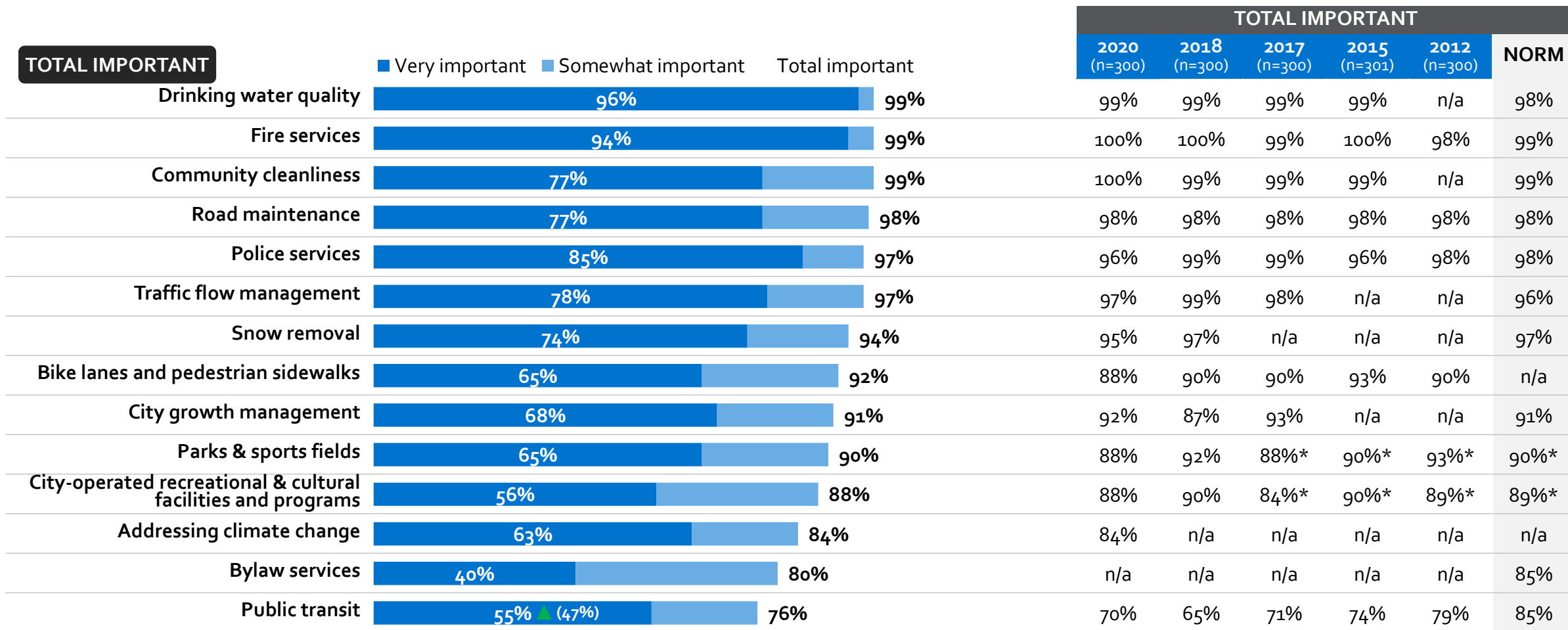
There have also been drops in satisfaction with a number of specific services.



* Prior to 2018, respondents were asked about parks, sports fields, recreational facilities and programs, and cultural facilities and programs separately. The yearly and normative ratings reported here are the average of these services.

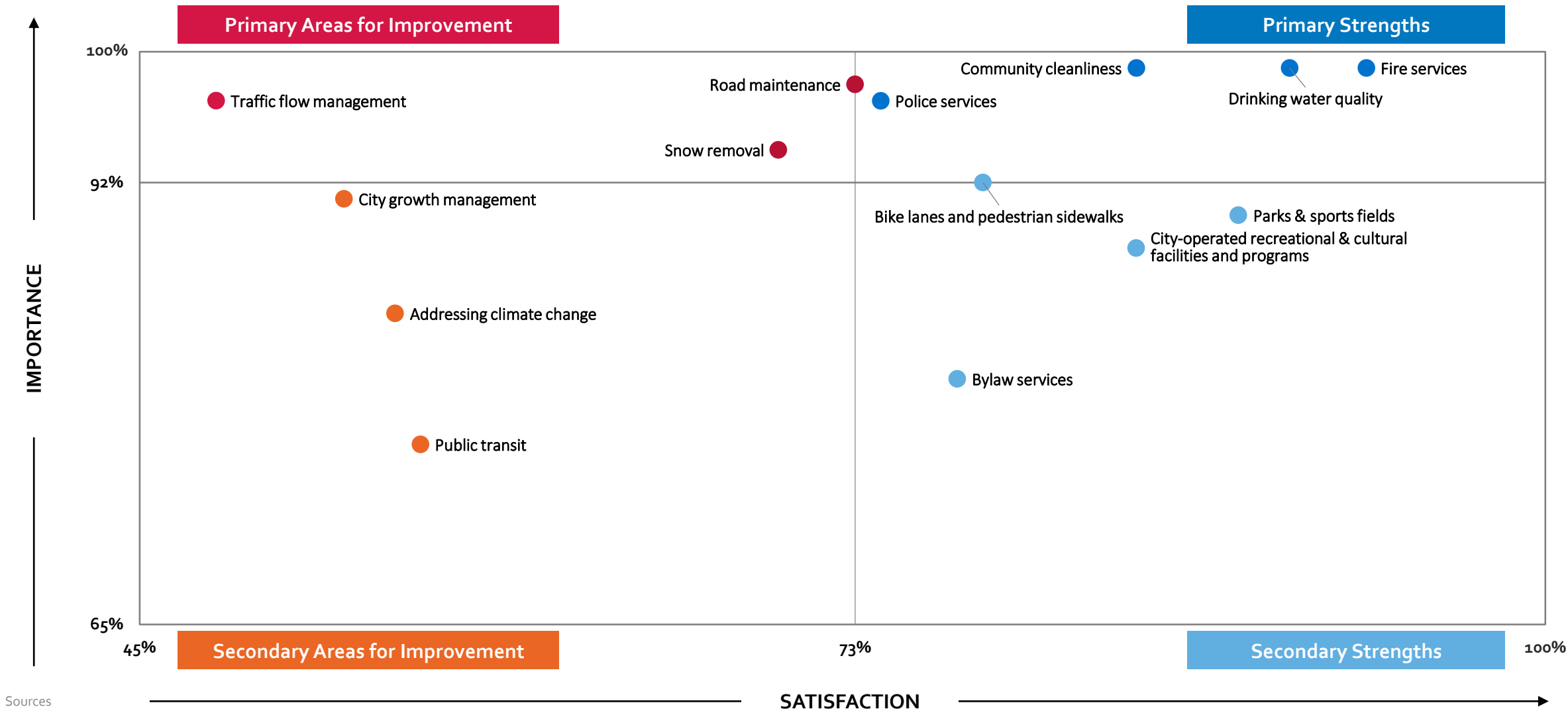
Base: All respondents (n=300)
Q8. And now how satisfied are you with ...? (Scale: very satisfied, somewhat satisfied, not very satisfied, not at all satisfied)

All the evaluated services are important to citizens.

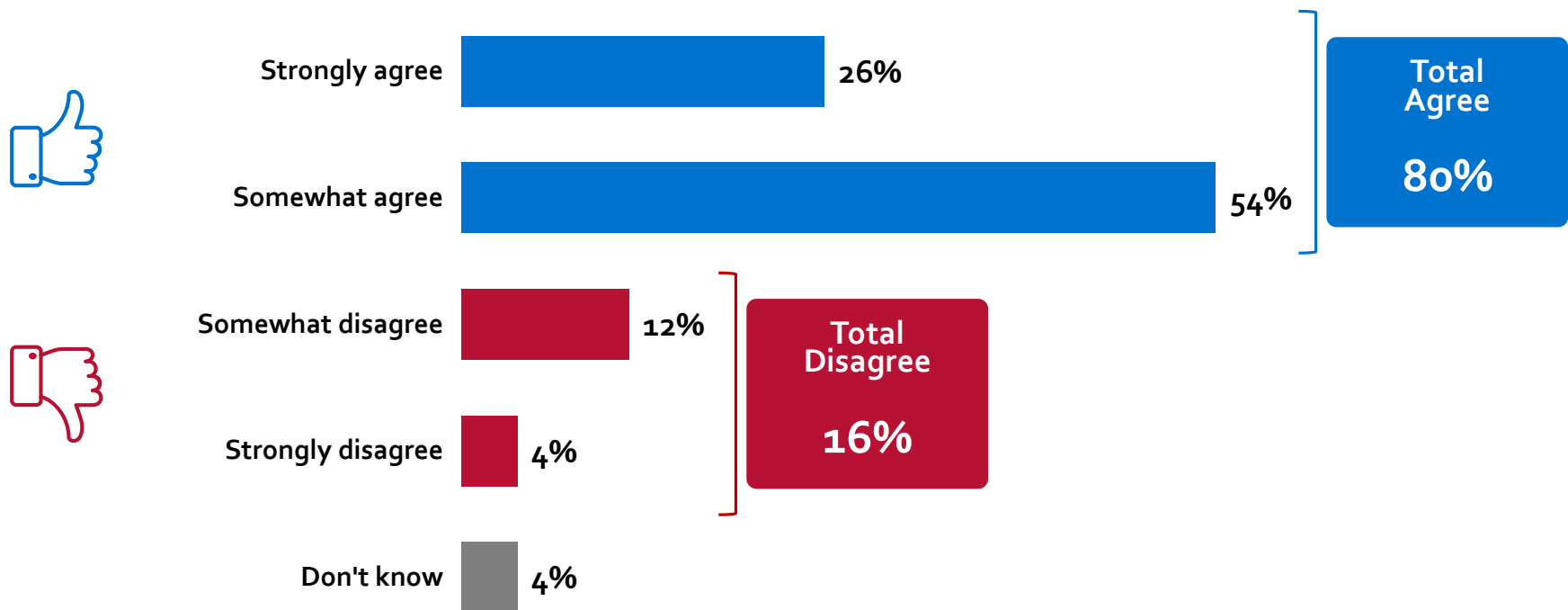


* Prior to 2018, respondents were asked about parks, sports fields, recreational facilities and programs, and cultural facilities and programs separately. The yearly and normative ratings reported here are the average of these services.

The City has four Primary Strengths and two Primary Areas for Improvement.



Perceptions of City inclusiveness and acceptance have declined.

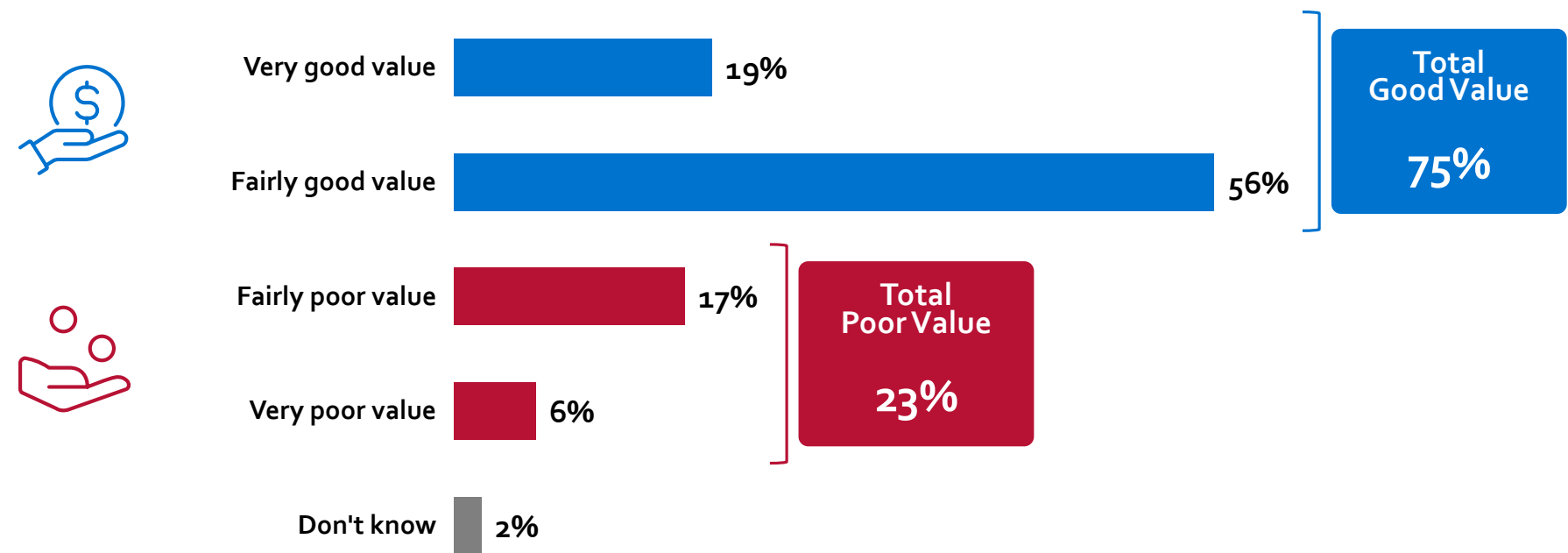


	2018 (n=300)	2020 (n=300)	2022 (n=300)
TOTAL AGREE	90%	89%	80%▼
Strongly agree	37%	32%	26%

Base: All respondents (n=300)
Q9a. Please tell me whether you agree or disagree with the following statement – The City of Kelowna municipal government fosters a city that is inclusive and accepting of all through its services and programs.

FINANCIAL PLANNING

Perceptions of the City's value for taxes are down slightly.



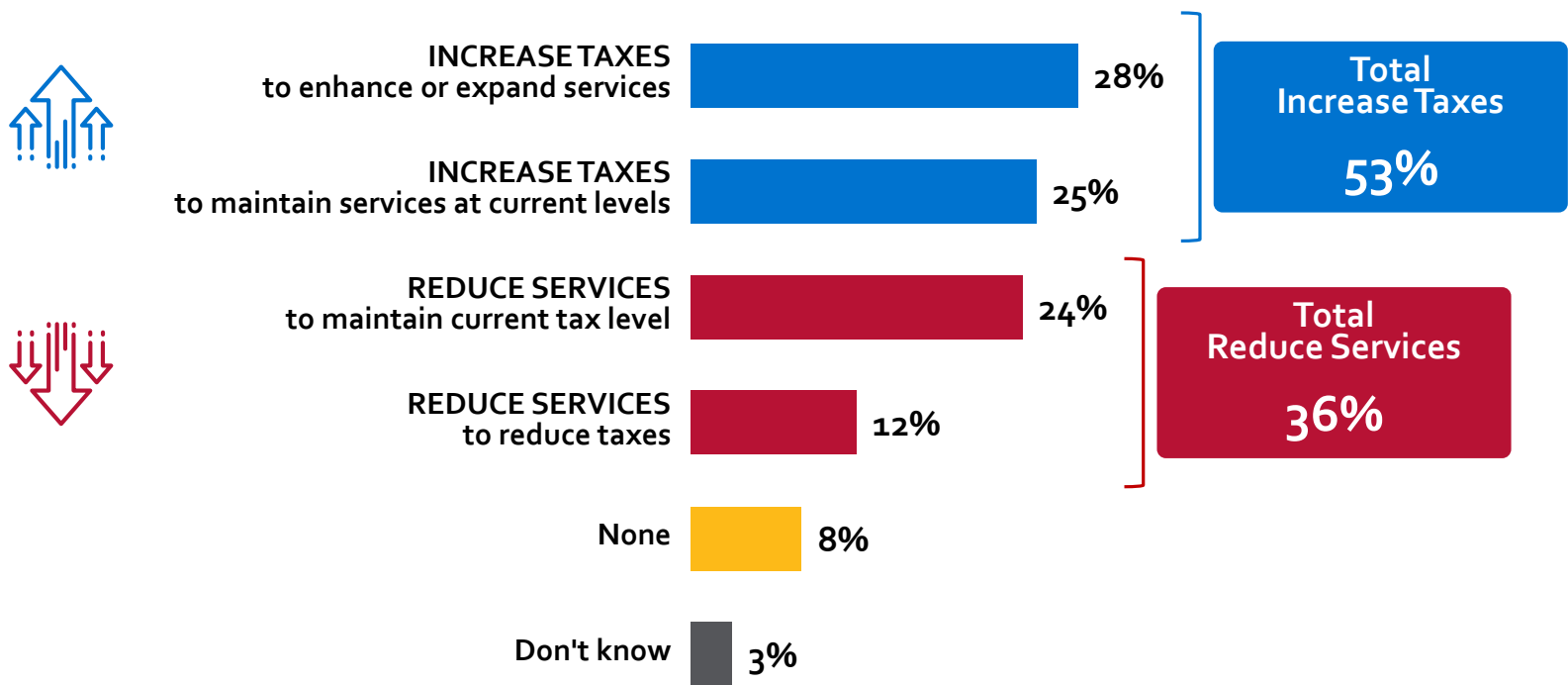
	2012* (n=300)	2015* (n=301)	2017* (n=300)	2018 (n=300)	2020 (n=300)	2022 (n=300)	NORM
TOTAL GOOD VALUE	81%	84%	84%	79%	79%	75%	85%
Very good value	16%	23%	18%	16%	17%	19%	22%

* Slightly different question wording.

Base: All respondents (n=300)

Q9. Your property tax dollars are divided between the City and the Province, with approximately 58% of your total tax bill going towards municipal programs and services. Thinking about all the programs and services you receive from the City of Kelowna; how would you rate the overall value for the taxes you pay?

Citizens continue to prefer tax increases over service reductions.

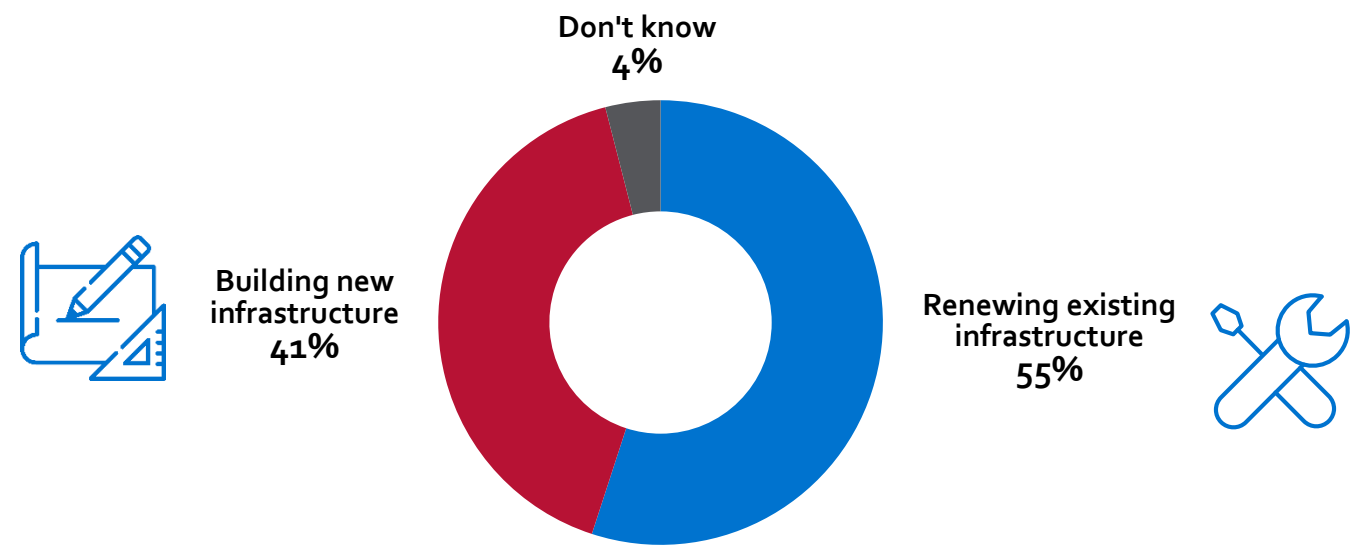


	2012 (n=300)	2015 (n=301)	2017 (n=300)	2018 (n=300)	2020 (n=300)	2022 (n=300)	NORM
TOTAL INCREASE TAXES	57%	56%	62%	55%	53%	53%	57%
TOTAL REDUCE SERVICES	34%	31%	30%	33%	37%	36%	32%

Base: All respondents (n=300)
 Q10. Municipal property taxes are one source of revenue used to pay for services provided by the City of Kelowna. Due to the increased cost of maintaining current service levels and infrastructure, the City must balance taxation and service delivery levels. To deal with this situation, which one of the following four options would you most like the City of Kelowna to pursue?

PRIORITY SETTING

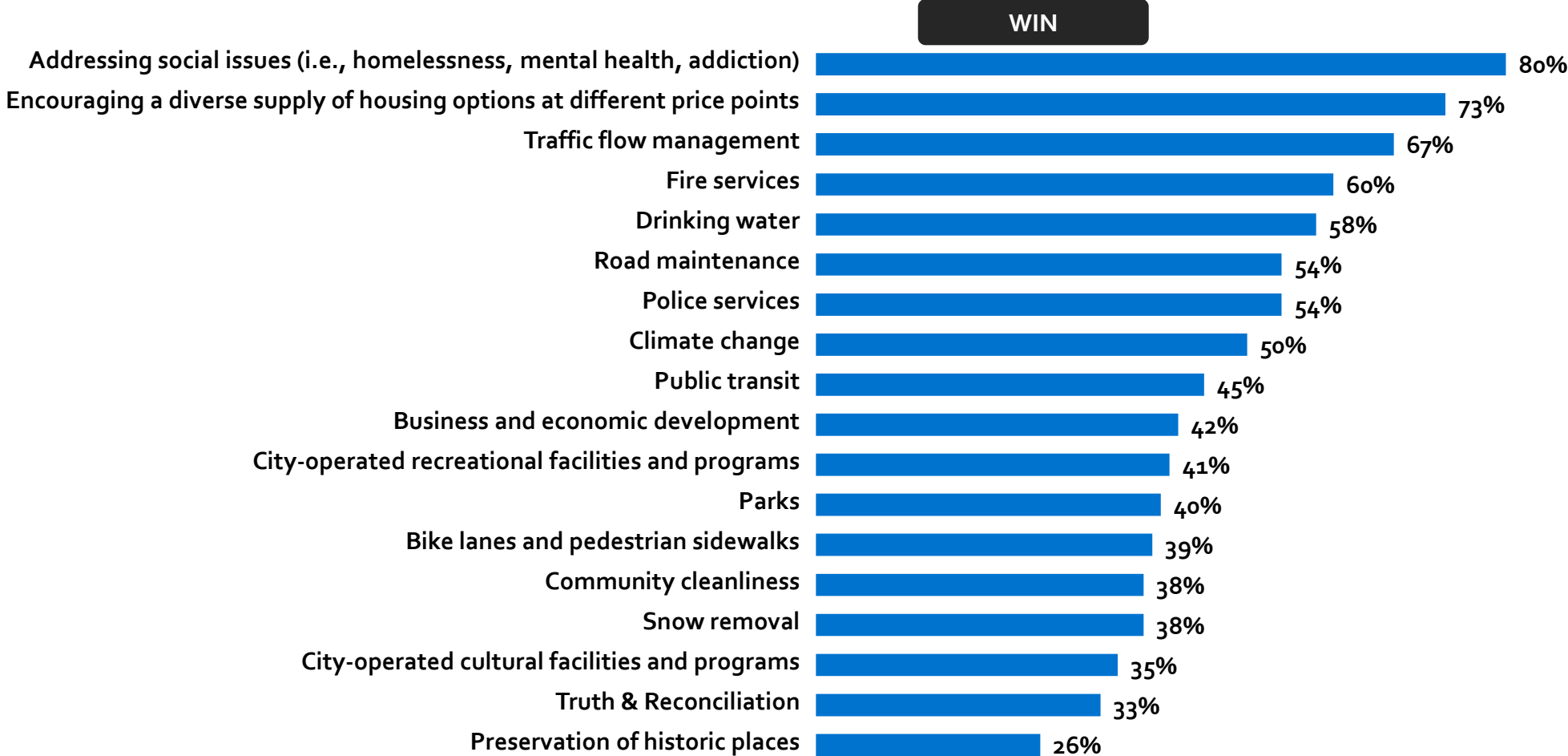
Citizens continue to prioritize infrastructure renewal over building new, although less so than previous years.



	2017* (n=300)	2018 (n=300)	2020 (n=300)	2022 (n=300)
Renewing existing infrastructure	56%	58%	64%	55% ▼
Building new infrastructure	41%	40%	34%	41%

* Slightly different question wording.
 Base: All respondents (n=300)
 Q11. Each year, the City is challenged with allocating limited capital dollars for roads, parks, utilities, buildings and IT infrastructure. In your opinion, which of the following should be the greater priority for investment for the City in 2023?

Citizens' top three priorities for investment are addressing social issues, encouraging a diverse supply of housing, and traffic flow management.

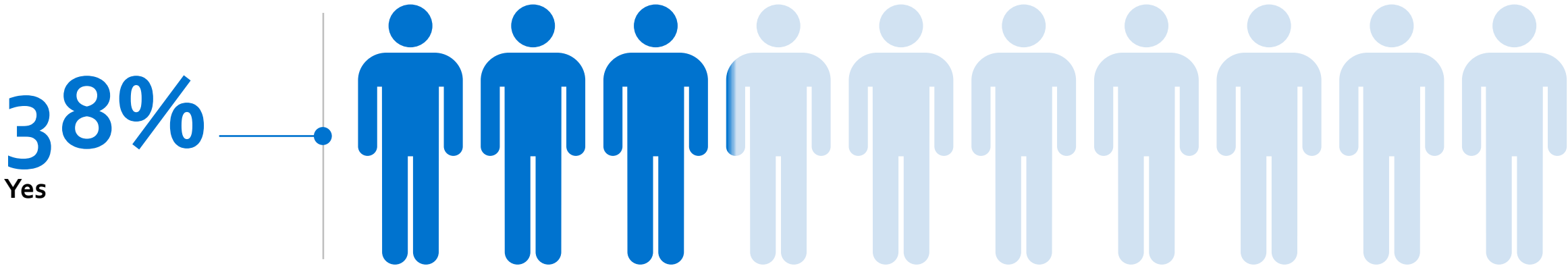


Base: All respondents (n=300)

Q12. The City of Kelowna has many different options for things it can invest in over the next four years. I'm now going to read you different pairs of priorities. For each pair, please tell me which item you think should be the greater priority for investment over the next four years.

CUSTOMER SERVICE

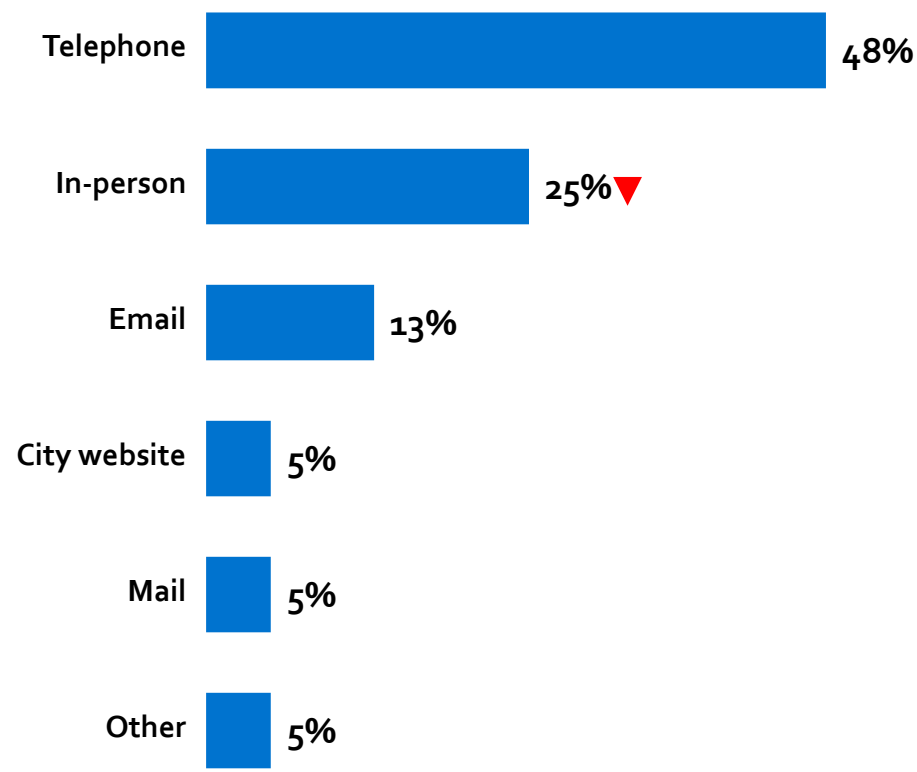
Claimed contact with the City is down slightly this year.



	2012 (n=300)	2015 (n=301)	2017 (n=300)	2018 (n=300)	2020 (n=300)	2022 (n=300)	NORM
Yes	38%	43%	50%	49%	43%	38%	47%

Base: All respondents (n=300)
Q14. In the last 12 months, have you personally contacted or dealt with the City of Kelowna or one of its employees?

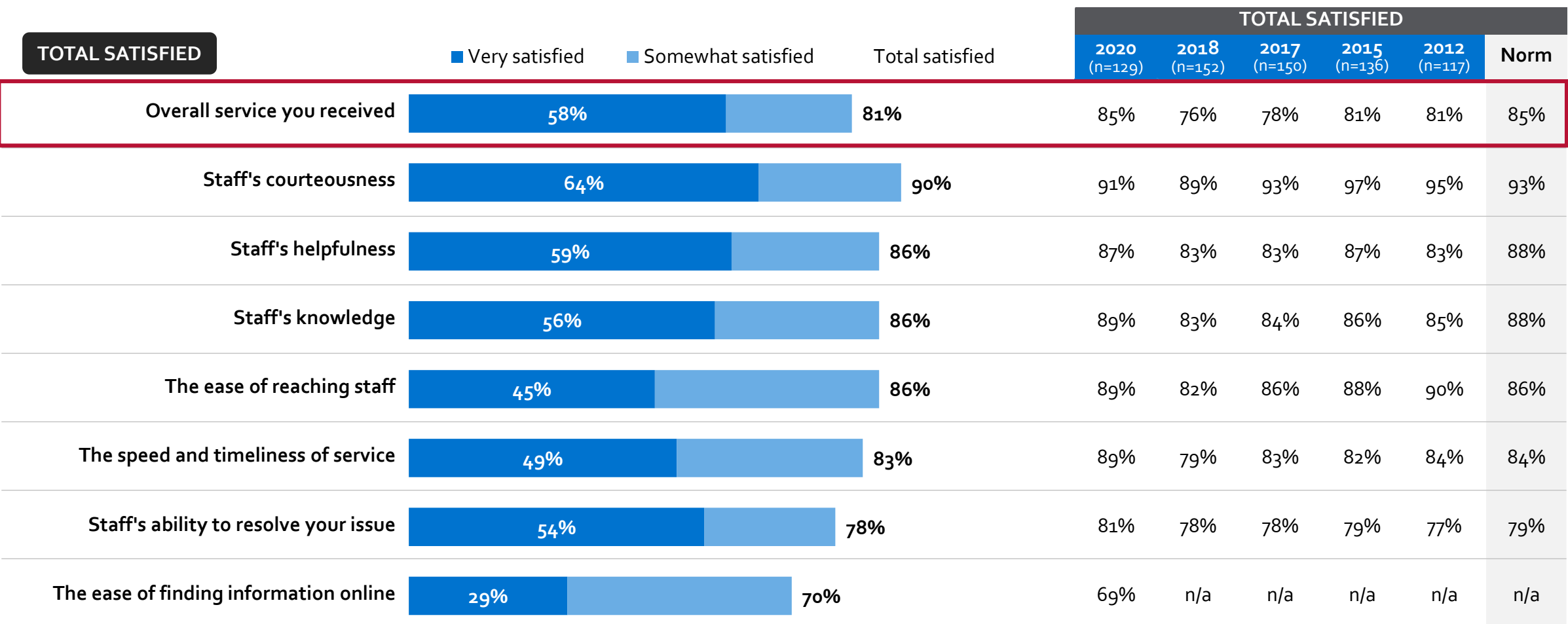
Most contacts occurred via the telephone. In-person interactions are down significantly.



2020 Top Mentions (n=129)	
Telephone	46%
In-person	38%
Email	10%

Base: Those saying they contacted or dealt with the City in the last 12 months (n=116)
Q15. For the next few questions, please think about the last time you contacted or dealt with the City of Kelowna or one of its employees. How did this contact occur?

Satisfaction with the City's customer service remains high.



Base: Those saying they contacted or dealt with the City in the last 12 months (n=116)
 Q16. How satisfied are you with the ...? (Scale: very satisfied, somewhat satisfied, not very satisfied, not at all satisfied)

Q&A

APPENDIX

Weighted Sample Characteristics

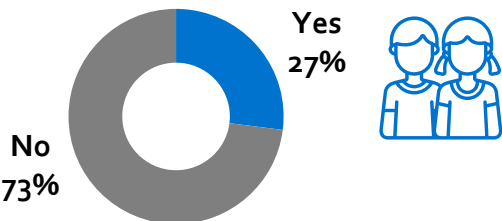
GENDER



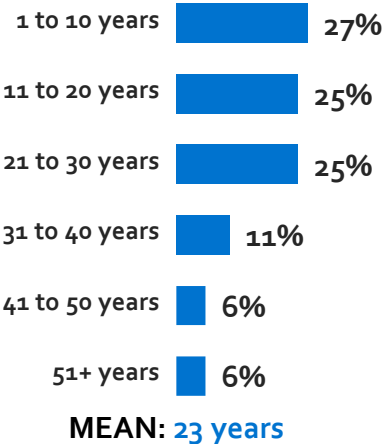
AGE



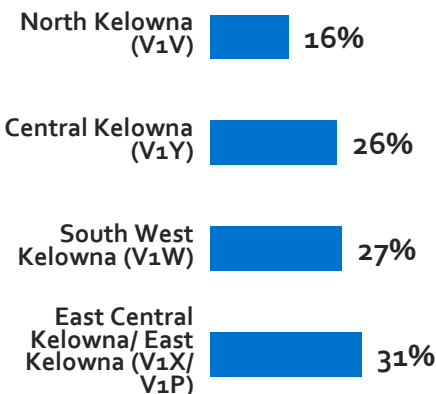
CHILDREN UNDER 18 IN HH



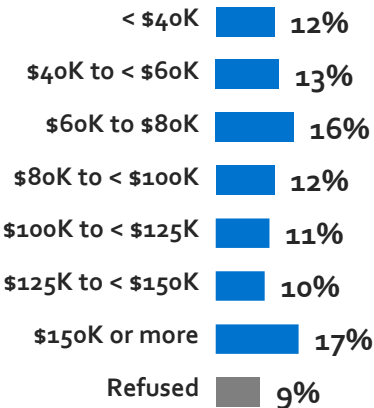
YEARS LIVING IN KELOWNA



AREA OF CITY



INCOME



Base: All respondents (n=300)

Report to Council



Date: June 20, 2022
To: Council
From: City Manager
Subject: Recycle BC and Curbside Collection
Department: Utility Services

Recommendation:

THAT Council receives for information, the report from Utility Services dated June 20, 2022, with respect to Recycle BC and Curbside Collection;

AND THAT Council requests Recycle BC undertake direct curbside recycling services within the City of Kelowna;

AND THAT Council authorize staff to submit a letter on behalf of the City before July 1, 2022, to acknowledge and agree to the Recycle BC Requirements as outlined in this report;

AND THAT Council direct staff to work with Recycle BC to extend the current Statement of Work for Curbside Collection Services Provided by Local Government agreement to April 30, 2026, to align the commencement of Recycle BC direct service with the expiration of the City's current curbside collection contract;

FURTHER THAT Council direct staff to work collaboratively with Recycle BC and the Regional District to review options to expand curbside collection prior to the April 30, 2026, transition.

Purpose:

To receive supplemental information regarding future responsibility for Recycling Collection in the City and to provide direction regarding the renewal of an existing Statement of Work with Recycle BC for the collection of packaging and paper products.

Background:

Previous Council Resolution

Resolutions	Date
(Draft pending approval of minutes) 3.1 THAT Council receives for information, the report from Utility Services dated June 13, 2022, with regard to the Recycle	13 June 2022 (AM)

BC and Curbside Collection Contract.	
3.1. THAT council receives for information, the report from Utility Services dated May 2, 2022, with respect to the Recycle BC Program Update; AND that Council direct staff to report back to Council with a recommendation on the approach to provide recycling service, no later than the end of June 2022.	2 May 2022

The City of Kelowna has a multi-year service agreement with Recycle BC that is coordinated by the Regional District of Central Okanagan (RDCO) for regional consistency. Under this agreement, the City operates as the Recycle BC collection contractor and collects the residential packaging and paper products (PPP) as part of the existing curbside waste collection program. All municipal contracts with Recycle BC in the region are currently being extended to expire December 31, 2024.

The City of Kelowna must notify Recycle BC by July 1, 2022, if the City intends to continue to collect recyclables in the curbside program on behalf of Recycle BC for an additional 5 years or notify Recycle BC that the City will no longer provide this collection service and Recycle BC will be responsible for the collection.

Discussion:

City and Recycle BC staff provided supplemental information to Council on June 13, 2022. This presentation confirmed that having Recycle BC perform the collection and quality assurance will provide best value, and lowest financial risk for our citizens.

In discussions with Recycle BC, they have indicated that they are willing to extend our agreement and fund City recycling collection until the end of our current collection contract with E36oS on April 30, 2026. At that time, a new curbside collection contract for garbage and yard waste could align with the new recycling collection contract.

If the collection program transitions to Recycle BC, they would work with the City and RDCO to ensure a smooth transition. Recycle BC has committed to working cooperatively with the City and RDCO on resident education, communication, program logistics and coordination to ensure mutual benefits for both collection programs.

Recycle BC would seek input from the City prior to deciding details of the collection system such as:

- single or multi stream,
- manual or automated collection,
- types and sizes of bins or carts,
- collection routes and days of collection.

Recycle BC requires that the following be agreed to when requesting direct recycling service:

1. Recycle BC will, at its own discretion, determine applicable packaging and paper curbside service details,
2. The existing inventory of collection containers will be left in possession of residents at no cost, at the discretion of Recycle BC.
3. Recycle BC will be provided with all reasonable assistance and cooperation during the transition period,

-
4. After the transition period, Recycle BC will be provided quarterly updates on households added or removed from our jurisdiction including but not limited to households added or removed from our curbside garbage service, relevant new occupancy permits and demolitions, etc.,
 5. Reasonable notice will be provided to Recycle BC with respect to changes to the City's curbside garbage service and all reasonable efforts will be made to collaborate with Recycle BC on the joint establishment of collection schedules and routes.

Financial/Budgetary Considerations

Having Recycle BC perform the collection is the best financial alternative for the City if our ratepayers are not to subsidize recycling collection.

Communications Comments:

The details and public education required in the transition plan would be coordinated between internal Communications staff, the RDCO Waste Reduction Office and Recycle BC operations at that time.

Conclusion:

City staff, in conjunction with the Regional District Solid Waste Technical Advisory Committee, recommend Recycle BC take over the direct service of recycling collection from the City.

A summary of the benefits and challenges of switching recycling collection from the City of Kelowna to Recycle BC is provided in Attachment 1.

Internal Circulation:

Communications
Financial Services

Considerations not applicable to this report:

Legal/Statutory Authority:
Legal/Statutory Procedural Requirements:
External Agency/Public Comments:
Existing Policy:

Submitted by: S. Hoekstra, Manager - Landfill and Composting Operations

Approved for inclusion: M. Logan, Infrastructure General Manager

Attachment 1: Recycle BC – Benefits and Challenges

Attachment 2: Recycle BC Decision - Presentation

cc: Divisional Director, Corporate Strategic Services
Divisional Director, Financial Services



City of
Kelowna

Recycle BC Agreement Decision

June 20, 2022

Overview

- ▶ Background
- ▶ Rationale
- ▶ Considerations
- ▶ Recommendations

Background

- ▶ Recycle BC is stewardship group for residential paper and printed packaging
- ▶ City has a contract to collect recycling for them and City receives a financial incentive
- ▶ Contract requires a commitment from the City to
 - ▶ collect for Recycle BC for an additional 5 years; or
 - ▶ switch collection services to Recycle BC
- ▶ Two previous council meetings for informational purposes
- ▶ Decision required by July 1, 2022

Rationale

- ▶ This decision is about who will collect the recycling at curbside, RecycleBC or the City on their behalf
- ▶ The same recyclable materials are collected regardless of who is responsible for collection
- ▶ Does not impact future Regional Waste Diversion initiatives such as
 - ▶ Multi family recycling
 - ▶ Expanding organics diversion
 - ▶ Demolition/building deconstruction
 - ▶ Review of Depot access and capacity
 - ▶ Adding alternate materials to curbside collection

Rationale

- ▶ If Recycle BC collects recycling, they would design program and recycling collection contract
- ▶ Recycle BC has agreed in principle to an April 2026 start date and would extend funding should the City officially request they perform collection
- ▶ Recycle BC would work collaboratively with Kelowna and attempt to align collections dates and processes

Financial Consideration

- ▶ Recycle BC pays the City an incentive to collect the recycling on their behalf
- ▶ Costs or surcharges are tied to the City's financial liability and potential for increased taxes
- ▶ This financial risk is mitigated if Recycle BC collects recycling

Considerations- Benefits

- ▶ The benefits to the City to have Recycle BC perform the collection include:
 - ▶ Removes financial risk of escalating costs
 - ▶ Expect that glass would be collected at curbside
 - ▶ Recycle BC performs education, manages contamination and contract oversight resulting in increased staff capacity for other waste reduction initiatives
 - ▶ No decrease in service – same 2-week cycle (minimum)

Considerations - Challenges

- ▶ The challenges to the City to have Recycle BC perform the collection include:
 - ▶ Recycle BC would oversee the collection and make the final decision on system and processes
 - ▶ May have different bins and pick up days
 - ▶ Transition/collaboration of two curbside collection programs

Recommendations

- ▶ Staff recommend that Council:
 - ▶ requests RecycleBC perform direct service
 - ▶ direct staff to submit a letter on behalf of the City
 - ▶ direct staff to request a contract extension
 - ▶ And direct staff to work with Recycle BC and the RDCO to review expanding collection options prior to the April 2026 transition



Questions?

For more information, visit kelowna.ca.

Attachment 1

Below is a summary of the benefits and challenges should Kelowna choose to have Recycle BC perform the curbside collection of recycling (packaging and paper products).

Benefits	Challenges
Removes financial risk of escalating costs and potential surcharges from high contamination levels	Transition between contracted haulers and service would require coordination between RDCO, Kelowna and Recycle BC
Would collect the same materials and frequency as existing program at a minimum	Expected multi stream collection could be seen as less convenient by some residents
Expect that multi stream collection would be preferred system, resulting in lower contamination levels	Recycle BC would make all decisions regarding collection including selection of multi or single stream collection, style of carts/bins and bags, routes, dates of service, etc.
Recovers similar or more recycling and as a higher quality material, diverts more from landfill	Should Recycle BC not use existing blue bins, potential for onetime expenses to remove carts from houses to re-purpose
Recycle BC may choose to re-use existing carts for their collection	Expect resident complaints and inquiries would increase for a period during service transition
Expect that glass collection at curbside would likely be included at no additional cost	Garbage and recycling may be collected on different days
Increases staff capacity to focus on waste reduction initiatives instead of contamination reduction and recycling education	Continued efforts to minimize contamination until Recycle BC takes over collection
Feedback from other Recycle BC serviced municipalities suggests an overall net positive outcome with Recycle BC collection	
Aligns responsibility of curbside recycling completely to the provincial Extended Producers Responsibility Program	
Expect transition to occur in conjunction with the expiration of the waste collection contract which allows for one transition plan for both programs	
Would not impact future decisions regarding waste reduction such as multi family recycling, expanding organics collection, or building deconstruction	

Report to Council



Date: June 20, 2022
To: Council
From: City Manager
Subject: Lynrick Rd Culvert Replacement Project
Department: Utility Services

Recommendation:

THAT Council receives for information, the report from Utility Services dated June 20, 2022, regarding the Lynrick Rd Culvert Replacement Project;

AND THAT the 2022 Financial Plan be amended to include the transfer of \$210k to the Lynrick Rd Culvert Replacement Project from the Gopher Creek Pre-Design and Land Acquisition general reserve funding.

Purpose:

To seek Council approval of additional budget for the Lynrick Rd Culvert Replacement Project.

Background:

In 2017, a \$325k project was included in the annual financial plan titled Gopher Creek Pre-Design and Land Acquisition (#3297). The scope of the project included planning and pre-design of a detention area along Gopher Creek to mitigate flood waters through the Rutland area of Kelowna. The budget was carried over from 2017 to 2019 as it was determined that significant additional funds were needed to complete the original scope of work. The multiple carryovers were attributed to detailed reviews of historical Gopher Creek reports and further investigation of a flow diversion to Mission Creek. Following this, staff then requested that the funds be set aside in reserve following further analysis.

Staff lowered the priority of the project during the two budget years impacted by the COVID-19 pandemic as reductions were realized to City revenue from general taxation. In 2021, the Gopher Creek project was re-analyzed by Utility Planning staff. A new hydraulic model was developed for Gopher Creek to better understand the creek's behaviour during minor and major storm events. Results from the modeling exercise have resulted in a lower prioritization of Gopher Creek projects.

In 2021, the culvert under Lynrick Road failed and a priority project became the Lynrick Road Culvert Replacement Project (#357001). This project is within the same catchment area as Gopher Creek and now requires additional funds beyond the original budget. This Report to Council is to seek Council's support to amend the financial plan using the existing reserve funding from the Gopher Creek project to fund the deficiencies for the Lynrick Road project. The project is part of the Storm Drainage Asset Renewal Program but will also address pipe capacity challenges and limit localized flooding.

Any surplus funds remaining after total completion of the Lynrick Rd Culvert Replacement Project will be transferred to the Storm Drainage Asset Renewal program (#3570 in cost centre 306).

Financial/Budgetary Considerations:

Additional budget is requested to accommodate the culvert failures under Lynrick Road. The \$210,000 additional budget will be funded from the reserve funding associated with the Gopher Creek Pre-Design and Land Acquisition (#3297).

Summary of Budget Adjustments

	<u>Amount</u>
Lynrick Rd Culvert Replacement Project (#357001) – original budget	\$380,000
<i>Gopher Creek Pre-Design and Land Acquisition</i> reserve funding	\$210,000
TOTAL	\$590,000

Conclusion:

The recommendations in this report will result in the transfer of \$210k to the Lynrick Road Culvert Replacement Project from the Gopher Creek Pre-Design and Land Acquisition general reserve funding.

Internal Circulation:

Asset Management and Capital Planning Manager
Budget Supervisor
Communications
Infrastructure Delivery Manager
Utility Services Manager
Wastewater Manager

Considerations applicable to this report:

Financial/Budgetary Considerations:

Considerations not applicable to this report:

Legal/Statutory Authority:
Existing Policy:
External Agency/Public Comments:
Legal/Statutory Procedural Requirements:
Communications Comments:

Prepared by: J. Hager, Design Technician

Submitted by: R. MacLean, P.Eng. Utility Planning Manager

Approved for inclusion: M. Logan, Infrastructure General Manager

cc: Divisional Director, Corporate Strategic Services
Divisional Director, Financial Services

Report to Council



Date: June 20, 2022

To: Council

From: City Manager

Subject: Knox Mountain Management Park Plan Update

Department: Parks and Buildings Planning

Recommendation:

THAT Council receives, for information, the report from the Parks and Buildings Planning Department dated June 20, 2022, with respect to the Knox Mountain Park Management Plan Update;

AND THAT Council endorse the Knox Mountain Park Management Plan Update as attached to the report from the Parks and Buildings Planning Department dated June 20, 2022;

AND THAT Council direct staff to begin implementation of the recommendations and actions.

Purpose:

For Council to update the Knox Mountain Park Management Plan for the next ten years.

Background:

The first Knox Mountain Management Plan was completed in 1999 and primarily focused on issues concerning forest health. The first Update completed in 2011 established the current vision and strategic goals for the park. The Knox Mountain Park Management Plan (KMPMP) 2022 Update summarizes the improvements made at Knox Mountain over the last ten years and outlines priority projects through the next ten years. It includes a bio-physical inventory and provides an assessment of current issues facing the park today. Further, it outlines 20 capital items and 8 operational maintenance items for action over the next 10 years.

Knox Mountain is our largest park, and one of our busiest, with over 260,000 visits last year. Knox Mountain Drive has seen a dramatic increase in walking and biking in addition to vehicle demand. In the spring of 2021, staff initiated a public engagement survey that provided five options for the public to choose from, which ranged from options with cars completely prohibited to having full access. In November of last year, Council voted to undertake a two-year trial with a hybrid 'Share the Road' approach, where the road to the First Lookout is open to vehicles from noon to 8 pm daily in the frost-free season, except for extreme fire hazard conditions. The trial includes traffic calming measures and signage upgrades, as well as vehicle, pedestrian and cyclist counts. This trial started in April of this year and will go on to 2024.

During the Summer and Fall of 2021, a biophysical inventory was prepared, as well as a full review of the management plan. In the winter and spring of 2022, the capital and operational projects were reviewed and updated.

Public Engagement – Update

In Spring 2022, the draft management plan update was presented for public review and feedback. The draft plan was available for review and poll questions were asked to ensure alignment with the park's vision and strategic goals. The online draft and survey link were sent directly to stakeholder groups. Over 1450 people participated in the engagement. Eighty-five percent of respondents agreed, strongly agreed, or felt neutral when asked if the investment areas advanced the vision and strategic goals through the updated plan. A full outline of the engagement results is attached to this report.

Biophysical Inventory Results

A biophysical Inventory was completed as part of the update. One of the issues that continue to be a primary concern with respect to ecological health is access management and the proliferation of rogue trails through the park. The study notes that efforts over the last years have been successful, with 26% fewer unsanctioned trails in Knox West 2021 than in 2011. Improvements such as delineation of sensitive areas have seen a recovery of those ecosystems. That said, when looking at the whole of the park, 46% of trails remain unsanctioned. This presents a significant impact to the ecological functioning of the park, particularly considering our dry climate where the recovery of ecosystems is slow. Given the anticipated increase in use over the next ten years, the assessment recommends significant effort should be invested into access management throughout the park.

Works Completed from 2011 to 2022

The last ten years saw twenty projects completed in the park. This included the addition of 1777 Crosby Road (43 acres/17.6 hectares), trail upgrades, expansion of the dog park, and wildfire mitigation measures through the park. A full list of the projects is included in Section 4.0 of the attached KMPMP Update.

Current Issues

Current issues today focus on the increased use of the park, and the anticipated increase through population growth over the next ten years. The bio-physical inventory outlines the current issues of trail proliferation as well as human/wildlife conflicts, including impacts from off-leash dogs. While over 7600 metres of rogue trails have been rehabilitated, there still remains over 34,000 metres, or 34 kilometres, of unsanctioned trails currently in the park. This remains one of the key impacts on the natural systems in the park today. The other primary issue of concern in the park is human/wildlife conflicts. This can result from vehicle impacts on wildlife, direct human/wildlife conflicts, and those from pets, including outdoor cats and off-leash dogs.

Vision and Strategic Goals

The vision and strategic goals have been brought forward from 2011 to the current update. These establish the basis for the work plan for the next ten years. The strategic goals outline how Knox Mountain Park is for nature, for people and for stewardship. The vision states:

Knox Mountain Park reveals the wonder and diversity of the Okanagan landscape. It is a symbol of Kelowna, a place of unique and remarkable natural beauty within our city's park system, a place where nature is able to flourish and evolve. Residents and visitors participate in the life of the park, establishing healthy and sustainable relationships between themselves and the natural environment.

Both the vision and goals provide important perspectives as we consider our role in taking care of Knox Mountain Park. For context many ecosystems within the Okanagan Basin are rare and of concern. The Biophysical Inventory cites 13 ecosystems within the park listed by the Conservation Data Centre of BC as being endangered, threatened, or of special concern. It notes twenty-eight species that are listed as endangered or of concern either provincially or federally, that potentially frequent or inhabit the park.

Moreover, while Knox Mountain Park, at 385 hectares, is our largest park, it represents less than 0.2% of Kelowna's landmass. This underlies the importance of the park as a refuge for sensitive ecosystems and a habitat for wildlife. Additionally, with our dry climate, the rate of rehabilitation is slow, resulting in a very fragile ecosystem that is vulnerable to damage. At this time of increased use, the importance of stewardship and respectful care is underlined.

Works included in the next ten-year plan

The strategy aims to address the primary issues facing the park, those of increased use and human/wildlife conflicts. The emphasis will be on creating functional key nodes of activity, redirecting some of the use to Knox Mountain Park East, access management, and engendering a culture of stewardship among all users. Twenty capital projects are included in the plan, Priority projects include:

- First Lookout Improvements
- Knox East Staging Area Improvements (parking/signage)
- Trail Maintenance and Decommissioning Rogue Trails
- Signage Renewal – Interpretive / Wayfinding
- Off-leash Dog Strategy
- Engendering Stewardship

A full list of the twenty capital projects is included in Section 6.3 of the attached KMPMP Update. Eight operational items are included in the plan. There have been significant wildfire mitigation measures undertaken in the park over the last few years. This is an ongoing activity and a priority. General day-to-day maintenance of the park, as well as implementing sustainable urban forest measures and trail maintenance are also key items. The full list of operations and maintenance action items are included in Section 6.4 of the attached KMPMP Update.

The plan outlines \$1.96 million in capital projects, in present-day value, over the next ten years and an operating budget of \$1.49 million, for a total for all components of \$3.45 million over 10 years. The plan underlines that funding is reviewed annually through the City's standard budget process.

Conclusion:

The next step is to include the capital work plan items into the Ten-year Capital Plan for Council's consideration, and subsequent bringing forward the annual operating and capital budget requests for the items within the Knox Mountain Management Plan 2022 Update.

Internal Circulation:

Parks Services
Transportation Engineering
Utility Planning
Financial Services
Active Living & Culture
Infrastructure Delivery
Community Communications
Partnerships Office
Policy and Planning

Considerations applicable to this report:

Existing Policy:

- *Knox Mountain Management Plan (2011)*

Financial/Budgetary Considerations:

The plan outlines \$1.96 million in capital projects over the next ten years to be included in the Ten-year Capital Plan. The plan also identifies an operating budget of \$1.49 million, for a total for all components of \$3.45 million over 10 years. These will be brought forward as subsequent budget requests in the annual budget process.

Communications Comments:

Engagement Survey Summary included as Schedule 1.

Considerations not applicable to this report:

Legal/Statutory Authority:

Legal/Statutory Procedural Requirements:

External Agency/Public Comments:

Submitted by: M. Steppuhn, Parks Planner

Approved for inclusion:



D. Edstrom, Divisional Director, Partnerships & Investments

Schedule 1 – Engagement Survey Summary 2022

Schedule 2 – Knox Mountain Park Management Plan Update 2022

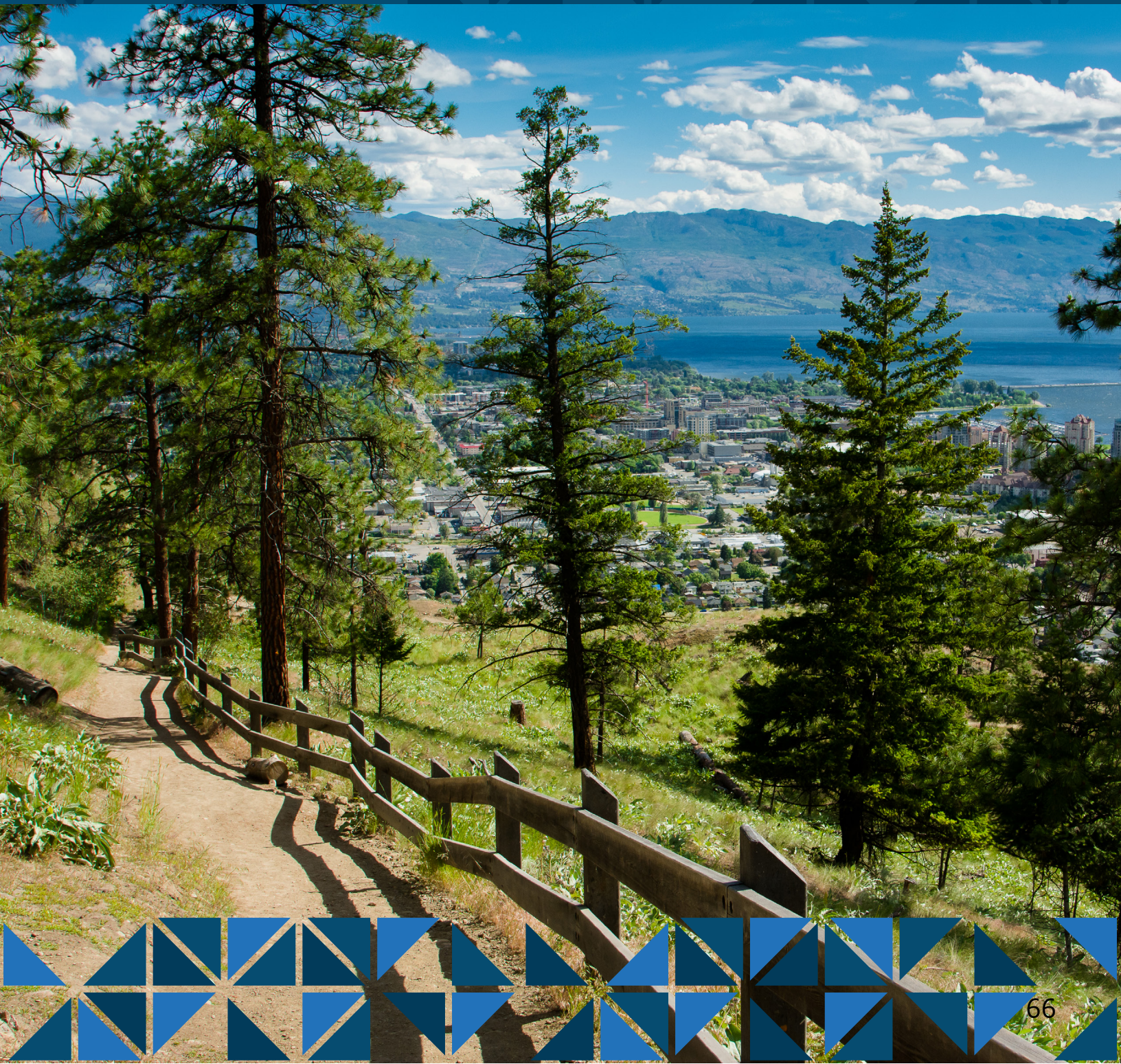
Schedule 3 – Biophysical Inventory / Environmental Overview – Knox Mountain Park 2021

Schedule 4 – Knox Mountain Management Plan Update Presentation

cc: Manager, Parks Operations

Knox Mountain Park Management Plan Update

Engagement Summary 2022





Background

Knox Mountain Park is a popular destination for both residents and visitors to Kelowna seeing ~260,000 visits per year, and its popularity and use continues to grow. The COVID-19 pandemic has contributed to the park's usage alongside Kelowna's rapid population growth. Every ten years, the management plan for Knox Mountain gets updated and the last one was endorsed by City Council in November 2011.

The update looks at what has been done in the past 10 years, and what focus areas will be to advance the vision of the park for the next 10 years. Much of the 2011 plan is brought forward, including the vision and strategic goals that state Knox Mountain is for nature, people, and stewardship. The focus of this update will be managing the explosive growth in use and addressing operational concerns including mitigating wildfire risks.

In May 2021, a survey seeking resident input on road access, who's using it, and next steps for Knox Mountain Drive was conducted for five weeks. The objectives of the survey helped inform the 2-year pilot Knox Mountain Drive Strategy adopted by Council in November 2021, which focuses on safety, accessibility, and operational considerations.

Below are the numbers of the Knox Mountain Drive engagement, which helped pave the way for staff consideration when creating the updated plan.

2021 Survey Information



8117
Survey
Respondents



39
Stakeholders
Engaged



4035
Comments
Submitted

Work continued on the management plan through 2021 into 2022. A comprehensive review of biophysical conditions, park use, and current issues facing the park was undertaken. The plan now focuses on how to manage the increased use the park is receiving and is expected over the next ten years.

In Spring 2022, based on earlier engagement results, the updated management plan was presented for public review and feedback. Poll questions were asked to ensure alignment with the park's 2011 vision and strategic goals and were available on the project page along with the draft document.

The Engagement

Purpose: To inform residents of the updated management plan and consult with both the public and park stakeholders on the draft.

Timeline: April 21 – May 15, 2022

Engagement Goals:

- Inform residents and stakeholders to participate in poll questions and discussion forum on GetInvolved
- Consult with residents if plan updates align with the park's vision and strategic goals
- Consult with stakeholder groups regarding the 10-year plan

Stakeholders: Staff included various stakeholders in the process to guide key focuses in the draft. Stakeholders included:

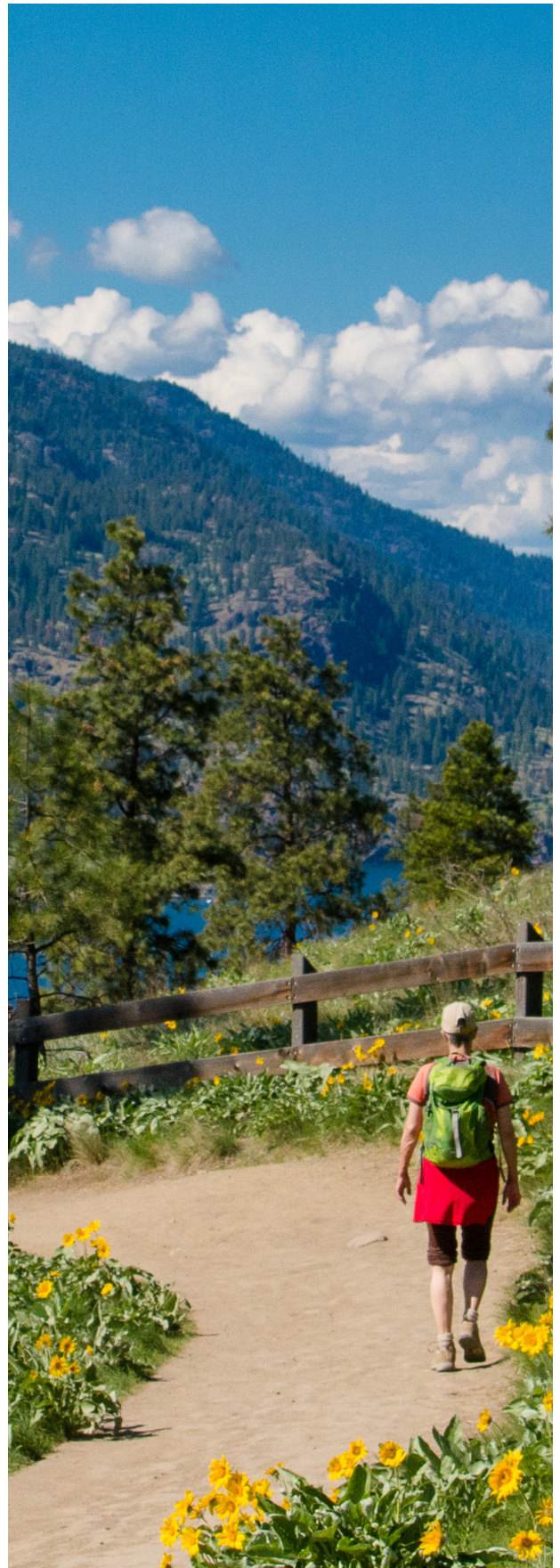
- Friends of KMP Society
- Mountain Bikers of the Central Okanagan
- Accessibility groups
- West Bank First Nation

Communications Goal

The updated plan incorporates environmental considerations, provides updated analysis on the ecological needs of the park, and gives guidance to decision-making on capital improvements and how we maintain the park through the next decade.

Residents were encouraged to read the updated plan and answer five poll questions to ensure the updated management plan aligned with the park's vision and strategic goals.

"I really enjoy Knox Mountain
for hiking and biking."
- Survey respondent



Engagement Overview

The updated plan was presented online through GetInvolved encouraging residents to read it, answer five poll questions, and participate in the discussion forum alongside other community members and stakeholders. Feedback was collected to ensure the updated plan aligned with the park's vision and strategic goals through the poll questions. To ensure online visibility, two media releases, two City in Action ads, and an ad on Castanet were issued alongside social media postings and an e-newsletter to over 6,000 Get Involved registrants. Park visitors were greeted with a poster at each the Base and First Lookout parking lots where a digital construction sign also encouraged visitors to participate in the project.

Poll numbers



Discussion Forum



What We Heard

Poll Questions

Polls are an effective way to gauge broad public sentiment on a topic where participants can engage and see community opinion immediately. It allows for quick responses on the project compared to a typical survey which tend to dive deeper into a specific subject(s). The poll questions were developed to garner public opinion on the work and goals for Knox Mountain management still aligning with the goals and vision of 2011.

The results show respondents concur the updated Knox Mountain Park 10-year Management Plan is on a path forward.

As typical response rates go in polling questions, there is approximately half the respondents from question one onward.

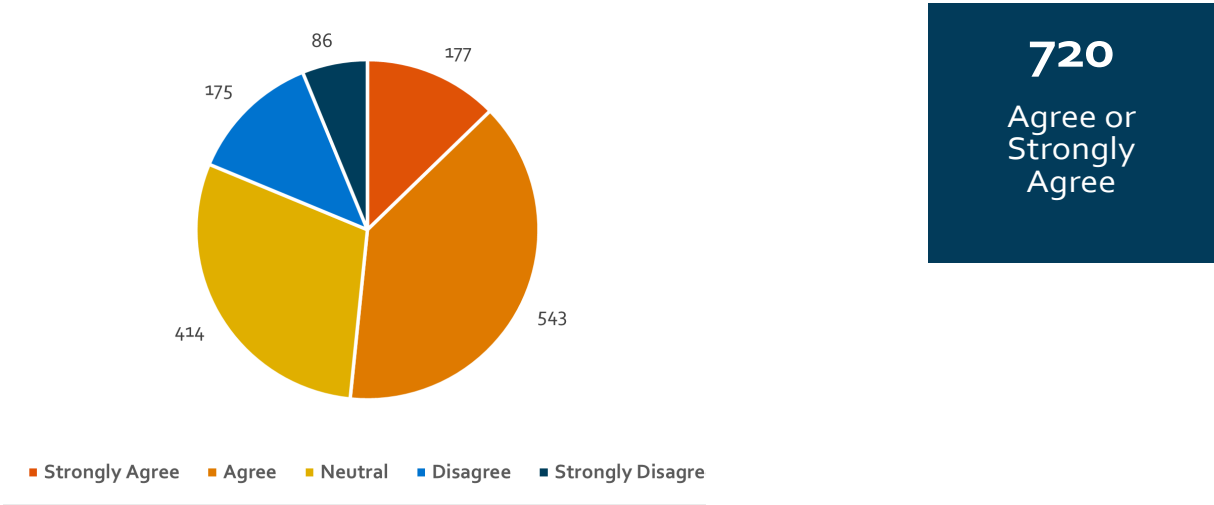
Discussion Forum

Residents were welcomed to participate in a discussion forum with other community members. The sentiment through the discussion forum was fairly positive with mentions of improvements to the dog park such as trees for shade, water for dogs, lighting, and more off leash areas. Further, there is resident concern over the disc golf course being removed, and overall pedestrian safety on Knox Mountain Drive. Lastly, there were quite a number of comments applauding the City for the work it has done to the park over the last decade.

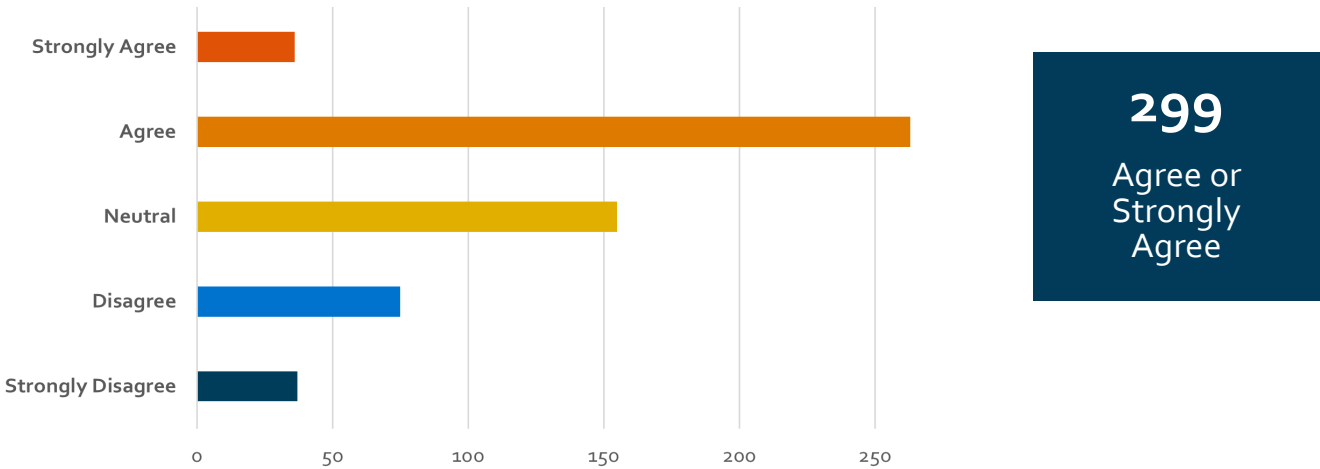




1,134 of 1,391 (85%) respondents agreed, strongly agreed, or were neutral when asked if the vision and strategic goals guiding the updated plan still hold true in 2022 as they did in 2011.

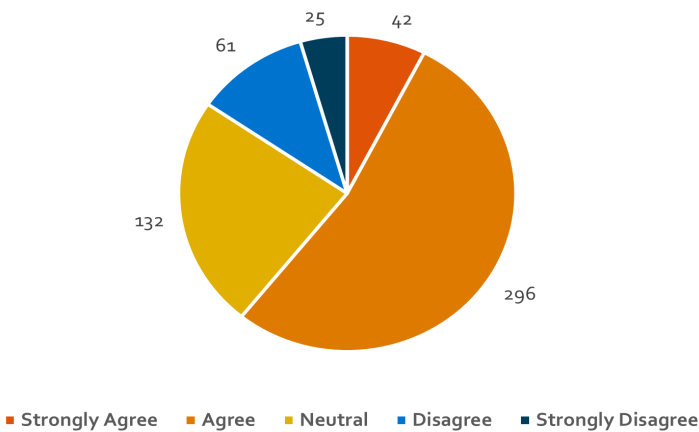


+450 of 566 (80%) agreed, strongly agreed, or felt neutral toward the investment areas advancing the vision and strategic goals through the updated plan.





When asked if the work done at Knox in the last 10 years aligned with the vision and strategic goals, 470 respondents agreed, strongly agreed, or felt neutral.



338
Agree or Strongly Agree

Accessibility and amenities like benches, washrooms, and signage are important investment areas for respondents. 482 of 581 (83%) agreed, strongly agreed, or felt neutral towards these investment areas.

396
Agree or Strongly Agree

Improving parking and trail connections at Knox Mountain East is a focal point for the next 10 years. 469 of 539 (87%) agree, strongly agree, or felt neutral on improvements to Knox East.

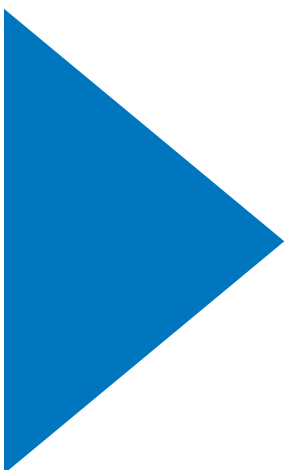
403
Agree or Strongly Agree



Conclusion

Through this final phase of public engagement, it remains clear that the residents continue to care about Knox Mountain Park and support the work the City is doing to advance and protect it for years to come. Investment into areas such as trail access and amenities are supported by residents and more importantly, consensus proves the 2022 management plan holds true to the 2011 vision and strategic goals. That vision continues to be a guiding path for the management of the park as we work together to create a place for nature, people, and stewardship.

Through the Imagine Kelowna process, the community expressed that the Kelowna of tomorrow should be inclusive, equitable, and sustainable. This means protecting our natural environment and parks within, so everybody who lives in and visits Kelowna can enjoy now and into the future. The updated Knox Mountain Park 10-year management plan ensures protection, advancement, and investment in the areas most needed.



"... Thank you for all the improvements to trails, parking, etc. that have been made so far... I want to mention is to please put more signs reminding people not to pick the wildflowers... There has been a massive increase in the arrowhead balsamroot being picked over the last few years and it's super sad to see."
- Survey respondent

"I enjoy spending time on Knox, and appreciate all of the work that goes into making it an even better place for residents..."
- Survey respondent





Knox Mountain Park

Management Plan 2022



April 2022
kelowna.ca

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ACKNOWLEDGEMENTS

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1.0 EXECUTIVE SUMMARY

The City of Kelowna 2022 Knox Mountain Park Management Plan provides sound guidance for the overall management of Knox Mountain Park for the next 10 years. The Management Plan establishes a framework for City decision-making with respect to park operations and maintenance, and it provides a strategic approach to park development and capital investment. The Plan underscores the City's commitment to public involvement and sets out avenues for community partners to participate in park activities.

The Management Plan's Vision clearly and concisely conveys the desired future for this important natural area park; the Vision reads:

Knox Mountain Park reveals the wonder and diversity of the Okanagan landscape. It is symbol of Kelowna, a place of unique and remarkable natural beauty within our city's park system, a place where nature is able to flourish and evolve. Residents and visitors participate in the life of the park, establishing healthy and sustainable relationships between themselves and the natural environment.

Strategic Goals – addressing the park's role as “a place for nature”, “a place for people”, and “a place for stewardship” – articulate specific directions necessary to achieve the plan's Vision. The core tools to achieve the intent of the plan include: Park-Wide and Park Zone-Specific Policies, and a Management Concept made up of a Development Plan and an Operations and Maintenance Plan. The document concludes with a proposed Implementation Program, extending out to the year 2031.

The City of Kelowna was motivated to initiate the preparation of the Management Plan to assess the improvements that have been completed since the previous Management Plan and to review the direction of improvements for the next 10 years. New lands (approximately 75 hectares) have been acquired and also need to be incorporated into the strategic planning framework for Knox Mountain Park. The City was also motivated to address a wide range of key issues affecting the park, many of which related directly to the impact of users on the park's environmentally significant areas. There has been a rapid increase of park use over the last decade which is anticipated to continue to grow, as documented in the City's Official Community

Plan growth scenario, which signals an increase of approximately 20,000 people over the next 20 years in the central core of the City. This will inevitably put more pressure of use on the natural systems of the park, while simultaneously being critical to providing spaces for residents and visitors to recreate, exercise, and enjoy the outdoors.

Of central concern was the impact on sensitive forested park areas and grasslands (and the related impacts on wildlife) from the proliferation of unsanctioned hiking and cycling trails. Other key challenges included managing off-leash dog behaviour, illegal dumping, and ensuring consistency between special events and the environmental integrity of the park.

The Management Plan's Park-Wide and Zone-Specific Policies establish a clear direction of park uses and a clear code of conduct for park users. The park's Development Plan and Operations and Maintenance Plan work together with and are supported by park policies.

The Management Plan includes the following components:

Development Plan: Capital (CAP) Items

- CAP 1** Vehicular Access to First Lookout: Two Year Pilot
- CAP 2** Undertake Rockfall Mitigation
- CAP 3** Construct Improvements at First Lookout
- CAP 4** Update Outdated and Damaged Interpretive Signage
- CAP 5** Install Information Kiosk and Signage at Ellis Street Gateway
- CAP 6** Develop a Strategy and Enforcement Plan for Off-Leash Dogs
- CAP 7** Renovate Abandoned Repeater Tower Foundation
- CAP 8** Trail Fencing for Conservation Areas
- CAP 9** Develop Staging/Parking Area at Knox Mountain Park East

- CAP 10** Install Knox East Staging Area Signage
- CAP 11** Install Signage on Remaining Trails
- CAP 12** Install Trail Fencing
- CAP 13** Crib Step Replacement throughout Park
- CAP 14** Establish Trail Connections between Knox Mountain Park West and Knox Mountain Park East
- CAP 15** Expand Designated Mountain Biking Trails
- CAP 16** Public Outreach
- CAP 17** Annual Scorecard Assessments
- CAP 18** Host Annual Stakeholder Meeting
- CAP 19** Rehabilitate Mountain Biking Trails
- CAP 20** Update Management Plan and 10 Year Environmental Assessment

Operations and Maintenance Plan: Operations (OP) Items

- OP 1** Undertake Annual Washroom Maintenance
- OP 2** Maintain a Park Caretaker Position
- OP 3** Trail Maintenance and Decommissioning of Rogue Trails
- OP 4** Maintenance of Trails at Kathleen Lake
- OP 5** Maintain (2) Summer Students
- OP 6** Implement Sustainable Urban Forest Strategy Measures in Knox Mountain Park
- OP 7** Undertake Annual Wildfire Mitigation Activities
- OP 8** Perform General Park Maintenance

Priorities for implementation were determined, high level cost estimates were prepared and tasks were broken down for both capital development and operations and maintenance.

Staff anticipate that the capital development plan will be funded from the City's capital budget that will be implemented over a 10 year time frame. Capital development costs are estimated at \$1.96 million.

In order to support ongoing operations of these capital improvements and all park infrastructure at Knox Mountain Park an operating budget has also been prepared and estimated at \$1.49 million. These estimates for ongoing base operations specific to Knox Mountain Park increase incrementally.

Investment in the full-scale Implementation Program of the Management Plan, including all Development Plan and Operations and Maintenance Plan components is estimated at \$3.45 million, over 10 years.

These budgets will be considered and weighed against other priorities in the long-term capital plan and provisional budget submissions in future years. It should be made clear that funding is not assured, but this information helps to educate everyone on the real cost implications of park stewardship and maintaining the value of our assets. If projects cannot be achieved in the year specified due to budgetary shortfall, specific projects will be deferred to the following year.



2.0 INTRODUCTION

The 2022 Knox Mountain Park Management Plan (“the Management Plan”) guides the overall direction for Knox Mountain Park over the next 10 years. The Management Plan provides sound guidance within the City of Kelowna and seeks to engage community partners and individuals in efforts to achieve the Vision for the park.

The Management Plan is a strategic, forward-looking document that provides an integrated and sustainable approach to park planning. It is designed to sustain and improve the environmental health of Knox Mountain Park for future generations while enhancing visitors’ experiences within the park. The Management Plan provides a framework for investment in environmental conservation and reversing environmental degradation, investment in the park’s recreational attributes, and investment in improvements that draw attention to the park’s natural and cultural features and the surrounding landscape of the Okanagan Valley.

Solid groundwork for the 2022 Management Plan was set in 2009 and 2011 through the preparation of the first two Management Plans for Knox Mountain Park (Companion Document 1: 1999 Knox Mountain Park Management Plan and Companion Document 2: 2011 Knox Mountain Park Management Plan). Since that time, the park boundaries have been significantly expanded. Although

the 2011 plan embodied a similar values framework for Knox Mountain Park as the plan within, the update provides an opportunity to breathe new life into the goals and objectives set by the previous plans and to establish current priorities for implementation.

The updated Management Plan benefits from what we have learned since the 2011 plan was prepared, including the rich knowledge of current environmental conditions in the park, the information and direction of studies and plans completed since 2011 and the insights of today’s park users and the public. The Management Plan responds to current pressure on the park from park users and is proactive in planning for the higher volumes of users anticipated in the future.

Parkland acquisitions have occurred since 2011 in the total of 75 acres, inclusive of the 1777 Crosby Road property. The City owned parcels 23 and 24 on Grainger Road have now been designated Knox Mountain Park East.

A range of tools are drawn upon to make the Management Plan a reality. The City of Kelowna, as the property owner, and ultimate manager and steward, retains the primary responsibility on behalf of the citizens of Kelowna to manage park infrastructure, operating and maintenance spending, and to create

and enforce operating regulations. Through the Management Plan process, the City has sought input from stakeholder groups, park users, and the general public on the Management Plan; as part of the direction to implementation the Management Plan emphasizes the key roles these stakeholders need to play as park stewards. As individuals and groups, these stakeholders have the potential to participate in annual meetings, in educational outreach activities and in the restoration and monitoring of the park's ecological health.



3.0 VISION AND STRATEGIC GOALS - Where We Want to Be

3.1 Introduction

The Vision and Strategic Goals of the Knox Mountain Park Management Plan communicate the direction of the Management Plan. They are the foundation for the Plan's Policies and Management Concept. Through the lens of the Vision and Strategic Goals, and a pragmatic approach to available resources, a realistic 10 year planning framework can be established for the park.

The Vision and Strategic Goals for the Knox Mountain Park Management Plan have been developed based on public involvement, consultation with City of Kelowna representatives, and research on best practices for the management of Natural Area Parks.

Knox Mountain Park reveals the wonder and diversity of the Okanagan landscape. It is a symbol of Kelowna, a place of unique and remarkable natural beauty within our city's park system, a place where nature is able to flourish and evolve. Residents and visitors participate in the life of the park, establishing healthy and sustainable relationships between themselves and the natural environment.

3.2 Vision

The vision statement for the Knox Mountain Park Management Plan clearly and concisely conveys the intended direction for the park. It guides decisions affecting the park, motivates those responsible for implementation, and shapes the public's understanding of why they should work to achieve the strategic goals for the park.

3.3 Strategic Goals

The Strategic Goals of the Knox Mountain Park Management Plan expand upon the Vision for the park. They build on the strengths of the park and take advantage of opportunities, while addressing weaknesses and warding off threats. They provide a framework for the objectives over the next 10 years.

The Strategic Goals are organized into three categories:

- A Place for Nature,
- A Place for People, and
- A Place for Stewardship.

The remainder of this section sets out the Strategic Goals within each category (goals are not in order of priority; goal numbers are included for reference purposes only).

3.3.1 A Place for Nature

Knox Mountain Park should be a living example of the way ecological values are protected in a place where appropriate kinds and levels of human activity are welcome. The set of Strategic Goals within the Place for Nature category outlines the Management Plan's aim to protect the park's natural systems.

Species and Genetic Diversity

Goal 1 - To protect unique, rare, threatened and endangered plant and animal species, including those that are locally, regionally, nationally, and internationally significant.

Terrestrial Habitat Quality

Goal 2 - To complete a network of protected areas that represent the diversity of ecosystems within Knox Mountain Park and serve as ecological benchmarks.

Goal 3 - To maintain and restore native bird communities through the protection and management of vegetation.

Goal 4 - To reduce sources of human-caused wildlife mortality and distress that threaten the viability of

wildlife populations in the park, including patterns of avoidance due to disturbance by off-leash dogs.

Goal 5 - To protect and enhance the integrity of wildlife corridors within and beyond the boundaries of the park, with the establishment of the Knox Mountain Ridge Ecosystem Connectivity Corridor.

Goal 6 - To maintain and, where feasible, restore native grassland and vegetation communities and protect rare and at risk plant species.

Goal 7 - To control or eliminate non-native species that threaten the integrity of native plant species and communities.

Goal 8 - To maintain forest health in a manner that is both sensitive to the ecosystem and consistent with sustainable forest management policies through such measures as the removal of pine beetle infested trees and forest fuel management.

Aquatic Ecosystem Habitat Quality

Goal 9 - To maintain the biodiversity of the park's aquatic ecosystems.

Goal 10 - To protect the features, functions and conditions of the park's riparian areas for the vital role they play in the natural maintenance of the lake and wetland health and productivity.

Geology and Landforms

Goal 11 - To protect geological and physical features.

3.3.2 A Place for People

Knox Mountain Park is a place for people. The park provides inspiration for artists, day use sightseeing and physical recreation opportunities for individuals, families and community groups, as well as other quality of life benefits. Whether one visits the park regularly or merely appreciates the view to it while going about one's daily routine, the mountain is part of Kelowna's physical identity and sense of place.

The set of Strategic Goals within the Place for People

category outlines the Management Plan's aim for the park to continue to offer a range of recreational opportunities while clearly defining the recreational conduct necessary to respect the park's natural setting.

Recreational Variety

Goal 12 - To maintain the existing range of recreational opportunities and enable visitors with varying interests to enjoy the park.

Goal 13 – To create a 'Share the Road' approach, where users of a variety of modes can enjoy, along Knox Mountain Drive and reduce pedestrian, cyclist and vehicle conflicts on the Drive.

Recreational Conduct

Goal 14 – To use communication, education and directional cues and tools to support and encourage the intentions of users to enjoy the park in a manner consistent with respect for the park's natural environment.

Designated Recreation Areas

Goal 15 - To define and clearly communicate to recreational users areas of high environmental sensitivity, and to direct recreational use away from these areas.

Parking Management

Goal 16 - To direct parking to locations within the park where recreational use is encouraged and decommission informal parking where recreational use is discouraged.

Access Management

Goal 17 - To provide designated pedestrian and bicycle access points to and from existing and future residential areas (see Figure 4).

Goal 18 - Where possible, to increase universal access opportunities in the park.

Goal 19 - To provide, where possible, appropriate access routes for wildfire management, urban forest management, and park maintenance.

Personal Safety

Goal 20 - To educate park users about physical risks and encourage mindful and prudent behaviour.

Goal 21 - To identify and correct serious hazards to personal safety along designated trails and zones of intensive use.

Goal 22 - To provide safe, clean, potable drinking water facilities through the utility infrastructure within the park.

Natural Landscape Aesthetic

Goal 23 - To protect from human alteration, the beauty of the park's natural landscape as seen from viewpoints around the City and from within the park.

Prohibited Activities

Goal 24 - To take proactive and targeted measures to ensure prohibited activities do not take place in the park (e.g. vandalism, littering, dumping of yard waste or pool water, encroachment of fencing or buildings on parkland, and unauthorized vehicle access).

Special Events

Goal 25 - To support the role of the park as host to special events that are consistent with respect for the park's natural environment.

3.3.3 A Place for Stewardship

The realization of the Management Plan's Strategic Goals within A Place for Nature and A Place for People becomes possible with a commitment to park stewardship by those centrally responsible for managing park operations (i.e. the City of Kelowna), as well as non-government stakeholder groups with an interest in the park. The category of "A Place for Stewardship" includes the Strategic Goals for mobilizing collective resources and encouraging community investment in Knox Mountain Park.

Communication and Education

Goal 26 - To pursue opportunities within existing regional and municipal communication and education programs, and to explore new communication and education methods that will advance the Vision and

Strategic Goals for the park.

Goal 27 - To implement directional signage, educational display material, and physical cues and barriers within the park to advance the park's Vision and Strategic Goals.

Public Engagement

Goal 28 - To engage user groups, conservation interest groups, and those recreating in the park through a park stewardship program.

Monitoring

Goal 29 - To monitor and report on the state of Knox Mountain Park regularly and consistently.

Fair and Transparent Processes

Goal 30 - To ensure management decisions on special events and proposals for new uses in the park consistent with the Management Plan are made in a timely and fair manner and are consistent in their approach.

Enforcement

Goal 31 - To provide the means necessary for an adequate level of enforcement to occur within the park ensuring that park users are following bylaws (eg. no smoking, dogs on-leash, no motorized vehicles on trail etc.).



4.0 PARK IMPROVEMENTS - What We Have Done

4.1 Overview

The 2011 Knox Mountain Park Management Plan has been vital in providing direction for the Park improvements over the last 11 years. A number of the Development Plan and Maintenance and Operations Plan items have been implemented.

Development Plan improvements took place throughout the park and include:

- Acquisition of Parkland
- Trail Repairs and Upgrades
- Caretaker's Cabin Facade Renewal
- Environmental Management
- Fencing and Access Management
- New Park Amenities
- Nature and Wayfinding Signage
- Disc Golf Course Improvements
- Overflow Parking Area
- Dog Park Expansion

A comprehensive overview of these items are found on Figure 1: Works Completed Map (2011-2022) and Figure 2: Works Completed List with Images (2011-2022).

4.1.1 Acquisition of Parkland

A number of areas were identified in the previous Management Plan for potential acquisition to expand the Park; one of which was 1777 Crosby Road. This parcel provides an important link for both wildlife and trail connections northwards to the Glenmore Highlands. Furthermore, the addition of these 17 hectares helps to accommodate the increased use and activity the park has experienced so far and may continue to see into the future.

4.1.2 Trail Repairs and Upgrades

A key Strategic Goal of the Management Plan was 'A Place for People'. The trail repairs and upgrades that were undertaken were targeted to areas of high traffic routes and were essential to balancing recreation with the natural setting of the park. For ease of access, steps were replaced on the Ogopogo Trail and the Paul's Tomb trail was realigned and widened for emergency vehicle access.

Trail enhancements included the creation of the Lochview Trail connection and mountain bike trails and hiking trails within the Knox Mountain East parcel.

Finally, a pedestrian walkway was provided alongside Knox Mountain Drive to improve interactions between differing user groups along this corridor.

4.1.3 Caretaker's Cabin Facade Renewal

The Caretaker's Cabin underwent a much-needed facade renewal. It also functions as a FireSmart™ demonstration home, adhering to FireSmart guidelines and principles. FireSmart priority zones around the Cabin have also been addressed to mitigate potential wildfire fuel, including the removal of brush and other combustible materials, as well as removing hazard trees.

4.1.4 Environmental Management

Various environmental management initiatives have been undertaken throughout the park over the last several years. These include preventative and proactive measures such as mitigation of wildfire fuels, forest health interventions, and removal of hazard trees (for both wildfire and fall concerns).

4.1.5 Fencing and Access Management

Fencing has been added to specific park locations that have high potential for encroachment into sensitive ecosystem areas. The areas of focus included exclusion fencing at the Rocky Knoll at the Second Lookout and access management fencing along the Apex trail. A gate was installed just past the First Lookout on Knox Mountain Drive.

4.1.6 New Park Amenities

New park amenities have been installed to benefit park users, including vault toilets in the spring of 2022, and a park sign. These improvements will tie into further improvements that have been identified as a priority within this Management Plan.

4.1.7 Nature and Wayfinding Signage

Signage has been incorporated throughout the park to identify high-value natural elements, provide educational or interpretive opportunities and to assist with wayfinding for park users. These were installed within minimal impact to the environment and utilize natural materials where possible. Additionally, the mountain biking trails received fibreglass composite posts.

4.1.8 Disc Golf Course Improvements

Improvements were made for the existing Disc Golf Course at the base of Knox Mountain Park in partnership with the Kelowna Disc Golf Association. This included the installation of concrete pads at tee boxes to assist in wayfinding for each hole of the course.

4.1.9 Overflow Parking Lot

The Ellis Street Entry is the primary vehicle, bicycle, and pedestrian access point for the park. The existing parking lot at the base of Knox Mountain Drive has been known to be quite busy in the high-use warm seasons. An overflow parking lot was established along Poplar Point Drive to accommodate additional users and ease congestion for those driving to/from the park.

4.1.10 Dog Park Expansion

The off-leash dog park at the base of Knox Mountain was expanded to promote and encourage appropriate dog activity within the boundaries of the park. Mitigation measures for unsanctioned off-leash dogs within the uphill areas of Knox Mountain will continue to be utilized and monitored as part of a larger management strategy.

Figure 1: Works Completed Map (2011-2022)



WORKS COMPLETION MAP



LEGEND

- Very High Environmental Sensitivity
- High Environmental Sensitivity
- Moderate Environmental Sensitivity
- Low Environmental Sensitivity
- Park Boundary
- Road
- Sanctioned Trails

- 1 Ogoopogo Trail – Step Replacement
- 2 Added 1777 Crosby Road (17 hectares)
- 3 Paul's Tomb – Widened for Improved Access
- 4 Caretakers Cabin Façade Renewal
- 5 Knox East Trail Improvements
- 6 Wildfire Fuel Mitigation
- 7 Rocky Knoll Exclusion Fencing and Monitoring
- 8 Apex trail – Access Management
- 9 Vault Toilets
- 10 Nature/Wayfinding Signage
- 11 Disc Golf Improvements (Partner KDGA)
- 12 Overflow Parking Area
- 13 New Park Sign
- 14 Pedestrian Walkway
- 15 Mountain Biking Trail Improvements
- 16 Dog Park Expansion
- 17 Installed Gate
- 18 Lochview Trail Connection
- 19 Traffic Calming Measures

Figure 2: Works Completed List with Images (2011-2022)

**1. Ogopogo Trail – Step Replacement****2. Added 1777 Crosby Road (17 hectares)****3. Paul's Tomb – Widened for Improved Access****4. Caretakers Cabin Façade Renewal****5. Knox East Trail Improvements****6. Wildfire Fuel Mitigation**

Figure 2: Works Completed List with Images (2011-2022)

**7. Rocky Knoll Exclusion Fencing and Monitoring****8. Apex Trail – Access Management****9. Vault Toilets****10. Nature/Wayfinding Signage****11. Disc Golf Improvements (Partner KDGA)****12. Overflow Parking Area**

Figure 2: Works Completed List with Images (2011-2022)



13. New Park Sign



14. Pedestrian Walkway



15. Mountain Bike Trail Improvements



16. Dog Park Expansion



17. Installed Gate



18. Lochview Trail Connection



5.0 CURRENT SITUATION - Where We Are

5.1 Introduction

Knox Mountain Park is the City of Kelowna's largest Natural Area Park. The park is 385 hectares (952 acres) in size (inclusive of the Knox Mountain East parcel) and is located immediately north of Kelowna's downtown at the north terminus of Ellis Street (Fig. 3: Location Map).

Mount Knox has a single summit with a number of secondary summits and ridge lines. The peak of Mount Knox rises approximately 640 metres above sea level, and approximately 300 metres above the high water mark of Okanagan Lake. While the shoreline of Okanagan Lake borders almost 1400 metres of the western park boundary, much of the remaining boundary is surrounded by residential development. The size, height, central location and natural amenities make this natural area a highly desirable destination for residents and tourists alike.

The majority of the park is composed of natural areas including coniferous woodlands, grasslands, bedrock outcrops, cliffs and gullies, and small riparian areas primarily along Okanagan Lake. Two wetlands exist

in the park, including Kathleen Lake (a 2.0 hectare permanent water body), and a discharge basin in a topographic low point, both in Knox Mountain Park West.

The park supports numerous activities, including: walking, running, hiking; mountain biking; nature appreciation and sight-seeing (Fig. 5: Current Land Use, Road and Trail Network). In the winter, park users can cross-country ski along Knox Mountain Drive. The gateway to the park, at the north terminus of Ellis Street, features recreation activities including tennis, disc golf and an off-leash dog run. Sutherland Park, a City-wide park at the base of Knox Mountain along Okanagan Lake's waterfront, includes grassy fields, picnic areas, a playground, a boat launch, and washrooms.

Knox Mountain Drive is the only road within the park that is accessible by private vehicle. It extends from the base of the park entrance near Sutherland Park, past the First Lookout and trail head to Paul's Tomb, and up to the Pioneer Pavilion and caretaker's residence at the park apex. In November 2021, Council recommended a 'Share the Road' approach to manage user conflicts

along Knox Mountain Drive. A two-year trial was established, starting in the spring of 2022, with vehicle access open to the First Lookout from noon to 8pm daily. The trial includes traffic calming measures and signage.

Knox Mountain Park can be seen at great distances, from many vantage points around the region. Views to the park provide an aesthetic dimension to Kelowna's landscape, and views from the park allow park visitors to appreciate the stunning scenery of the region's farms, orchards, vineyards, natural areas, and Okanagan Lake. The trails that wind through the park give visitors a close-up view of the flora and fauna, typical and symbolic of the Okanagan region and some rare within the region. The park makes an ideal location to express and share the tangible and intangible natural and cultural resources that define Kelowna's identity and sense of place.

The natural environmental value of Knox Mountain Park has been well documented in Kelowna's planning studies, including the recent baseline biophysical inventory and environmental overview update conducted as part of the Management Plan process (Figure 5: Environmentally Sensitive Areas and Companion Document 4: 2021 Biophysical / Environmental Overview, Knox Mountain Park). The park is an important part of the natural systems that help cool the city's neighborhoods, filter the city's water, clean the city's air, and sequester the carbon produced by cars, homes, and industries.

The park is made up of numerous ecosystems, most of which are rare, fragile, and regionally and nationally important. In addition to enhancing visitors' experiences in the park, these ecosystems support numerous plant and wildlife species, both those that are rare/at-risk and those that are typical to the region. The interface of grassland, coniferous woodland and lacustrine ecosystems collectively provide a unique habitat mix that supports a diverse species group, including species at risk. Species at risk that have been documented in the park include the American Badger, Flammulated Owl, Great Basin Gopher Snake, Northern Rubber Boa, Western Yellow-bellied Racer, Swainson's Hawk, Great Blue Heron and Barn Swallow. It is probable that

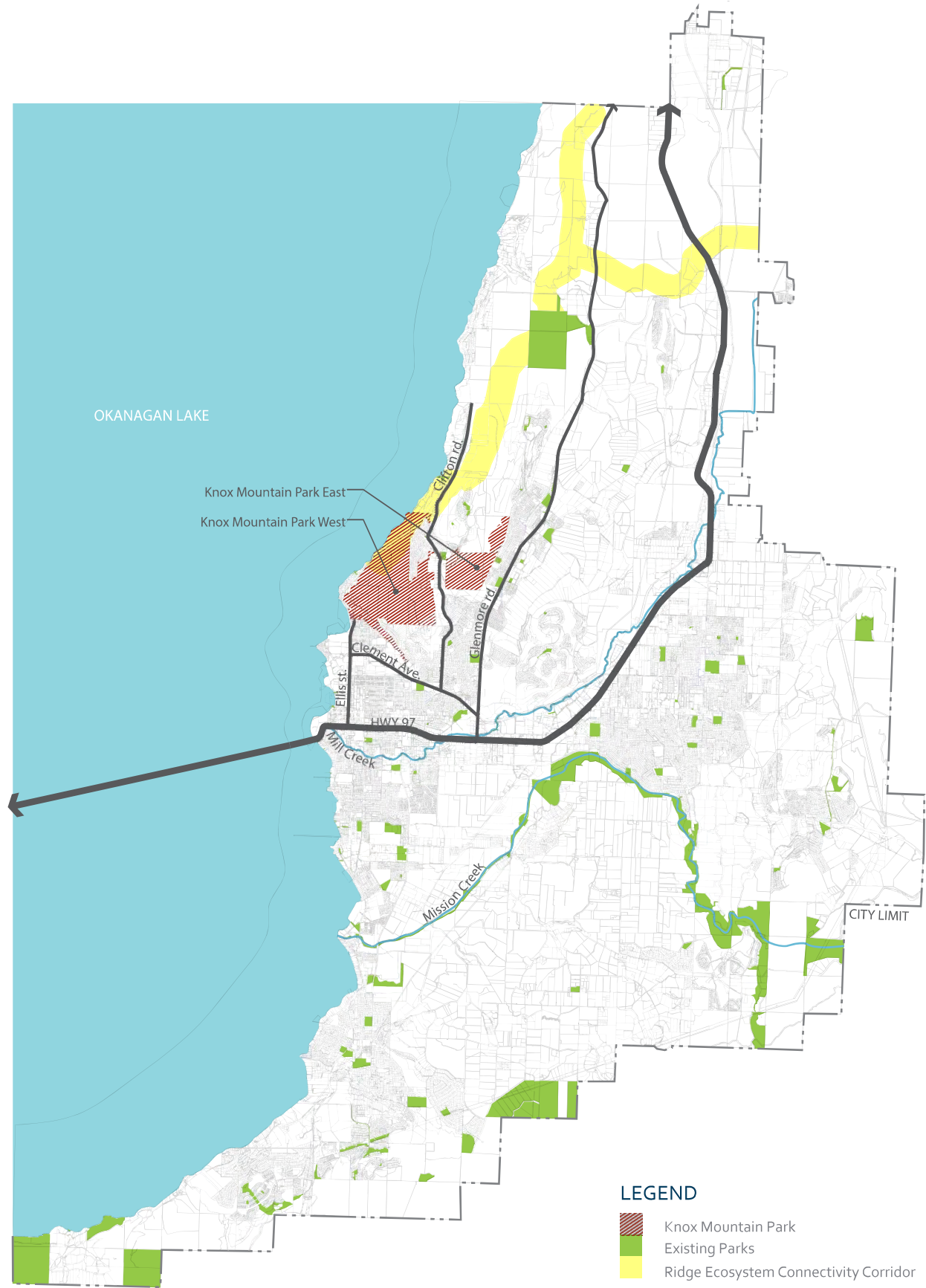
even more species at risk are likely to occupy Knox Mountain Park (Figure 6: Recorded or Potential Species at Risk). In addition, Slender Hawksbeard, a Red-listed plant species has been documented in the park (2011 Management Plan).

Almost ninety-two percent of the park is classified as having either "High" or "Very High" levels of environmental sensitivity. The park's steeply sloping mature coniferous woodland and open grassland ecosystems account for much of the "Very High" sensitivity. Other areas of special concern include sparsely vegetated rock outcrops, Kathleen Lake, and 1400 meters of Okanagan Lake shoreline (including Yellow, Red and Black Kokanee Shore Spawning Zones). The Okanagan Lake foreshore, riparian fringe and wetland communities do not occupy a significant land mass in the park; however, these unique ecosystems are extremely important to the overall biodiversity of the park.

The condition of most of the ecosystems within the park is classified as "Good" or "Excellent". Significant human-made disturbances to former natural areas (other than the cut banks required to accommodate Knox Mountain Drive) are generally minimal throughout most of the park and includes disturbances such as unsanctioned trail development, general refuse, fire pits, and biking obstacle courses. Invasive plant species are low to absent depending on the area assessed. Invasive plants, for the most part, are limited to areas adjacent to roads and trails.

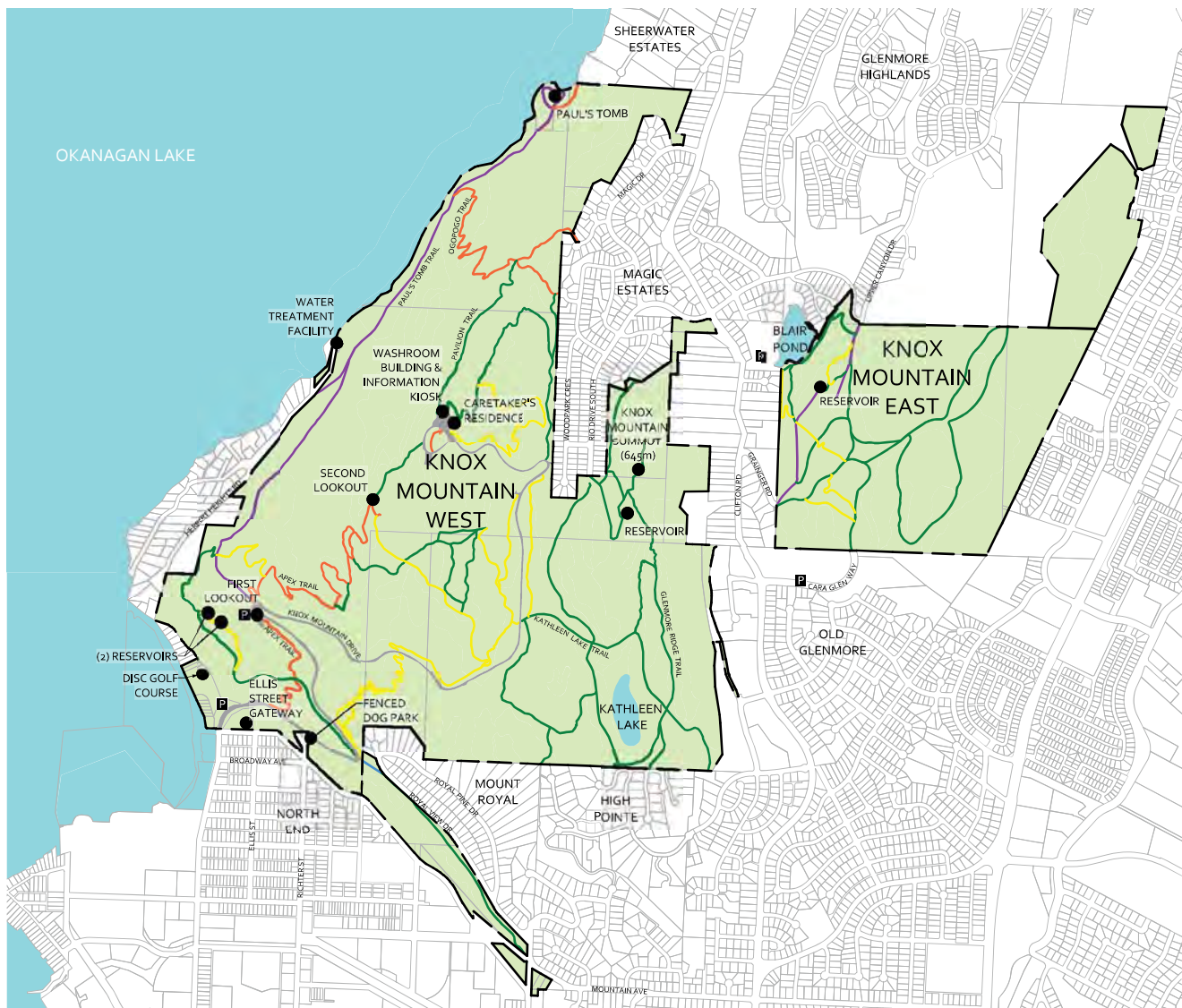
The park's intact grasslands, with minimal historic evidence of grazing by livestock, are especially noteworthy, as they are a rarity within the Okanagan. Central risks and challenges to the environmental integrity of the park are fire prevention, forest health issues, such as disease, human-wildlife conflicts, and pest infestations (such as the western and mountain pine beetle), and the proliferation of unsanctioned trails across sensitive grassland ecosystems.

Figure 3: Location Map



LOCATION MAP
N

Figure 4: Current Land Use, Road, and Trail Network



CURRENT LAND USE, ROAD & TRAIL NETWORK



LEGEND

- Park Boundary
- Road
- Major Multi-Use Trail
- Standard Multi-Use Trail
- Narrow Multi-Use Trail
- Nature Trail
- Mountain Bike Only Trail
- Point of Interest
- Parking

Figure 5: Environmentally Sensitive Areas

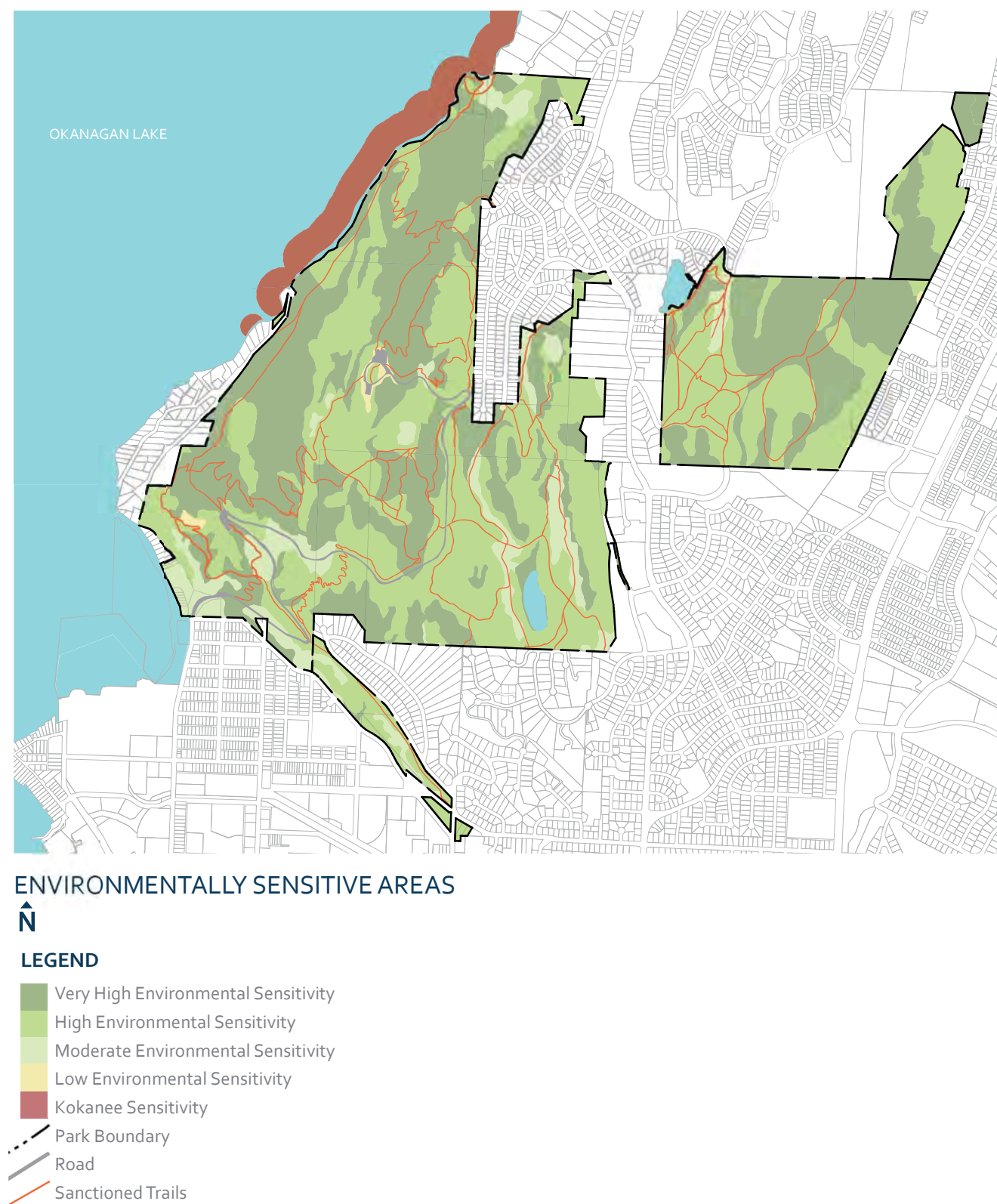


Figure 6: Recorded or Potential Species at Risk

Group	Common Name	Scientific Name	BC List	COSEWIC
Amphibian	Western Toad	Anaxyrus boreas	Yellow	Special Concern
	Great Basin Spadefoot	Spea intermontana	Blue	Threatened
Birds	Great Blue Heron, Herodias subspecies	Ardea Herodias herodias	Blue	
	American Bittern	Botaurus lentiginosus	Blue	
	Swainson's Hawk	Buteo swainsoni	Red	
	Evening Grosbeak	Coccothraustes vespertinus	Yellow	Special Concern
	Olive-sided Flycatcher	Contopus cooperi	Blue	Special Concern
	Horned Lark, merrilli subspecies	Eremophila alpestris merrillie	Blue	
	Barn Swallow	Hirundo rustica	Blue	Special Concern
	California Gull	Larus californicus	Blue	
	Lewis's Woodpecker	Melanerpes lewis	Blue	Threatened
Invertebrates	Flammulated Owl	Otus flammeolus	Blue	Special Concern
	Lance-tipped Darner	Aeshna constricta	Blue	
	Emma's Dancer	Argia emma	Blue	
	Vivid Dancer	Argia vivida	Blue	Special Concern
Mammals	Common Sootywing	Pholisora catullus	Blue	
	American Badger	Taxidea taxus	Red	Endangered
	Townsend's Big-eared Bat	Corynorhinus townsendii	Blue	
	Western Small-footed Myotis	Myotis ciliolabrum	Blue	
	Little Brown Myotis	Myotis lucifugus	Yellow	Endangered
	Fringed Myotis	Myotis thysanodes	Blue	Data Deficient
Reptiles	Western Harvest Mouse	Reithrodontomys megalotis	Blue	Endangered
	Northern Rubber Boa	Charina bottae	Blue	Special Concern
	Western Painted Turtle – Intermountain -Rocky Mountain Population	Chrysemys picta pop. 2	Blue	Special Concern
	Western Yellow-bellied Racer, Mormon subspecies	Coluber constrictor mormon	Blue	Threatened
	Western Rattlesnake	Crotalus oreganus	Blue	Threatened
	Gopher Snake, deserticola subspecies	Pituophis catenifer deserticola	Blue	Threatened
	Western Skink	Plestiodon skiltonianus	Blue	Special Concern

BC List Definitions (Source: <http://www.env.gov.bc.ca/cdc>)**Yellow:** Not at Risk**Blue:** Of Special Concern (Formerly Vulnerable)**Red:** Extirpated, Endangered, or Threatened**Committee on the Status of Endangered Wildlife in Canada (Cosewic) Definitions**(Source: <https://www.cosewic.ca/index.php/en-ca/assessment-process/wildlife-species-assessment-process-categories-guidelines/status-categories.html>)**Special Concern:** A wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.**Endangered:** A wildlife species facing imminent extirpation or extinction.**Threatened:** A wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.**Data Deficient:** A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.

5.2 Key Issues

There are a number of key issues related to the effective management of Knox Mountain Park. Many issues relate to concern about the impact of park users on environmentally sensitive areas (ESA). Key issues include:

- Park-Wide User Access
- Proliferation of Unsanctioned Trails
- Human/Wildlife Conflicts
- Off-Leash Dog Impacts
- Biking Impacts
- Park Rental and Special Events
- Perimeter Access Management
- Utility Impacts

5.2.1 Park-Wide User Access

All areas of the park are currently accessible to users (Fig. 4: Current Land Use and Trail Network). However, park users seem unaware of the impacts of unfettered access on the park's terrestrial and aquatic environmentally sensitive areas. These areas are sensitive to alteration by human actions and are generally slow to recover from disturbance.

5.2.2 Proliferation of Unsanctioned Trails

The park contains 29 km of sanctioned trails (Fig. 4: Current Land Use and Trail Network). The proliferation of unsanctioned trails has contributed to the overall degradation of the terrestrial environment of the park.

Since 2011, the trail network within Knox Mountain Park West has increased by approximately 17% overall, yet the total unsanctioned trail networks has decreased by approximately 26%. However, of the total existing trail network across the entire park, approximately 46% of trails are unsanctioned. Although there has been success in decommissioning previously unsanctioned trails in Knox Mountain Park West, nearly 50% of all trails through the park are unsanctioned. This indicates that unwarranted trail development is most likely the single greatest environmental issue within the park and requires ongoing evaluation and management.

Figure 7: Existing Trail Network in Knox Mountain Park

Type of Trail	Knox Mountain Park West Length (m)	Knox Mountain Park East Length (m)	Knox Mountain Park Total Length (m)
Sanctioned	24,428	4,342	28,770
Unsanctioned	31,489	3,373	34,862
Rehabilitated	7,698	0	7,698
Road	4,077	477	4,554
Total	67,692	8,192	75,884

5.2.3 Human/Wildlife Conflicts

Human-wildlife conflicts have been documented in Knox Mountain Park, with common recurrent interactions from humans, domestic pets (dogs and cats) and vehicles on Knox Mountain Drive. Wildlife most at risk from vehicles include deer and several species of reptiles, most of which are rare or endangered. Additionally, human-wildlife conflicts have occurred between people and snakes. Many people fear snakes and therefore snakes are often persecuted by humans. Given the imperiled state of BC's reptiles, it is critical that parks such as Knox Mountain are a safe place for reptiles. Outdoor cats that roam and hunt within the park are also a concern. Cat predation is the largest single source of human-caused mortality of mammals and birds in North America, with typical free roaming cats predating on 14-100 prey items annually. The most effective stewardship practices to mitigate cat predation is to promote keeping cats indoors and spaying and neutering. In Knox Mountain Park, the most commonly encountered human-wildlife conflict is from off-leash dogs, which will be discussed separately below.

5.2.4 Off-Leash Dog Impacts

The City of Kelowna looks for opportunities to provide dogs and their owners with areas in the park system in which to exercise and socialize with other dogs and owners. There are currently 115 parks that allow dogs and eleven are sanctioned off-leash parks. Within Knox Mountain Park dog owners are currently restricted to exercising their dogs on trail, on-leash and off-leash in a off-leash dog exercise area. Although the City of Kelowna has a leash law within

the park, this regulation is frequently not followed, and off-leash dog activity is negatively impacting the ecology of the park.

Of particular concern are: injury to wildlife caused from being chased by dogs off-leash; disturbance and damage to small wildlife such as ground nesting birds, amphibians, rare reptiles, and small mammals; plant life and ecosystem impacts; the potential damage to Kokanee spawning areas along the Okanagan Lake shoreline; plant impacts, including the spread of invasive species; public health issues when dog owners do not pickup after their dogs; and low compliance with dog licensing requirements.

From an ecological standpoint, dog-wildlife interactions are the biggest concern regarding off-leash dogs. Interactions of concern include chasing deer causing injury and death, disturbance of small mammals, and off-leash dogs entering wetlands and chasing waterfowl, as well as disturbance to ground nesting sites.

5.2.5 Biking Impacts

Three forms of biking occur in the park: downhill mountain biking, road biking (on Knox Mountain Drive) and cross-country mountain biking. Since the 2011 plan, mountain biking trails have been designed and built, such as the Shale Trail. The Shale Trail is maintained by the Mountain Bikers of Central Okanagan (MTBCO). Trail braiding and rogue trails remain an issue through the park.

5.2.6 Park Rental and Special Events

The park hosts numerous single and recurring active and passive recreational events. There are currently five key booking areas in Knox Mountain Park (no events are booked at Paul's Tomb due to access and liability issues):

- First Lookout
- Second Lookout
- Disc Golf Course
- Pioneer Pavilion
- Knox Mountain Drive

The following are examples of events in the park that require bookings:

- Easter Sunrise
- Weddings
- Knox Mountain Hill Climb
- Film Productions
- Hungry Hungry Half Marathon
- Disc Golf Tournament
- Expedition Canada

The City of Kelowna's Event Services Department manages park rentals and special events bookings. Rental fees and damage deposits are charged according to the Recreation Fees and Charges Bylaw #9609. Events are authorized through outdoor event and park rental permits and bookings are granted following consultation with the Event Services Committee. As a minimum, the City's Parks Community Relations Coordinator is responsible for conducting pre-event and post-event inspections of parks to assess potential hazards and risk management concerns for public events, ensuring timely follow-up with corrective measures to minimize public safety risks and protect park assets.

5.2.7 Perimeter Access Management and Interface Conflicts

Knox Mountain Park West has one primary vehicle and pedestrian entrance and 9 secondary public pedestrian entries around the perimeter. A future pedestrian access is planned to connect this parcel to the East park parcel. Knox Mountain Park East has one current primary maintenance vehicle and pedestrian entrance. Trail improvements will facilitate access from Blair Pond Park. There are 3 secondary public pedestrian and cyclist access points to this area as well.

Regulating access along this frontage and sustaining the park boundary is a challenge, as is the ability to manage negative impacts, such as illegal dumping, encroachment by abutting private property, illegal access into the park by motorized vehicles at unsanctioned locations, and trespassing on private properties.

5.2.8 Utility Impacts

The Poplar Point water intake, located outside the park's west boundary, is the City's main water supply. Both water and sewer utilities surround the park boundary. Over the years, buried reservoirs, buried transmission mainlines, overhead power lines and communications towers have been installed with varying degrees of impact to sight lines and the terrestrial environment. Ideally, utility infrastructure in parcels and properties zoned for parks should be minimized, and not infringing on the beauty or benefits of the park.

A watermain upgrade is planned to connect both Poplar Point, Knox Reservoirs and areas east. The alignment and complexity of this work in the park will depend on the future location of a water filtration facility in the City's north end. Compensation and mitigation measures will be required on utility projects to ensure net park and / or environmental gain achieved.



6.0 PARK MANAGEMENT PLAN - How We Get There

6.1 Introduction

The Park Management Plan is designed to achieve the Knox Mountain Park Vision and Strategic Goals, and is made up of Policies, both those that are park-wide and those that are zone-specific, including a Knox Mountain Park Development Plan and an Operations and Maintenance Plan.

6.2 Policies

6.2.1 Park-Wide Policies

The following policies largely apply to the ongoing management and operations of the park, however, some provide specific direction to the construction and restoration activities proposed by the Development Plan (Fig. 11: Development Concept Map).

1. Dogs are permitted in the park on-leash, and on sanctioned and designated trails only. The only exception is within the park's designated off-leash dog exercise area near the Ellis Street Entrance.
2. Knox Mountain Drive will to vehicles during the frost-free season to the First Lookout between

the hours of 12:00PM and 8:00PM, seven days a week. Closures may occur during the summer when the fire hazard reaches extreme levels for more than three consecutive days. Vehicles may be allowed for special events with the appropriate permit.

3. Mountain biking will be permitted on designated trails only.
4. Waterfront access infrastructure will be set back a minimum of 15 metres from the 343 metre level of Okanagan Lake.
5. All new utility installations will:
 - a) ensure net benefit to the park and consistent with the Strategic Goals of this Management Plan
 - b) be subject to an environmental development permit approval process, including the preparation of an environmental management and monitoring plan
 - c) require the retention of qualified environmental professionals to monitor construction practices

- d) locate associated structures on existing disturbed areas only and route linear utilities under existing roads and paved surfaces only
 - e) locate and design structures to have no negative visual impact from sight lines within and to the park
 - f) ensure complete landscape restoration of any disturbed areas to include long-term plant viability, without erosion issues or noxious weeds
 - g) include a public consultation component
6. All special events within the park will be subject to a special event permit process, including the preparation of an environmental management plan, and will provide a meaningful damage deposit, with specific terms and conditions that include restoration should damage occur.
 7. Safe maintenance access to the wildland urban interface will be provided where possible and will be constructed in a manner that utilizes existing circulation routes and limits the access footprint to areas rated as moderate or low environmental sensitivity (Fig. 5: Environmentally Sensitive Areas).
 8. The removal of wildfire fuel materials will follow best management practices and wildfire fuel prescriptions developed by forest professionals to mitigate wildfire risk.
 9. Where trails are upgraded or where new trails are constructed, implementation will meet the trail classification system requirements of the City of Kelowna Linear Park Masterplan, consider opportunities for universal accessibility and be constructed of natural and permeable trail surfacing materials.
 10. Visitor access to the park is restricted only to sanctioned points of access (including the designated main entry and the secondary entries).
 11. Shared vehicles under the Micromobility Permit Program are permitted on Knox Mountain Drive only. Shared e-scooters are permitted from the Ellis Street Entry to Royal View Drive only. Privately owned e-scooters, electric skateboards, and other electric micromobility devices are also permitted from the Ellis Street Entry to Royal View Drive only. In all other than specified areas, e-scooters, electric skateboards and other electric micromobility devices are prohibited in Knox Mountain Park East and West.
 12. Visitor motor vehicle access through the park or into the park from adjacent private property, excluding the existing main access road, is prohibited.
 13. Signage installed within the park will be sympathetic to the natural environment in the choice of materials, sign frequency, colours and other design elements, and will comply with the Natural Area Park Sign Guidelines.
 14. The Paul's Tomb cultural feature will be featured through use of interpretive signage but will remain protected through the existing soil cover.
 15. Park bylaws and code of conduct will be clearly communicated and enforced through visitor education, signage and fines.
 16. Signage to enhance and aid users' experiences in the park will incorporate a family of signs including:
 - a) Entry Sign
 - b) Current Fire Risk and Trail Condition Sign
 - c) Kiosk
 - d) Trailhead
 - e) Simple Trail Junction
 - f) Complex Trail Junction
 - g) Trail Marker
 - h) Interpretation Sign
 17. Prohibited and Restricted Activities
Please refer to Fig. 8 for a list of prohibited and restricted activities in the park.

Figure 8: Prohibited and Restricted Uses

PROHIBITED ACTIVITIES

Prohibited Activity	Conditions of Use
ATV, Dirt Bike Use	City maintenance vehicles permitted
Equestrian Use	
Camping	
Dumping and Disposal	
Fire, Barbeques, Stoves	Approved prescribed burns by City staff permitted
Off-Road Vehicle Use	City maintenance/emergency vehicles permitted
Overnight Parking	
Hunting, Trapping	Hazard animals (i.e. coyotes, bears) by authorized staff
Parties	Events authorized by City permit
Rock Climbing	
Smoking	
Snowmobile Use	
Utilities and Infrastructure	Only within REC-1 zone, or as existing in other zones. New utilities not of benefit to park are not permitted.
Boats	

RESTRICTED ACTIVITIES

Restricted Activity	Conditions of Use
Bicycle Races	As approved by City, on designated routes only
Commercial Uses	Temporary and event-related only with a valid permit
Field Trips	School, community and naturalist groups
Knox Mountain Hill Climb	Permitted once per year, subject to damage deposit, City impact assessment and approval
Orienteering	Permitted once per year, subject to damage deposit, City impact assessment and approval
Non-Disruptive Research	Only as approved by City
Social Events	Subject to City impact assessment and approval
Tour Buses	Only permitted access to First Lookout with a permit
Weddings	As approved by City, in designated locations only with a permit
X-Country Foot Race	As approved by City, on designated trails only with a permit
Mountain Biking	As approved by City, on designated trails only (except Nat. Area Park Coordinator)
Dogs	On-leash only, unless in the designated off-leash dog park near the Ellis Street/Royal Ave Entry
Swimming	As approved by City, in designated locations only

6.2.2 Zone-Specific Policies

Park Zoning Concept

Knox Mountain Park is made up of different ecosystems with varying degrees of sensitivity, ecological importance and existing disturbance. The park also has established built infrastructure and utilities and an existing pattern of recreational access and use.

The Knox Mountain Park Zoning Concept is based on what is known about the park's natural and built environment, pattern of use, and the Vision and Strategic Goals of the Management Plan. The Zoning Concept provides direction to the management, use, and development of the park on an area-specific basis; as a whole, the Zoning Concept enables the preservation of environmentally sensitive areas while focusing existing and future recreational use, access infrastructure, and further alteration of the natural environment to less sensitive areas and areas with existing disturbance. The Knox Mountain Park Development Concept Map (Fig. 11: Development Concept Map) is based on, and reinforced through, the direction of the Zoning Concept.

The Zoning Concept delineates four management zones (Fig. 9: Park Management Zones). Each zone has a different objective and a series of associated policies. The zones are detailed in the following sections include:

- Conservation Zone (CON Zone)
- Nature Zone (NA Zone)
- Access Zone (AC Zone)
- Recreation Zone (REC Zone)

Conservation Zone (CON Zone)

The Conservation Zone (CON Zone) includes areas of high environmental sensitivity that are both highly fragile and sensitive to human disturbance. Specifically, this Zone includes: the South-West Slopes Grasslands (CON-1), the North-West Slopes Coniferous Woodlands (CON-2), Kathleen Lake (CON-3), Kokanee Spawning Area along Okanagan Lake (CON-4), and Grasslands Plateaus and Open

Coniferous Woodland in Knox Mountain Park East (CON-5).

The objective for this zone is to protect provincially significant natural ecosystems for their intrinsic value, their contribution to the park's biodiversity and for long-term public appreciation. The following policies provide direction to management of the natural environment within the CON zone.

CON Zone Policies

CON Policy 1: Public access to or through this zone is only permitted on a limited network of sanctioned trails. Non-disruptive scientific research may be allowed through designated controlled access points with prior authorization by the City.

CON Policy 2: No further alteration of the natural landscape is permitted except as required for human safety, monitoring and maintaining the environmental integrity of the area, or restoring unsanctioned trails to reflect the natural condition of the surrounding landscape.

CON Policy 3: Mature trees including those that are dead and/or decaying are to be left standing unless they pose an immediate public safety hazard.

CON Policy 4: Habitat enhancements for Rare and Endangered species (e.g. construction of nesting platforms, nest boxes, etc.) are permitted.

CON Policy 5: No overland stormwater is to be directed to these areas from future urban development.

Nature Zone (NA Zone)

The Nature Zone (NA Zone) is inclusive of the open coniferous woodland and other natural landscapes that exist outside of the Conservation Zones. The NA Zone includes the park's sanctioned trail network.

The objectives for this zone are to:

- a) provide for passive, recreational opportunities in a manner that will have minimal impact on the natural environment

of the park and will serve to enhance users' experiences or understanding of the park's natural environment

b) maintain specific trails for mountain biking

NA Zone Policies

NA Policy 1: Public access to this zone is permitted at sanctioned points only; access through and within this zone is permitted on sanctioned trails only.

NA Policy 2: Landscape alteration is limited to sanctioned trails, signage for route identification, and minimal interpretative facilities to support recreational use; no construction of new roads, parking areas, utilities, or large-scale infrastructure is permitted.

NA Policy 3: New routes for trails are not to be established except as required for human safety or for maintaining environmental integrity.

NA Policy 4: Mountain biking is permitted in the NA zone on sanctioned mountain biking trails and shared use trails only.

NA Policy 5: When evaluating trails for decommissioning, realigning trails or designing new trails, consideration will be given to:

- a) maintaining critical wildlife habitat and connectivity (i.e. wildlife trees with potential nest cavities and perches, mule deer winter range)
- b) avoiding hazard trees and the related need for removal of hazard trees or other management practices that have high environmental impact
- c) protecting cultural features from potential negative impacts

NA Policy 6: Public access may be temporarily closed to decommission trails and to facilitate restoration activities.

Access Zone (AC Zone)

The Access Zone includes: Knox Mountain Drive extending from the park entrance to the Apex, the First Lookout parking area, the Pioneer Pavilion, parking areas along the Drive (A-1); and reservoir sites together with their access drives (A-2 and A-3).

The objective for this zone is three-fold, as follows:

- a) to focus visitor use and special events within the park to access roads and staging areas with existing investment in supporting visitor, recreation, and transportation infrastructure
- b) to acknowledge the locations of existing utilities and those that are planned in the near future.

AC Zone Policies

AC Policy 1: Special events and uses as defined by the City of Kelowna Park Services Manager are permitted subject to conditions determined by the Park Services Manager.

AC Policy 2: Vehicle access will be permitted on Knox Mountain Drive in accordance with Council approved hours of operation.

AC Policy 3: Utilities existing at the time of completion of the Management Plan and a potential future cell-phone tower in the Knox Mountain East parcel are permitted within the A zone.

AC Policy 4: New utilities and utility corridors are permitted in the park within disturbed areas and areas hidden from public views, if they demonstrate public park benefit and a net environmental gain. If exceptions are required for greater overall City benefit they must be approved by the Director of Partnerships and Investments.

Recreation Zone (REC Zone)

The Recreation Zone includes the parkland adjacent to the Ellis Street Gateway (REC-1). The following

policies provide direction to management, use, and development within the Recreation Zone.

REC Zone Policies

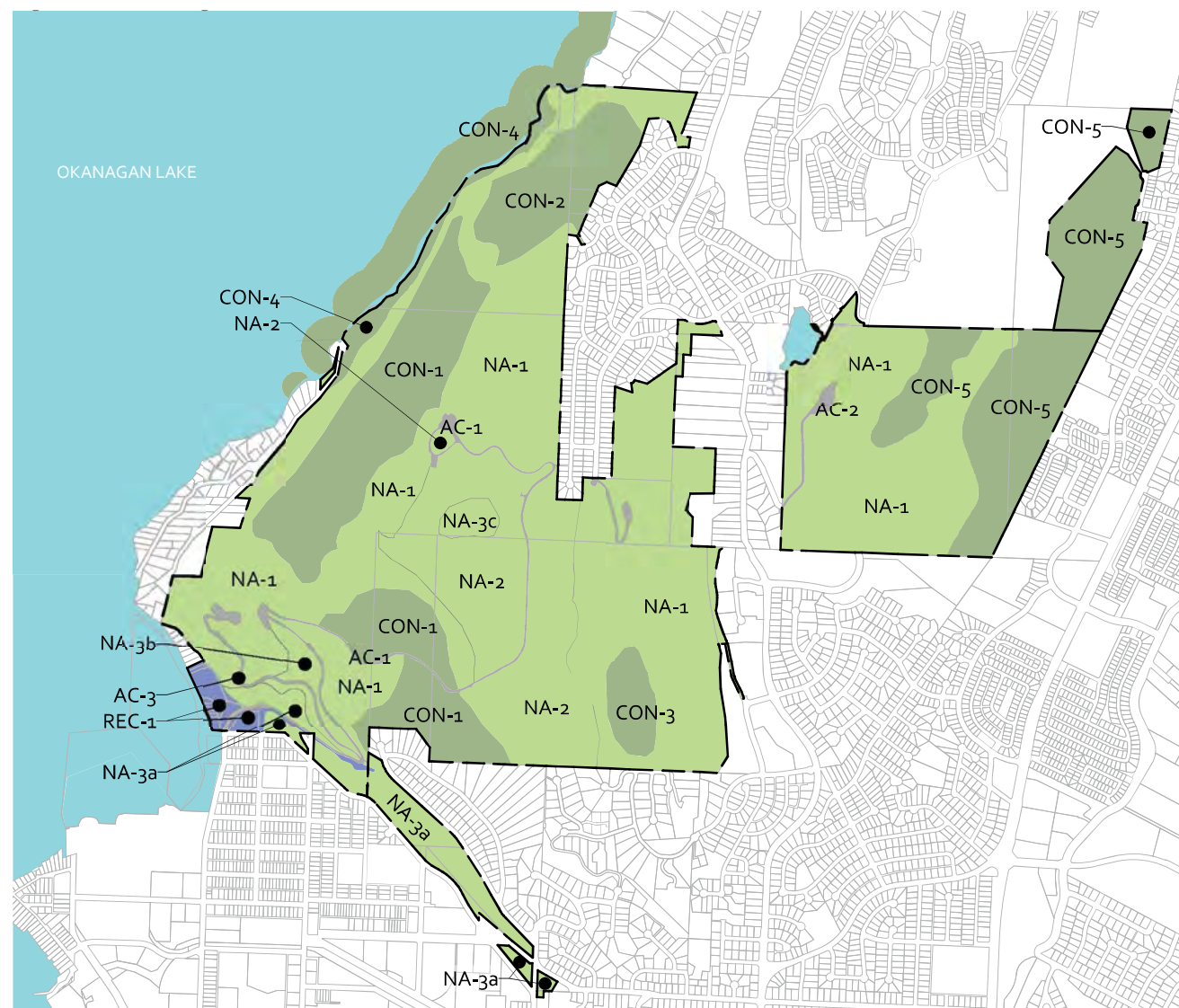
REC Policy 1: Intensive recreational activities, including tennis, disc golf and off-leash dog areas, are permitted within the REC-1 subzone in designated areas.

REC Policy 2: Development may include visitor information and educational structures (e.g. signage and fencing), day-use facilities (e.g. playground picnic areas), multi-use trails and supporting infrastructure for permitted recreational activities.

REC - Policy 3: Commercial uses are permitted on a temporary and event-related basis, according to required licensing and permitting by the City of Kelowna.

REC - Policy 4: Existing utilities within the park that pre-date preparation of this Management Plan are permitted within the REC zone; new utilities proposed that do not directly benefit the park will not be permitted in this zone.

Figure 9: Park Management Zones



PARK MANAGEMENT ZONE



LEGEND

- Access (AC)
- Conservation (CON)
- Nature (NA)
- Recreation (REC)
- Park Boundary

PARK ZONE DEFINITIONS

- CON-1: South and Southwest Slopes Grasslands
- CON-2: Northwest Slopes Coniferous Woodlands
- CON-3: Kathleen Lake
- CON-4: Kokanee Spawning area along Okanagan Lake
- CON-5: Grassland Plateaus and Open Ponderosa Pine Woodlands

- NA-1: Relatively steep, good condition landscapes
- NA-2: Relatively flat, good condition landscapes
- NA-3: Sites in need of restoration
 - (a) south facing slopes near the southern boundary of park
 - (b) areas downslope of the first lookout
 - (c) isolated playground area/discharge basin wetland

- AC-1: Knox Mountain Drive extending from the park entrance to the second lookout
- AC-2: Knox Mountain East access routes provide access to the water reservoirs and monopole in the northwest quadrant, and access/parking for the future recreation site.
- AC-3: Access roads to water reservoirs within Knox Mountain West
- REC-1: Day-use Parkland at Park's Entrance

Figure 10: Park Zoning Concept - Acceptable Uses

PARK ZONING CONCEPT - Acceptable Uses

Activity	Conservation (CO) Zone	Nature (NA) Zone	Access (AC) Zone	Recreation (RE) Zone	Comments
Dog Walking, Off-Leash				●	In fenced, designated area only
Dog Walking, On-Leash		●	●	●	On-leash, on-trail only
Hiking/Walking/Running	●	●	●	●	On designated trails only
Mountain Biking		●	●		On designated mountain biking trails only
Micro-Mobility Devices (Electric Bikes)			●		On Knox Mountain Drive Only
Micro-Mobility Devices (Electric Scooters & Skateboards)			●		On Knox Mountain Drive Only (Ellis Street Entry to Royal View Drive only)
Nature Appreciation	●	●	●	●	Info structures in REC or NA zones only
Outdoor Education	●	●	●	●	Info structures in REC or NA zones only
Picnicking		●	●	●	In shelters and on benches only
Playground				●	
Road Cycling			●		On Knox Mountain Drive only
Snow-Shoeing		●	●	●	On designated trails only
Swimming, Unsupervised					Unsupervised; Paul's Tomb only
Disc Golf				●	In designated disc golf course only
Tennis				●	Designated area at Ellis entry only
Vehicle Parking			●	●	In designated areas only
X-Country Skiing			●		On Knox Mountain Drive only
Special Events			●	●	According to permit only

6.3 Development Plan

The Development Plan forms one part of the Park Management Plan. Another part consists of the Operations and Maintenance Plan, described later in this chapter. The Development Plan describes the development work that is recommended to achieve the Vision and Strategic Goals of the Management Plan. Implementation practices are to conform to the Policies prescribed in previous sections of this report.

There are twenty major interrelated items to the Development Plan. These capital (CAP) items are categorized consecutively; however, the interrelated nature of the improvements should be stressed.

Furthermore, there are seven main objectives for park improvements, including: Environmental Protection, Recreational Amenities, Gateway and Staging Area Improvements, Maintenance Infrastructure and User Services, Capacity Building and Public Involvement, Operations and Maintenance Planning, and Monitoring. Each of the 20 capital improvement items has been designated into one of these categories.

The items are detailed in the following sections and the specifics of each component are referenced in Fig. 11: Development Concept Map. The items are as follows:

CAP 1 Vehicular Access to First Lookout: Two Year Pilot

CAP 2 Undertake Rockfall Mitigation

CAP 3 Construct Improvements at First Lookout

CAP 4 Update Outdated and Damaged Interpretive Signage

CAP 5 Install Information Kiosk and Signage at Ellis Street Gateway

CAP 6 Develop a Strategy and Enforcement Plan for Off-Leash Dogs

CAP 7 Renovate Abandoned Repeater Tower Foundation

CAP 8 Trail Fencing for Conservation Areas

CAP 9 Develop Staging/Parking Area at Knox Mountain Park East

CAP 10 Install Knox East Staging Area Signage

CAP 11 Install Signage on Remaining Trails

CAP 12 Install Trail Fencing

CAP 13 Crib Step Replacement throughout Park

CAP 14 Establish Trail Connections between Knox Mountain Park West and Knox Mountain Park East

CAP 15 Expand Designated Mountain Biking Trails

CAP 16 Community Outreach

CAP 17 Annual Scorecard Assessments

CAP 18 Host Annual Stakeholder Meeting

CAP 19 Rehabilitate Mountain Biking Trails

CAP 20 Update Management Plan and 10 Year Environmental Assessment

CAP 1: Vehicular Access to First Lookout: Two Year Pilot

Objective: Operations and Maintenance Planning

Due to the increased use of this road by all user groups (i.e vehicles, cyclists, pedestrians, and long boarders), the City undertook a survey in the spring of 2021, which provided five options for public consideration. The overall highest rated option was to keep vehicular access open to the First Lookout.

This resulted in the development of The Knox Mountain Drive Multi-Modal Access Strategy with consideration to safety, accessibility and operations and maintenance. The Strategy takes into account management and use restrictions to reflect the unique context and constraints of the park. A 'Share the Road' approach was proposed and endorsed by Council in November 2021.

A two year pilot has been introduced to allow vehicular access to the First Lookout from noon to 8pm daily during the frost free season. For special events with appropriate permits, a staff led pilot car

will be utilized. The road will continue to be closed fully to vehicles during the winter months and periods of extreme fire danger. Staff will monitor vehicle, pedestrian, and cyclist counts at select park locations, special event permits, and receive public feedback and operations feedback during this time.

Vehicular access to the First Lookout was chosen for a number of reasons:

- Views over the City are immediately available from the First Lookout parking area and are most accessible for all users
- A parking lot currently exists in this location
- There are multiple options for alternative hiking and cycling routes at the First Lookout
- This option was most favoured in the public engagement survey

The two year pilot includes traffic calming measures, signage, and improvements to trails and accessibility supports at the First Lookout .

CAP 2: Undertake Rockfall Mitigation

Objective: Maintenance Infrastructure and User Services

There are various natural rock outcroppings within the boundaries of Knox Mountain Park. These shall be assessed on an annual basis to identify potential public safety hazards. Any serious hazards will be prioritized and budgets brought forth for Council consideration.

Rock scaling will be undertaken on an as-needed basis to remove unstable or potentially unstable areas of rock near recreation areas/trail routes. Geotechnical engineers and environmental professionals should be retained to assess the rock outcropping and to monitor potential habitat disturbance.

CAP 3: Construct Improvements at First Lookout

Objective: Gateway and Staging Area Improvements

The First Lookout has been identified as an area to improve park amenities for users to facilitate better flow of traffic and parking configuration, amenities for users and elements to facilitate better accessibility for mobility challenged individuals.

CAP 4: Update Outdated and Damaged Interpretive Signage

Objective: Maintenance Infrastructure and User Services

Some signage within the boundaries of the park is outdated and/or damaged and needs to be replaced. Priority should be given to areas of high-use, where environmental encroachment is known to occur, critical trail intersections for wayfinding purposes, and interpretive, historical and educational opportunities.

The format of signage should be upgraded to match current precedent established in the park to create a comprehensive look and feel throughout the park.

A variety of sign types will be installed on new and remaining trails within the park and shall incorporate interpretive and historical, and indigenous content. Interpretive signage with information on local floral, fauna, rarity and vulnerability will be developed through consultant with local consulting professionals and historical groups. Indigenous content will be developed and provided by local indigenous partners. The style of signage will be consistent with that already established in the park. The City will work with our indigenous partners to include the Nsyilxcən names and language, cultural history and traditional practices in the signage at Knox Mountain Park.

CAP 5: Install Information Kiosk and Signage at Ellis Street Gateway

Objective: Gateway and Staging Area Improvements

Visitor amenities at the Ellis Street gateway to Knox Mountain Park will be upgraded to include a main park gateway sign; identification plaque for existing public art piece ("Levels", 1986 by Judson Beaumont); and a permanent information kiosk that includes directional, regulatory, and emergency contact information, with rotating/changeable educational panels.

CAP 6: Develop a Strategy and Enforcement Plan for Off-Leash Dogs

Objective: Operations and Maintenance Planning

Off-leash dogs have been identified as one of the current issues most impactful to local wildlife and plant survival. A comprehensive program to address

the impact of off-leash dogs within the park will be developed. Strategies will include public awareness, signage, and bylaw enforcement.

CAP 7: Renovate Abandoned Repeater Tower Foundation

Objective: Recreational Amenities

There is utility infrastructure East of Kathleen Lake in the form of a repeater tower foundation that is no longer used. This provides an ideal opportunity to provide additional recreation amenities to park users in the footprint of this infrastructure. An existing narrow access road is situated within an easement that will be converted into a trail. This will terminate at the repeater tower foundation and include a new seating area lookout over the Lake.

CAP 8: Trail Fencing for Conservation Areas

Objective: Environmental Protection

Conservation zones have been identified as areas for minimal disturbance, though the boundaries of these sensitive environmental zones can often be unclear to users. Regular monitoring of interface areas can help identify and assess impacts. Fencing along trail routes is to be installed at specific interface zones; where there is not the occurrence of steeply sloped topography to naturally deter encroachment into these areas. Priority locations for fencing include: the Shale Trail downslope of Knox Mountain Drive, and the Roundabout Trail in Knox Mountain Park East where it provides access to viewpoints and grassland plateaus. Fencing at the First Lookout should also be prioritized to prevent access to the sensitive grassland ecosystem. The fencing will allow for the free passage of wildlife and will be constructed of 1.2 metre height natural area fencing to match already established precedents within the park.

CAP 9: Develop Staging/Parking Area at Knox Mountain Park East

Objective: Gateway and Staging Area Improvements

The main entrance to Knox Mountain Park East will be from the existing Blair Pond parking lot. A permanent vault toilet will be installed at Blair Pond Park to accommodate users entering Knox Mountain Park

East from this location and those that are travelling between Knox Mountain Park East and West.

A new parking lot and staging area for Knox Mountain Park East will be developed off of Cara Glen Way. The design and implementation of this critical infrastructure will be undertaken in coordination with the adjacent private residential development. The footprint of on-site parking will be fairly small with additional off-site street parking available for users. This staging area will reduce pressures of increased use from the western park parcel.

Amenities will take care to reduce impacts on sensitive environmental areas, and include wayfinding, interpretive and regulatory signage, and a vehicle access gate.

CAP 10: Install Knox Mountain Park East Staging Area Signage

Objective: Gateway and Staging Area Improvements

Similar to the Ellis Street Entry, signage should be incorporated at the primary staging areas of Knox Mountain Park East. This could include a gateway sign, and a permanent information kiosk that includes directional, regulatory, and emergency contact information, with rotating/changeable educational panels.

CAP 11: Install Signage on Remaining Trails

Objective: Recreational Amenities

Signage is a critical piece of any park's infrastructure as it can be used for wayfinding, preventing encroachment into sensitive ecosystem areas, and education of park users. The installation of signage on remaining trails will focus on wayfinding and regulatory signage where required and follow the existing templates for natural area park signage.

CAP 12: Install Trail Fencing

Objective: Environmental Protection

Fencing may be desirable at road ends, for example, to discourage illegal dumping or similar activities. Generally, fencing adjacent to private property is installed on the private property by the private

property owner. Fencing materials are to be consistent with that already utilized within the park.

CAP 13: Crib Step Replacement throughout Park

Objective: Recreational Amenities

Various trails within the park include timber crib steps which are degrading and require replacement. These will be replaced with concrete crib steps, which provide better longevity and require less maintenance.

CAP 14: Establish Trail Connections between Knox Mountain Park East and Knox Mountain Park West

Objective: Recreational Amenities

The single family residential areas along Clifton Road separate Knox Mountain Park West from Knox Mountain Park East. A safe pedestrian and cycle corridor is planned to be established to connect these two areas. This will provide a corridor for users but also help to relieve pressures of use on the existing park for both current and future increases in park activity.

CAP 15: Expand Designated Mountain Biking Trails

Objective: Recreational Amenities

The Knox Mountain Park East parcel provides new opportunities for both downhill and cross-country mountain biking trails that will help to ease pressures of high use within the main western parcel of the park. The mountain has special value to the mountain biking community due to its central locations within the City. Consideration is to be given to how these trails interact with trails for other user groups so to minimize potential conflicts.

CAP 16: Community Outreach

Objective: Capacity Building and Public Involvement

A number of community outreach initiatives will be explored for Knox Mountain Park. This will include:

i) Dedicated Park Web Page: continue the on-line information page describing current Park management initiatives will be posted on the City web site and be updated to correspond with the annual external stakeholder meetings. The Knox Mountain Park web page is expected to serve as an online

source of information pertaining to the park and its management and could contain information about events, the hours that the Drive is open, the location of sanctioned trails and access points, park regulations, natural and cultural history, invasive species, typical plant and animal species, and hazardous conditions.

ii) Adopt-a-Trail Program: initiate an adopt-a-trail program whereby members of the public would commit to regular maintenance of the trail in the form of litter pick-up; removal of sticks, rocks and debris; recording and reporting of vandalism, hazards, and illegal activity; cleaning of signage. Terms could be for a two year minimum with trail maintenance once per month between April and October and volunteers would get name recognition on a sign.

iii) Annual Monitoring and Population Counts: community led (e.g., volunteers) development and implementation of an ongoing monitoring program for bird, amphibian, reptile and plant species to identify population trends and to measure water levels of Kathleen Lake in order to ensure that the strategic goals and policies are contributing positively to ecological protection. The information will be recorded in the Annual Scorecard report.

iv) Annual Festivals: support community-led festivals meeting the intent of the Vision and Strategic Goals for the park will be considered. These must be coordinated with the Parks Community Relations Coordinator or Parks Services to ensure authorized use of the park and its amenities. Examples of such festivals may include:

- An Annual Kokanee Awareness Festival: a fall festival in the park during spawning season (September and October) to increase public awareness and associated with protecting the fish that use the park's shoreline. The park is one of few stretches of undeveloped shoreline on Okanagan Lake and it is classified as a "Black Zone" or critical habitat for shore spawning Kokanee.
- An Annual Okanagan Sunflower Festival: a springtime festival in the park to celebrate the

annual re-emergence the City's official flower, Arrowleaf Balsamroot (*Balsamorhiza sagittata*). The bright yellow flowers bloom in late April or early May and have a particular resonance in the cultural identity of many residents. A festival to celebrate this phenomenon could become a valuable opportunity to promote and communicate the uniqueness of and reasons for protecting the ecosystems in Knox Mountain Park.

v) Consider support of educational Initiatives proposed by local groups (i.e. First Nations, Naturalist Clubs, Museums, etc) or summer students that provide nature walks or other activities available to the public at regularly scheduled intervals. This would increase awareness and provide education opportunities of the historical, environmental, and First Nations significance and traditional uses within Knox Mountain Park.

vi) Invite local indigenous partners to participate as a stakeholder in activities for Knox Mountain Park, as in the annual stakeholder meeting. Work with indigenous partners to include the Nysylxcn language, place names, history, and cultural practices in signage in the park.

vii) Encourage community involvement in educational and cultural opportunities within the park. Encourage local experts in natural history or indigenous culture to participate in sharing knowledge with residents and visitors in the park.

CAP 17: Annual Scorecard Assessments

Objective: Monitoring

The implementation of annual scorecard assessments was established with the 2011 Knox Mountain Park Management Plan to assess the ongoing effectiveness of the document. Baseline measurements were taken with the first scorecard assessment which now provide a template against which future conditions and trends are measured (i.e. improving, declining, or stable).

Measurements include frequency and type of outdoor events, vehicular traffic, wildlife mortality, bylaw infractions and monitoring of several location specific

plots against predetermined environmental criteria. The annual scorecard assessments will continue to be conducted at the same time each year (late spring) by City staff familiar with Knox Mountain Park (i.e the Parks Planner and/or the Natural Area Park Coordinator) and a Qualified Environmental Professional, supported by qualified community volunteers. The annual scorecard assessment will be presented at the annual stakeholder meeting.

CAP 18: Host Annual Stakeholder Meeting

Objective: Capacity Building and Public Involvement

City staff will continue to formally engage interested stakeholder groups at least once per year. A spring external stakeholder meeting will focus on projects under consideration for upcoming annual budget submissions. Parks and Building Planning will budget for, host and coordinate these stakeholder meetings, with participation by Design and Construction and Parks Services.

CAP 19: Rehabilitate Mountain Biking Trails

Objective: Maintenance Infrastructure and User Services

Dedicated downhill and cross-country are an important recreational amenity within Knox Mountain Park. Management of these specific use trails may require signage, education, and enforcement to ensure safety and reduce potential conflict of users. These will be monitored throughout the life of this Management Plan and unsanctioned routes will be decommissioned and re-naturalized. The biking restrictions to single-use designated trails will allow Knox Mountain Park to continue as a convenient, local destination for off-road mountain biking, while also limiting conflicts, disturbance and erosion in more ecologically sensitive areas within the park.

CAP 20: Update Management Plan and 10 Year Environmental Assessment

Objective: Operations and Maintenance Planning

The Knox Mountain Management Plan will be reviewed and updated every ten years to ensure that annual projects undertaken meet the established Strategic Goals and to confirm that the actions taken contribute to a net park benefit.

6.4 Operations and Maintenance Plan

This section describes the Operations and Maintenance Plan that is recommended as part of the effort to achieve the Vision and Strategic Goals of the Management Plan.

There are seven major interrelated items to the Operations and Maintenance (OP) Plan. Furthermore, there are two main objectives for operations and maintenance, including: Environmental Protection, and Maintenance Infrastructure and User Services. Each of the 7 operations and maintenance items have been designated into one of these categories.

The items are categorized consecutively and are detailed in the sections below:

OP 1 Undertake Annual Washroom Maintenance

OP 2 Maintain a Park Caretaker Position

OP 3 Trail Maintenance and Decommissioning of Rogue Trails

OP 4 Maintenance of Trails at Kathleen Lake

OP 5 Maintain (2) Summer Students

OP 6 Implement Sustainable Urban Forest Strategy Measures in Knox Mountain Park

OP 7 Undertake Annual Wildfire Mitigation Activities

OP 8 Perform General Park Maintenance

OP 1: Undertake Annual Washroom Maintenance

Objective: Maintenance Infrastructure and User Services

Portable washrooms or vault toilets are a cost-effective option to provide necessary park amenities for users around the park, where permanent utility infrastructure is not available or practical. Rentals of these elements will be undertaken on an annual basis with arrangements made for maintenance and servicing.

OP 2: Maintain a Park Caretaker Position

Objective: Maintenance Infrastructure and User Services

The Knox Mountain Park caretaker presently lives year-round in the caretaker's residence adjacent to the Pioneer Pavilion near the summit of Knox Mountain Drive. The caretaker is responsible for providing a presence in the park to deter unauthorized activities, and for monitoring the Park to ensure that it is safe for all to enjoy. Park caretaker duties are decreased in the winter off-season. The park caretaker position will be maintained for the duration of the Management Plan period and the Caretaker will continue to perform currently assigned duties.

OP 3: Trail Maintenance and Decommissioning of Rogue Trails

Objective: Maintenance Infrastructure and User Services

Trail maintenance should be planned comprehensively within the park and identify priority projects based on a variety of factors (i.e. intensity of use). Where possible, it shall be undertaken in tandem with the decommissioning of unsanctioned trails as budget allows. Trail maintenance may include upgrades or enhancements such as trail resurfacing, installation of concrete crib steps, and/or minor realignments to address steep grades and to improve the user experience.

Unsanctioned trails are to be decommissioned and restored. Damaged areas will be repaired through careful soil remediation, erosion control, fencing as required to eliminate access to rogue trails, and replanting with ecosystem-appropriate native plants, with the objective that the footprint of these trails will slowly be erased over time. Trail restoration and maintenance priorities include mountain biking and walking trails where shortcuts exist and where trails have become excessively widened (i.e. Shale Trail, Pavilion South Trail).

OP 4: Maintenance of Trails at Kathleen Lake

Objective: Maintenance Infrastructure and User Services

The Kathleen Lake trails are somewhat remote, similar to the Paul's tomb trail, and will be upgraded

to provide better accessibility for both daily users and emergency vehicle access.

OP 5: Maintain (2) Summer Students

Objective: Maintenance Infrastructure and User Services

Maintain two summer student positions for noxious weed removal and as park ambassadors.

OP 6: Implement Sustainable Urban Forest Strategy Measures

Objective: Environmental Protection

Forest Management strategies will be implemented throughout Knox Mountain Park per the City's Sustainable Urban Forest Strategy. Areas of focus will be identified with recommendations for restoration, which will be prioritized into key actions to assist with implementation. A schedule for ongoing monitoring and review will be required to assess the past and current states of sensitive ecosystems within the park. Learning about and investigating Indigenous cultural and ecological practices will be explored.

OP 7: Undertake Annual Wildfire Mitigation Activities

Objective: Environmental Protection

Wildfire mitigation will be undertaken within the park, as required to protect both park users and the natural ecology. This may include fuel reduction treatments within natural areas to meet wildlife needs but also reduce wildfire risk.

OP 8: Perform General Park Maintenance

Objective: Maintenance Infrastructure and User Services

General park maintenance duties, including: snow clearing and road sweeping, mowing (roadside and formal), large bin garbage disposal, and miscellaneous infrastructure amenity maintenance, will occur on an annual basis.



7.0 IMPLEMENTATION PROGRAM

7.1 Introduction

The Strategic Plan focuses and defines the implementation items within the Development Plan and the Operations and Maintenance Plan.

Working closely together with Park Services, this management plan has quantified costs for what an appropriate level of maintenance specific to Knox Mountain Park should be.

For both capital development and operations & maintenance items priorities for implementation were determined, high level cost estimates were prepared.

Staff anticipate that the capital development plan will be funded from the City's capital budget implemented over a 10 year time frame. Capital development costs are estimated at \$1.96 million.

In order to support ongoing operations of these capital improvements, and all park infrastructure at Knox Mountain Park, and operating budget has also been prepared and is estimated at \$1.49 million. These

estimates for ongoing base operations specific to Knox Mountain Park increase incrementally and include one time operating requests for such items as rock fall mitigation.

The locations of the Development Plan items are identified comprehensively in Figure 11 - Development Concept Plan. The Implementation Program is summarized in Fig. 12 - Phasing and Costing Chart. Priorities are listed in descending order of importance on both the Development Concept Plan and in the Phasing and Costing Charts.

Investment in the full scale Implementation Program of the Management Plan, including all Development Plan and Operations and Maintenance Plan components is estimated at \$3.45 million, over 10 years with \$1.49 million attributed to ongoing Operations and Maintenance.

Parks and Building Planning is the city department responsible for submission of capital budget requests. Requests for operations and maintenance budget will be the responsibility of the departments identified on

the Phasing and Costing Chart.

These budgets will be considered and weighed against other priorities in the long-term capital plan and provisional budget submissions in future years. It should be made clear that funding is not assured, but if projects cannot be achieved in the year or phase specified due to budgetary allocations, specific projects will be deferred to the following year.

A full description of projects can be found in Section 6.3 - Development Plan. The numbers assigned here are listed in order of priority and correspond with those shown in the Phasing and Costing Chart (Figures 12).

Figure 11: Development Concept Plan



DEVELOPMENT CONCEPT MAP



LEGEND

- Very High Environmental Sensitivity
- High Environmental Sensitivity
- Moderate Environmental Sensitivity
- Low Environmental Sensitivity
- Park Boundary
- Road
- Sanctioned Trails

* Note: only items with specific locations are noted on the map.

- CAP-1 Vehicular Access to First Lookout - Two Year Pilot
- CAP-2 Undertake Rockfall Mitigation
- CAP-3 Construct Improvements at First Lookout
- CAP-4 Update Outdated & Damaged Interpretive Signage
- CAP-5 Install Information Kiosk & Signage at Ellis Street Gateway
- CAP-6 Develop a Strategy & Enforcement Plan for Off-Leash Dogs
- CAP-7 Renovate Abandoned Repeater Tower Foundation
- CAP-8 Trail Fencing for Conservation Areas
- CAP-9 Develop Staging/Parking Area at Knox Mountain Park East
- CAP-10 Install Knox East Staging Area Signage
- CAP-11 Install Signage on Remaining Trails
- CAP-12 Install Trail Fencing
- CAP-13 Crib Step Replacement Throughout Park
- CAP-14 Establishment of Trail Connections between Knox West & Knox East
- CAP-15 Expand Designated Mountain Biking Trails
- CAP-16 Community Outreach
- CAP-17 Annual Scorecard Assessments
- CAP-18 Host Annual Stakeholder Meeting
- CAP-19 Rehabilitate Mountain Biking Trails
- CAP-20 Update Management Plan & 10 Yr Environmental Assessment
- OP-1 Undertake Annual Washroom Maintenance
- OP-2 Maintain a Park Caretaker Position
- OP-3 Trail Maintenance and Decommissioning of Rogue Trails
- OP-4 Maintenance of Trails at Kathleen Lake
- OP-5 Maintain (2) Summer Students
- OP-6 Implement Sustainable Urban Forest Strategy Measures in Knox
- OP-7 Undertake Annual Wildfire Mitigation Activities
- OP-8 Perform General Park Maintenance

Figure 12: Phasing and Costing Chart

Item #	Development Plan Item	Objective	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Yr. 1-10 Total
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	
CAP-1	Vehicular Access to First Lookout - Two Year Pilot (PBP/PS)	OMP	\$2,000	\$2,000									\$4,000
CAP-2	Undertake Rockfall Mitigation (ID)	MIUS	\$50,000		\$50,000		\$50,000						\$150,000
CAP-3	Construct Improvements at First Lookout (PBP/ID/PS)	GSIA	\$25,000	\$150,000	\$75,000								\$250,000
CAP-4	Update Outdated and Damaged Interpretive Signage (PBP/ID/PS)	MIUS	\$50,000	\$70,000	\$70,000								\$190,000
CAP-5	Install Information Kiosk and Signage at Ellis Street Gateway (PBP/ID)	GSAI			\$35,000								\$35,000
CAP-6	Develop a Strategy and Enforcement Plan for Off-Leash Dogs (PBP)	OMP			\$5,000	\$10,000							\$15,000
CAP-7	Renovate Abandoned Repeater Tower Foundation (Stair Access / Seating) (PBP/ID)	RA				\$5,000	\$75,000						\$80,000
CAP-8	Trail Fencing for Conservation Areas (ID/PS)	EP				\$22,000				\$22,000			\$44,000
CAP-9	Develop Staging / Parking Area at Knox Mountain Park East (PBP/ID/PS)	GSAI					\$25,000	\$140,000	\$145,000				\$310,000
CAP-10	Install Knox East Staging Area Signage (PBP/ID/PS)	GSAI								\$25,000		\$50,000	\$75,000
CAP-11	Install Signage on Remaining Trails (Regulation and Wayfinding) (ID)	RA	\$20,000				\$20,000				\$20,000		\$60,000
CAP-12	Install Trail Fencing (at Road Ends / Interface Areas) (ID/PS)	EP				\$30,000		\$30,000		\$30,000		\$30,000	\$120,000
CAP-13	Crib step replacement throughout park (e.g. Apex, Lochview, Ogopogo) (ID/PS)	RA	\$15,000	\$15,000	\$16,000	\$16,000	\$16,500	\$16,500	\$17,000	\$17,000	\$17,500	\$17,500	\$164,000
CAP-14	Establish Trail Connections between Knox West and Knox East (PBS/ID)	RA							\$50,000		\$65,000		\$115,000
CAP-15	Expand Designated Mountain Biking Trails (ID/PS)	RA				\$75,000				\$75,000			\$150,000
CAP-16	Community Outreach (Stakeholder Engagement etc.) (PBP)	CBPI	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$20,000
CAP-17	Annual Scorecard Assessments (PBP)	MO	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$2,000	\$20,000
CAP-18	Host Annual Stakeholder Meeting (PBP/ID/PS)	CBPI	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$1,500	\$15,000
CAP-19	Rehabilitate Mountain Biking Trails (ID/PS)	MIUS				\$35,000					\$35,000		\$70,000
CAP-20	Update Management Plan and 10 Yr Environmental Assessment (PBP)	OMP										\$75,000	\$75,000
			\$167,500	\$242,500	\$256,500	\$198,500	\$192,000	\$192,000	\$217,500	\$174,500	\$143,000	\$178,000	\$1,962,000

Item #	Operations and Maintenance Plan Item	Objective	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	Yr. 1-10 Total
			Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	
OP-1	Undertake Annual Washroom Maintenance (PS)	MIUS	\$27,500	\$29,000	\$30,500	\$32,000	\$33,500	\$35,000	\$37,000	\$38,500	\$40,500	\$42,500	\$346,000
OP-2	Maintain a Park Caretaker Position (PS)	MIUS	\$31,000	\$31,500	\$32,000	\$32,500	\$33,000	\$33,500	\$34,000	\$34,500	\$35,000	\$35,500	\$332,500
OP-3	Trail Maintenance and Decommissioning of Rogue Trails (PS)	MIUS	\$10,000	\$10,500	\$11,000	\$11,500	\$12,000	\$12,500	\$13,000	\$13,500	\$14,000	\$14,500	\$122,500
OP-4	Maintenance of Trails at Kathleen Lake (PS)	MIUS				\$20,000				\$22,000			\$42,000
OP-5	Maintain (2) Summer Students (Weed Removal/Park Ambassadors - half time) (PS)	MIUS	\$15,000	\$15,500	\$15,500	\$16,000	\$16,000	\$16,000	\$16,500	\$16,500	\$17,000	\$17,000	\$161,000
OP-6	Implement Sustainable Urban Forest Strategy Measures in Knox (PS)	EP			\$35,000	\$20,000							\$55,000
OP-7	Undertake Annual Wildfire Mitigation Activities (PS)	EP		\$40,000				\$50,000				\$50,000	\$140,000
OP-8	Perform General Park Maintenance	MIUS	\$28,500	\$28,500	\$28,500	\$29,000	\$29,000	\$29,000	\$29,500	\$29,500	\$29,500	\$29,500	\$290,500
			\$112,000	\$155,000	\$152,500	\$161,000	\$123,500	\$176,000	\$130,000	\$154,500	\$136,000	\$189,000	\$1,489,500

Objective Legend
Maintenance Infrastructure and User Services - MIUS
Recreational Amenities - RA
Environmental Protection - EP
Operations and Maintenance Planning - OMP
Gateway and Staging Area Improvements - GSAI
Capacity Building and Public Involvement - CBPI
Monitoring - MO

Total	\$3,451,500
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8.0 FUTURE AREAS OF INTEREST FOR PARK ACQUISITION

In order to facilitate improved connections between Knox Mountain Park, Knox Mountain Park East and other trail systems, acquisitions of additional properties are desirable.

The City's Official Community Plan provides guidelines to direct future land use and potential areas of interest where connections for both wildlife and trails are desirable.

Designation of areas of interest does not commit the City of Kelowna to acquire these or any other lands, but merely establishes a desired planning direction for City of Kelowna parks. More detailed planning and construction will be required.



9.0 CONCLUDING COMMENTS

This update to the 2011 Knox Mountain Management Plan was initiated in the fall of 2021. With input from city staff, external stakeholder groups and the public, preparation of this updated plan has been a flexible process that has evolved over its course.

The City of Kelowna 2022 Knox Mountain Park Management Plan provides sound guidance for the overall management of Knox Mountain Park for the next 10 years. The Management Plan establishes a framework for City decision-making with respect to park operations and maintenance, and it provides a strategic approach to park development and capital investment.

It is envisioned that the list of developed priorities will form the basis for annual capital budget submissions, and that the Operations and Maintenance Plan items will form the basis for annual operational budget submissions by the individual city departments identified as the lead in the Phasing and Costing Chart.

It is also envisioned that this Management Plan, together with the Biophysical / Environmental Inventory, will be reviewed and updated in ten years (2031) or less and the Development Plan items will be further refined at

that time. This will be an opportunity to confirm that the annual projects being undertaken in Knox Mountain Park are meeting the goals and objectives of the Management Plan.

The Management Plan provides a solid framework, enabling the City of Kelowna to showcase Knox Mountain Park as an outstanding natural area within City boundaries. The park is a living example of the way ecological values are protected in a place where appropriate kinds and levels of human activity are welcome; the policies of the Management Plan aid those who manage it in achieving the careful balance between environment and recreation.

The Plan underscores the City's commitment to public involvement and sets out avenues for community partners to participate in park activities.

10.0 APPENDICES - *Refer to Appendices Document*

Companion Document 1: 1999 Knox
Mountain Park Management Plan

Companion Document 2: 2011 Knox
Mountain Park Management Plan

Companion Document 3: 2010 Biophysical
Inventory/Environmental Overview, Knox
Mountain Park

Companion Document 4: 2022 Biophysical
Inventory/Environmental Overview, Knox
Mountain Park

2021 BIOPHYSICAL INVENTORY/ ENVIRONMENTAL OVERVIEW

KNOX MOUNTAIN PARK, KELOWNA, BC

Prepared For:

CITY OF KELOWNA
1435 Water Street
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June 2022
Ecoscape File No: 21-3807

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1.0 INTRODUCTION

Ecoscape Environmental Consultants Ltd. (Ecoscape) has been retained by the City of Kelowna (the City) to provide environmental consulting services pertaining to the Knox Mountain Park Management Plan update. Specifically, we provide this document as an environmental overview and biophysical inventory of ecological features, including ecosystems and species that exist within the park. Here, we also present very specific recommendations that are designed to be included within the Management Plan update and are geared toward achieving a balance between recreational park use by the general public and environmental protection over the long term.

Knox Mountain Park is located within the city limits of Kelowna and covers an area of approximately 386.3 hectares (Figure 1). The park currently consists of two independent parcels. The original parcel (~77 ha) was sold to the City for a dollar in 1939 and is located immediately adjacent to Okanagan Lake and downtown Kelowna. Since the 2011 management plan, the Park has expanded by 27.3 ha through land acquisitions. The 2011 management plan referred to the original parcel and the Grainger parcel. This report will refer to the original parcel as Knox Mountain West and the Grainger parcel as Knox Mountain East (Figure 1). A total of 18.3 ha of park land has been added to the Knox Mountain East and 9 ha has been added to Knox Mountain West (Figure 1). The addition to Knox Mountain East includes two relatively undisturbed woodland parcels off of Crosby Road. The addition to Knox Mountain West includes several parcels south of Royal View Drive and north of Trench Place comprised of disturbed grasslands. All new parcels will collectively be referred to as Knox Mountain Park for the purposes of this report, but in some cases Knox Mountain East and Knox Mountain West may be discussed individually.

1.1 Project Objectives

The purpose of this assessment is to provide environmentally specific contributions that will be considered in the preparation of the park management plan update. The last management plan was prepared in 2011, and improvements are warranted with regard to establishing management that achieves improved environmental health and overall condition of the park. In recent years, several broad-scaled environmental inventories (e.g., Sensitive Ecosystem Inventory, Foreshore Inventory and Mapping) have been undertaken, and the City of Kelowna wishes to incorporate and refine these data for Knox Mountain Park.

To meet this objective, Ecoscape has focused on the following elements to more accurately describe the natural components of the park and to highlight avenues for improved environmental conditions:

- Spatially accurate mapping of the existing trail network, in order to understand the extent of disturbance and to make informed recommendations for future trail management;
- The incorporation of data from the 2009 Sensitive Ecosystem Inventory (SEI), the most up-to-date Okanagan Lake Foreshore Inventory and Mapping (FIM), and the Wetlands Inventory Mapping (WIM), in order to more precisely describe and document the existing natural communities, their relative sensitivities and levels of anthropogenic disturbance;
- Assess and update the environmental sensitivity of the park with the inclusion of the aforementioned data; and
- Propose a park use/zoning concept that will achieve a balance between continued recreational use and minimal environmental impacts.

2.0 BIOPHYSICAL ASSESSMENT

Knox Mountain Park is located in the Okanagan Very Dry Hot Ponderosa pine variant (PPxh1), which is generally described as the driest forested region in British Columbia. Hot dry conditions are commonplace in the summer months and cool conditions with light snow levels are typical in the winter (Lloyd *et al.* 1990).

Ecoscape spent several days in August 2021 in Knox Mountain Park documenting extents of disturbance, verifying the accuracy of ecosystem mapping within existing and new park parcels, and updating the existing sanctioned and non-sanctioned trail networks.

2.1 Topography, Geology and Soils

The topography, geology and soils of Knox Mountain Park have been described in detail in the previous park management plan from 1999 (Urban Systems Ltd., 1999). Since these characteristics remain unchanged, only a brief summary will be provided here.

The topography of Knox Mountain Park is undulating with moderate to very steep slopes across all aspects (see Figure 1 for 10 m contour lines). Slopes ascend abruptly from Okanagan Lake, and less so from other park boundaries into a series of ridges and peaks. Topographic draws and depressions are also commonplace. In addition, near vertical topography occurs as a result of the south and east facing bedrock outcrops that overlook downtown Kelowna and Clifton Road.

The geology of Knox Mountain Park is primarily characterized by volcanic bedrock as the park occurs on the eastern edge of the physiographic division known as the Thompson Plateau. The mountain itself was formed from localized volcanic activity some fifty million years ago (Kelowna Geology Committee, 2004). The soils within the park boundaries are grouped

taxonomically as Orthic Eutric Brunisols. They have developed over the bedrock and have a sandy loam texture, good drainage, approximately 20 to 50 percent volume of coarse fragments and a xeric moisture regime.

Knox Mountain West and Knox Mountain East are separated by a narrow, low-lying, highly urbanized valley that runs north/south. Despite their separation, the two parcels are very similar in topography, geology and soils.

2.2 Ecosystem Classification

2.2.1 Mapping Methodology

The ecosystem mapping component incorporated Terrestrial Ecosystem Mapping (TEM) polygons previously described in the Conservation Analysis and Updated Ecosystem Mapping for Central Okanagan Valley. Haney and Iverson (2009), detail the methodology for stratifying TEM polygons and for identifying generalized groupings of sensitive ecosystems (Sensitive Ecosystem Inventory (SEI) polygons). In short, TEM is a stratification of landscape into polygons of similar biophysical characteristics including climate, terrain, soils and vegetation. Within each of these identified polygons, up to three different ecosystems may be included. The percentage of ecosystems within each polygon is determined, then ecosystem codes and descriptive qualifiers such as structural stage, stand composition and any relevant site modifiers are assigned. Sensitive Ecosystem Inventory then identifies groupings of ecosystems based on at-risk status, ecological sensitivities, ecological processes, and wildlife habitat values (Haney and Iverson, 2009).

Ecoscape overlaid the previously described TEM polygons across park boundaries in order to verify their accuracy. Many of these polygons incorporated areas beyond the extents of the park; therefore, they were cut at the park boundary and reclassified based on the existing ecosystems within. Additional polygon boundary adjustments and classification changes were made as necessary based on desktop mapping at a finer spatial scale (1:5,000) and as a result of field verification. The updated polygons were compiled using a geographic information system (GIS), and a final database including ecosystem descriptions consistent with the Standard for Terrestrial Ecosystem Mapping in British Columbia was prepared (RIC, 1998). To help decipher the database, a mapping key specific to those ecosystems occurring in Knox Mountain Park is included in Appendix A.

2.2.2 Mapping Results

Within Knox Mountain Park, a total of twenty-seven (27) different ecosystems were identified within the two hundred and sixty-two (262) TEM polygons (see Figure 2 for polygon extents and Appendix A for ecosystem classification and descriptions). Table 1 shows the ecosystem codes, their associated site series name, the areas of each, their percent coverage of the total park, and their provincial conservation status (CDC, 2022). Of the twenty-seven (27) ecosystem types, six (6) are provincially Red-listed, seven (7) are Blue-listed, five (5) are anthropogenic classifications and nine (9) are not provincially classified.

Table 1. Ecosystems Occurring in Knox Mountain Park and Provincial Conservation Status.

Ecosystem Code	Site Series	Ecosystem / Community Type	Area (ha) / Percent of Total	Provincial Status ¹
BE	00	Beach	0.28 / 0.1	-
BM	00	Bullrush Marsh	0.68 / 0.2	Blue*
CB	-	Cutbank	0.04 / 0.0	-
CW	00	Choke cherry - Bluebunch wheatgrass rocky bluff	0.12 / 0.0	-
DM	08	Douglas-fir - Water birch - Douglas maple	0.19 / 0.1	Red
DS	07	Douglas-fir/Ponderosa pine - Snowberry - Spirea	4.55 / 1.2	Red
ES	-	Exposed Soil	4.78 / 1.2	-
FB	00	Rough fescue - Bluebunch wheatgrass	14.20 / 3.68	Red
FO	00	Douglas-fir/Ponderosa pine -Saskatoon - Mock orange	7.74 / 2.0	-
Gs03	00	Field Sedge Meadow	0.32 / 0.1	Blue*
GW	00	Giant Wild Rye Grassland	0.64 / 0.2	-
OW	00	Shallow Open Water	1.85 / 0.5	Blue*
PC	04	Ponderosa pine - Bluebunch wheatgrass - Cheatgrass	111.45 / 28.9	Blue
PF	05	Ponderosa pine - Bluebunch wheatgrass - Rough fescue	45.55 / 11.8	Blue
PT	02	Ponderosa pine - Red three-awn	25.10 / 6.5	Blue
PW	01	Ponderosa pine - Bluebunch wheatgrass - Idaho fescue	44.39 / 11.50	Blue
RO	00	Rock Outcrop	0.58 / 0.2	-
RW	-	Rural	7.68 / 2.0	-
RZ	-	Road Surface	10.11 / 2.6	-
SA	00	Antelope Brush - Selaginella	3.45 / 0.9	-
SB	00	Selaginella - Bluebunch wheatgrass rock outcrop	16.95 / 4.4	-
SO	00	Saskatoon - Mock orange Talus	11.99 / 3.1	-
SP	06	Douglas-fir/Ponderosa pine - Snowberry - Pinegrass	11.16 / 2.9	Red
SW	01	Big sage - Bluebunch wheatgrass	3.37 / 0.9	Red
TA	00	Talus	3.35 / 0.9	-
UR	-	Urban/Suburban	1.59 / 0.4	-
WB	00	Bluebunch wheatgrass - Balsamroot	54.18 / 14.0	Red
Total			386.28 / 100	

¹**Blue-list:** List of ecological communities of special concern (formerly vulnerable) in British Columbia.

Red-list: List of ecological communities that are extirpated, endangered or threatened in British Columbia.

*At this time only some wetland units have a provincial listing. Ecoscape uses professional discretion when assigning wetlands that have not yet been provincially designated.

For ease of discussion and due to the large number of TEM polygons that occur across the park, Ecoscape utilized the coarser SEI mapping to generate broad ecological communities (as shown in Table 2). Each TEM polygon was grouped into one broad ecological community based on the dominant ecosystem type in each polygon. Professional judgment was utilized in a few cases where there were equal components of multiple ecosystem types. Figure 3 illustrates the occurrences of broad ecological communities across Knox Mountain Park, and Table 2 provides a summary of their relative areas and percent coverage.

Table 2. Broad Ecological Communities Occurring within Knox Mountain Park (Data has been adopted from the SEI (Haney and Iverson, 2009)).			
Broad Ecological Communities	# of TEM Polygons	Area (hectares)	Percent of Total Area
Wetlands	2	2.84	0.74
Old Forest	9	23.17	6.00
Grassland	46	70.02	18.13
Coniferous Woodland	159	257.02	66.5
Mixed Riparian/Moisture Receiving Sites	3	1.72	0.44
Sparsely Vegetated	18	18.37	4.76
Anthropogenic Sites	24	13.15	3.41
Total		386.28	100.00

Coniferous woodlands make up the greatest area within the park; at 70 percent, while grassland, old forest, and sparsely vegetated sites are the next most abundant ecological communities encountered. Together, these four ecological classifications comprise more than 95 percent of the total area in Knox Mountain Park. Mixed riparian / moisture receiving sites and wetland communities occupy a small area, however, they are extremely important to the overall biodiversity of the park and are considered integral to the habitat values present. Most of the remaining area is made up of various anthropogenic classifications including rural, urban/suburban, exposed soils, cutbanks and roads. Because the broad ecological communities were determined based on the first decile of the TEM polygons, there are several cases where anthropogenic sites are not displayed. One example occurs in the NW corner of Knox Mountain East, where a water reservoir and main access road are classified as Coniferous Woodland (Figure 3). Based on this methodology, broad ecological community areas should be considered approximate, as it is possible that the areas of less frequently occurring communities could be underestimated.

The following section provides greater detail regarding the broad ecological communities that occur within the park.

2.3 Broad Ecological Community Descriptions and Relevant Discussion

2.3.1 Wetlands

A wetland is defined as land that is saturated long enough to promote wetland or aquatic processes indicated by poorly drained soils, hydrophilic (water-loving plants) vegetation (>50 composition) and various kinds of biological activity, which are adapted to a wet environment. Wetlands are ecologically significant communities that have a higher moisture regime than coniferous and grassland areas. Because of the increased water that is available, they tend to provide vital habitat for a variety of species. Studies have shown that the majority of wildlife is either directly or indirectly dependent on wetland and riparian ecosystems and that they are frequented more often than any other habitat types.

It is estimated that more than 85 percent of valley bottom wetland and riparian habitats have been lost within the Okanagan Valley (Hawes and Schleppe, 2009). Given their imperiled state, wetlands are of high conservation priority. Comprehensive wetland inventory and mapping was completed within the City of Kelowna municipal limits (Hawes and Schleppe, 2009). Table 3 is derived from the wetland database and provides a brief summary of the two wetlands that occur in the Park. The ecosystem key (Appendix B) is also inclusive of wetland classification descriptions that are useful in understanding the information presented below (Table 3). The spatially accurate extents and wetland numbers are also depicted on Figure 3.

Table 3. Wetland Units that occur within Knox Mountain Park.

Common Name (Wetland No.) ¹	Area (m ²)	No. Types ²	No. Communities ³	No. Veg. Forms ⁴	Open Water Type	Classes	Types	BC Wetland Associations
Discharge Basin (C3-1)	6,229	1	2	3	1 (<5% Open Water)	Marsh	Tall Rush	Wm06
						Flood Low Bench	Tall Shrub	Fl07
Kathleen Lake (C4-7)	20,292	2	2	2	8 (>95% Open Water)	Shallow water	Submerged aquatic	Wa
						Marsh	Tall Rush	Wm06
1. Wetland numbers in accordance with Hawes and Schleppe (2009).								
2. Number of Wetland Types: Total wetland classes per wetland unit (e.g., Marsh/Swamp/Low flood bench = 3).								
3. Number of Communities: Total number of Vegetation communities within the wetland unit (e.g., cattail marsh (Wm05) / shallow water(Wa) / Great bulrush marsh (Wm06) / Water birch-rose (Fl07) = 4).								
4. Number of Vegetation Forms: Form is the physical structure or shape of a plant determined by features such as height, branching, pattern, and leaf shape.								

2.3.1.1 Discharge Basin



Discharge Basin in 2021.

The discharge basin occurs near the Second Lookout (formerly known as the Apex) in Knox Mountain West. It occurs within a depression (a topographic low point), where the water table is near or at the surface depending on seasonal fluctuations. Haney and Iverson (2009) classify the basin as 60 percent bulrush marsh (BM) and 40 percent Field Sedge Meadow (Gs03). As illustrated in Table 3, the City of Kelowna wetland inventory described the discharge basin as an approximately 6,229 m² marsh/flood low bench system, with less than 5% open water (Hawes and Schleppe, 2009).

Upon field verification, it was evident that the basin maintains plant species which are indicative of a wetland community; however, several of the species were stressed and, in some cases, appeared to be dying (e.g., water birch) from what appears to be a lack of water. The level of standing water in the discharge basin has varied since 2011; there was minimal

standing water at the time of the 2017 spring site visit when water levels should be at their highest, however in 2021 open water was present.

Ecoscape understands that historically (>25 years ago), water was pumped into this discharge basin from a water reservoir within the park. This influx of water was used as a preventative fire fighting measure (pers. com., Adrian Weaden, City of Kelowna). The previous Management Plan from 1999 described the wetland as an unnamed pond with permanent standing water (Urban Systems Ltd. 1999), thus it was wetted as recently as the late 1990s. In discussions with Mr. Weaden at the City of Kelowna, Ecoscape understands that infrastructure used to supplement water to the basin, is unlikely to still be intact and functional. Nevertheless, the addition of water to this wetland feature during dry years would likely enhance species such as field sedge, Baltic rush and bulrush, and will also make the feature more attractive to a variety of wildlife including birds, invertebrates, mammals and herptiles.

2.3.1.2 Kathleen Lake

Kathleen Lake is a permanent alkaline water body that is approximately two hectares in size and is located near the eastern park boundary within Knox Mountain West. It is also located in a topographic depression of an isolated basin and fills from subsurface drainage and surface runoff. The lake is highly dynamic and routinely experiences significant vertical fluctuations that contribute to its alkaline water chemistry. Because it is the only significant water



Kathleen Lake



Kathleen Lake (September 2, 2009) during a period of lower water levels

source within Knox Mountain Park; it acts as a critical ecological feature for a variety of wildlife. The shoreline of Kathleen Lake provides important thermoregulatory conditions in what is an otherwise hot and dry landscape. The area also provides critical nesting and foraging habitat for species ranging from invertebrates to mammals. Finally, the lake's alkaline conditions contribute to productive invertebrate populations, and an overall

high species richness. Together these conditions create a level of endemism and biodiversity that is unrealized in other areas of the park.

The SEI classifies Kathleen Lake as 90% open water (OW) and 10% bulrush marsh (BM). The north end of Kathleen Lake maintains a flat area which supports emergent vegetation, as well as various grasses and sedges. This densely vegetated section provides ample habitat for nesting waterfowl and other avian species.

The remaining OW component of Kathleen Lake maintains permanently flooded water and supports a diversity of rooted, submerged and floating aquatic vegetation. Although no fish are known to inhabit Kathleen Lake, it does support a hearty population of brine shrimp and other invertebrates (e.g., dragonflies, damselflies, beetles, mayflies, midges, etc).

The eastern border of Kathleen Lake is a steep, west facing talus slope that provides optimal basking habitat for reptiles. Some of the species that could occur on this slope include Northwestern alligator lizard (*Elgaria coerulea principis*), Western skink (*Plestiodon skiltonianus*), common garter snake (*Thamnophis sirtalis*), Western terrestrial garter snake (*Thamnophis elegans vagrans*), and the great basin gopher snake (*Pituophis catenifer deserticola*). At the time of the site visit, there was no evidence of the blue-listed Western painted turtle (*Chrysemys picta bellii*), however, this species has been previously documented at Kathleen Lake.

Unfortunately, despite its ecological value, Kathleen Lake has been and continues to be impacted by anthropogenic disturbance. Ecoscape noted evidence of 4x4 activities below the high-water level in 2011; while the park caretaker has removed a variety of items from the lake including a bicycle, lawn chairs and garbage (pers. com., Mark Goddard). Reducing anthropogenic effects on Kathleen Lake via education and enforcement is an important step to protect this feature, especially as park users become more familiar with the Kathleen Lake, and the number of people visiting the site increases.

2.3.2 Okanagan Lake Foreshore and Riparian Fringe

Most of the TEM polygons that overlap the Okanagan Lake Foreshore / Riparian Fringe were broadly grouped into the Coniferous Woodland category. Nevertheless, it is important to discuss the Okanagan Lake foreshore independently due to the significance of this feature. Since the issuance of the last Management Plan update in 2011, the Okanagan Lake Foreshore Inventory and Mapping was updated in 2016 (Schleppe and Plewes, 2017). The most recent Foreshore Inventory and Mapping (FIM) project's primary objective was to update the FIM dataset to be more current. Because of the level of overlap, Ecoscape only summarizes data from the most recent report below (see Table 4).

Generally, FIM is used to collect baseline information regarding the current condition of shorelines and associated riparian habitats. Data such as shoreline character, shore/bank

types and condition, substrates, land use and habitat modifications are combined with existing fisheries inventories and orthophotos to determine the relative habitat value of the shoreline.



Riparian Fringe

Knox Mountain Park abuts two shoreline segments, 77, and 79, extending from south to north (Table 4; Schleppe and Plewes, 2017). Segment 79 has the greatest overlap with 100% of the segment occurring adjacent to the Knox Mountain boundary (see Figure 4). Due to the steep grades along much of the park, a distinctive riparian band is not overly developed along the foreshore. However, fringe species such as black cottonwood and red-osier dogwood occur intermittently where flatter grades and

gravel beaches exist. A second zone generally encompassing coniferous woodland extends upslope above the narrow riparian fringe communities.

The foreshore along Knox Mountain Park is largely comprised of cliff/bluff features with elements of a rocky shoreline. Substrates consist of bedrock and boulders with patches of gravel and cobble. The rocky substrates provide optimal habitat for the shore spawning kokanee. In Okanagan Lake, kokanee are the fish species of most concern with respect to shoreline development and aquatic habitat alteration. Recent declines of kokanee have been primarily attributed to factors including interspecific competition with the opossum shrimp (*Mysis relicta*), a general reduction in lake carrying capacity due to nutrient imbalance, and egg and alevin mortality associated with stranding (a result of lake level regulation) (Wilson and Andrusak, 2003), as well as habitat loss.

The peak of spawning for shore spawning kokanee in Okanagan Lake occurs generally over a 2-week period in mid-late October, beginning when lake temperatures drop to approximately 13°C. The vast majority of kokanee shore spawners (in Okanagan Lake) utilize a very restricted water depth of 0.25 - 0.75 m, with the majority of fish spawning at a depth of 0.5 m (Wilson and Andrusak, 2003).

Since the issuance of the last management plan in 2011, the Ministry of Environment released the finalized the Okanagan Large Lakes Foreshore Protocol that is used to guide review of current applications for foreshore developments such as moorages (BC MFLNRORD, 2018). This protocol incorporates the most recent kokanee shore spawning data, and that of select species at risk. The majority of the shoreline along Knox Mountain Park (~ 1.2 km) occurs in a Black Zone, which is defined as critical habitat, where greater than

1000 spawning kokanee have been documented (see Figure 4). In addition, approximately 160 metres of the shoreline falls within a Red Zone (>50 spawning kokanee, or 1000 or more historical occurrences).

The current and potential Aquatic Habitat Index (AHI) for FIM Segments 77 and 79 were ranked as moderate and very high, respectively in the 2016 FIM study (Figure 4; Schleppe and Plewes, 2017). The ranking parameters include the foreshore protocol (e.g., presence of the critical shore spawning kokanee habitat) and upland conservation zones as determined from the Sensitive Ecosystem Inventory.

The high FIM rankings along Knox Mountain Park are also due to the relatively little disturbance to foreshore and riparian areas. Because the shoreline is adjacent to the park, it prevents future upland development and thus it is that much more critical to maintain the natural state of the foreshore. Given the rate of growth within the Okanagan Valley, and the overall development pressure on Okanagan Lake, efforts should be made to minimize shoreline disturbance and to maintain its natural state well into the future.

Table 4. Abbreviated Summary of FIM Shoreline Segments that Abut Knox Mountain Park (Schleppe and Plewes, 2017).

Segment No.	Segment Length (m) / Percent Overlap with KMP	Shore Type	Slope (%)	Level of Impact (%)	Current Condition Disturbed / Natural (%)	Dominant Substrate Type (%)	Littoral Zone Width (m)	Large Woody Debris (%)	Docks Per km	Veteran Trees	Snags	% Black Zone (Kokanee)	% Red Zone (Kokanee)	AHI Rating Current / Potential	Juvenile Rearing Potential
77	719.37 / 8.0	Cliff/Bluff	Very Steep (60+)	High (>40)	45 / 55	Bedrock (50)	Moderate (10-50)	25-50	16.68	25-50	<5	0	0	Moderate / Moderate	Moderate
79	1407.29 / 100	Cliff/Bluff	Very Steep (60+)	Low (<10)	5 / 95	Bedrock (35)	Narrow (<10)	0	0	25-50	25-50	0	100	Very High / Very High	Moderate

2.3.3 Grasslands



Typical grassland community

Knox Mountain Park contains four distinctive grassland communities including the Bluebunch wheatgrass – Balsamroot (WB), the Rough Fescue – Bluebunch Wheatgrass (FB), Giant Wildrye (GW), and the Big Sage – Bluebunch Wheatgrass (SW) ecosystem. These communities typically occur on drier, south facing slopes that have good soil drainage. Grasslands are extremely fragile and are very prone to anthropogenic disturbance of the cryptogamic soil crust, facilitating

infestation by non-native Eurasian species (e.g., knapweed). Cryptogamic soil crusts are an assemblage of bacteria, cyanobacteria, green algae, mosses, liverworts, microfungi and lichen living symbiotically. The cryptogamic crust promotes soil structure and formation, protection of the soil surface from erosion, increases water infiltration and provides a stable rooting soil structure for other flora species (Marsh et al., 2006). Cryptogamic crusts are incredibly sensitive to disturbance and take a long time to recover, if at all. Once the cryptogamic crust has been disturbed, the soil structure and functionality become less suitable to native species but some invasives can thrive under these conditions. Many of the grassland areas in the Okanagan have been so heavily impacted that they no longer resemble the native community, but are better described as "weed fields". For this reason, the preservation of high-quality grassland and associated cryptogamic crust within park environments is that much more important. Given their inherent sensitivity, it is critical to pinpoint the extents of grassland ecosystems within Knox Mountain Park, in order to direct anthropogenic activities elsewhere.

Terrestrial ecosystem mapping of grasslands incorporates levels of weed infestation. The classifications are generally 2-fold, a mid to late seral association where there is still a reasonable component of bunchgrasses with introduced Eurasian species such as cheatgrass, knapweed and sulfur cinquefoil, or an early to very early seral association where there are few to no native bunchgrasses remaining on site. In Knox Mountain Park, the early to very early seral association is limited to smaller areas that are in close proximity to development. For example, there are some polygons near the entrance to the park that are highly infiltrated by weedy species. But, for the most part grassland communities within Knox Mountain Park are fairly intact; making it one of the few remaining destinations within urbanized areas of the Central Okanagan, to view a variety of native grassland ecosystems.

The Bluebunch wheatgrass – Balsamroot (WB) grassland ecosystem typically occurs on moderately steep to steep warm slopes (Iverson & Cadrin, 2003), and is the most commonly occurring grassland within the park. In general, the WB community is predominantly found in the southwestern corner of Knox Mountain West and there are also patches of the ecosystem in Knox Mountain East. For the most part, this grassland is in good to excellent condition; however unsanctioned trail development appears to be its greatest threat. Trail networks and general site disturbance in some areas have resulted in noxious weed cover, soft soils and erosion potential.

The Rough Fescue – Bluebunch Wheatgrass (FB) ecosystem occurs on more gentle, warm aspects sites, level sites, and on non-forested cool aspects. It consists of a mixture of rough fescue and bluebunch wheatgrass with balsamroot and other herbs. Other less common grassland ecosystems in Knox Mountain Park include Giant Wildrye grassland (GW) and Big Sage – Bluebunch Wheatgrass (SW). Both of these ecosystems are generally limited to the south facing front face of Knox Mountain East.

The Big Sage community (SW) is of particular interest, because in Knox Mountain Park it occurs at, or near, the most northern edge of its distribution. The vegetation within this ecosystem is a mixture of bunchgrasses with forbs that are interspersed amongst big sagebrush (*Artemisia tridentata*). Sagebrush communities are much more typical in the south Okanagan within the bunchgrass biogeoclimatic zone. Within Knox Mountain Park, the SW community used to be restricted to polygon 107 (see Figure 2), with sagebrush occurring on both sides of Knox Mountain Drive just up from the first switch back. However, with the additional parcels to Knox Mountain West, there are multiple polygons south of Royal View Drive comprised of SW and GW communities. Because these communities are so rare, both within the Central Okanagan and within Knox Mountain Park, efforts should be made to limit disturbance (e.g., trails) and to protect these unique ecosystems.

Other areas of interest within Knox Mountain Park are the many transitional areas between grasslands and coniferous woodlands. These ecosystems often consist of elements of WB grasslands and PC woodlands (see Coniferous Woodlands below). The coniferous species, often Ponderosa pine, are widely spaced apart; however, they provide habitat structure and complexity for numerous species that utilize grasslands for foraging, but also need the woodlands for cover, protection against predators and breeding/nesting sites. Given the importance of these transitional areas for wildlife; it critical to maintain their natural state by directing trail development and recreational activities elsewhere.

2.3.4 Coniferous Woodland and Old Forest

Forest ecosystems vary based on numerous characteristics including slope, aspect, slope position (i.e., at the top or bottom of hills/mountains), and soil moisture regime. Coniferous woodlands in the Ponderosa Pine Very Hot dry subzone generally have open

canopies that typically occur in drier climates, on rocky knolls, and on steep, dry south-facing slopes where there is sufficient moisture to allow tree growth to occur. Within Knox Mountain Park, there are six unique ecosystem types of coniferous woodland (DS, FO, PC, PF, PT and PW; see Table 1 above).

The majority of the coniferous woodland in Knox Mountain has relatively open canopies with a bunch grass dominated understory. Ponderosa pine is the predominant species present, although Interior Douglas fir occurs in areas that have a higher moisture regime (e.g., more north facing slopes, depressions, gullies, etc.) Commonly encountered shrubs include Saskatoon, common snowberry, tall Oregon-grape, and Rose spp.; while grasses include bluebunch wheatgrass, pinegrass and fescues.



Ponderosa pine forest that has been thinned due to the pine beetle infestation. New saplings (with a white protective casing) have been planted by each remnant stump.

Coniferous woodlands provide important habitats for a suite of wildlife. The Ponderosa pine is of particular importance to two rare woodpeckers (white-headed (*Picoides albolarvatus*) and Lewis' (*Melanerpes lewis*) for feeding and nesting. Woodpecker cavities are also utilized by secondary cavity nesters including the Blue-listed

Flammulated Owl (*Otus flammeolus*), whose habitat is restricted to Ponderosa pine and interior Douglas-fir. Ponderosa pine is of further importance to other species, especially when the trees are located in close proximity to water and riparian habitats, such as in Knox Mountain Park.

Of particular interest are the seven TEM polygons that are grouped into the broad ecological classification of Old Forest. These Old Forest polygons occur within both parcels on very steep slopes where forest harvesting was likely difficult. Haney and Iverson (2009) assigned Old Forest the highest SEI value (10) based on sensitivity, rarity, condition and benefit to wildlife. They report that Old Forest within the Central Okanagan is very rare (~0.5%) (Haney and Iverson, 2009), yet in Knox Mountain Park, Old Forest makes up 23 hectares or approximately 6.5% of the park. These larger groupings of Old Forest, especially since they occur adjacent to water bodies (Okanagan Lake and Blair Pond), provide such invaluable habitat for a variety of species.

Generally, across its range Ponderosa pine stands are declining. Their value as wildlife trees increases with age, and unfortunately younger trees are not being allowed to live long enough to replace veterans¹. The issue is further complicated by the recent mountain pine beetle infestation and especially so in urban parks, as foresters are faced with balancing wildfire potential and public safety issues with long term retention of wildlife habitat. In Knox Mountain Park, there are numerous examples of recent tree removal. The concern with the sheer number of removals is not only the loss of potential wildlife trees, but also the potential impacts due to ground disturbance from logging machinery (i.e., establishment of invasive plants) and erosion potential within steep slope areas.

2.3.5 Mixed Riparian/Moisture Receiving Sites

There are four TEM polygons (#80, 97, 126 and 252) with this general ecological classification, which includes Douglas fir/Ponderosa pine – Snowberry – Spirea (DS) and Douglas-fir - Water birch - Douglas maple (DM) ecosystems. These polygons are distributed as follows in the park:

- #80: DS and DM gully ecosystems that extend in the north/south direction and abuts the edge of the Magic Estates development;
- #97: DS ecosystem that extends in the north/south direction just north of Kathleen Lake;
- #126: DS ecosystem that extends in the north/south direction west of Kathleen Lake; and,
- #252: A DS ecosystem at the furthest northeast boundary of the park, within Knox Mountain East.

These ecosystems maintain a high diversity of mixed coniferous (fir and pine) and deciduous overstories, as well as a diverse shrub and forb understory. These ecosystems often have riparian vegetation and the pockets are typically high diversity areas for avian and mammalian species because of the increased vegetated diversity of the sites. The moist soils of these sites are particularly sensitive to disturbances of subsurface flows and any alterations present a considerable risk.

¹ Wildlife & Trees in British Columbia. BC Ministry of Forests and Range and Lone Pine Publishing. 2006.

2.3.6 *Sparsely Vegetated*

Sparsely vegetated sites in Knox Mountain Park are common and include habitats such as talus slopes and bedrock outcrops. There are six individual ecosystems grouped within the broad classification of sparsely vegetated including talus (TA), rock outcrop (RO), choke cherry - Bluebunch wheatgrass rocky bluff (CW), antelope Brush – Selaginella (SA), selaginella - Bluebunch wheatgrass rock outcrop (SB), Saskatoon - Mock orange Talus (SO). These sites are also extremely fragile, as it can take many years for plant development due to the dry nature of these sites.



Sparsely vegetated talus slope and rock outcrop in new parcels in Knox Mountain East

Rocky outcrops are often encrusted with a diversity of lichen species, which are adapted to the dry and nutrient poor nature of the sites. Coupled with this, these sites are also extremely important to reptile species as they typically provide critical security and denning habitat. Furthermore, sparsely vegetated sites with warm aspects provide important basking habitat for reptiles. Whereas ungulates such as deer rely on them in the winter, as they maintain minimal snow pack.

Sparsely vegetated sites are sensitive to anthropogenic disturbance as lichen species can be easily trampled. Sites that are vulnerable to anthropogenic disturbance include the rock outcrops immediately below the First Lookout (formerly known as the crown lookout) and those in close proximity to the Second Lookout. Both of these areas have been heavily trampled by foot traffic.

2.3.7 *Anthropogenic Sites*

There are five ecosystems grouped within the broad classification of anthropogenic sites and includes urban/suburban (UR), roads (RO), rural (RW), cutbank (CB) and exposed soils (ES). The primary anthropogenic sites in Knox Mountain West include the day use recreational area at the main entrance to the Park, the aparking lot southeast of the Second Lookout, the First Lookout, Paul's Tomb, and the pavilion and related structures at the Second Lookout. Although the levels and extents of disturbance at these sites are highly variable, they are generally considered primary destinations within the park, and they experience the most intensive recreational use.



An example of anthropogenic disturbance within the Kathleen Lake property.



View of cutbank ecosystem in new parcels in Knox Mountain West

The Kathleen Lake area has become a primary destination for park users since the last management plan update in 2011 and exhibits a high level of anthropogenic disturbance compared to the rest of the park. Ecoscape understands that a portion of this parcel was cleared for future development prior to being purchased by the City. Although it will likely be decades before the disturbance is no longer apparent, there have been significant gains in terms of re-establishment of vegetation and naturalization of the area.

Polygon 244 is within one of the new parcels added to Knox Mountain West and is comprised of a 100% cutbank ecosystem. The parcel additions to Knox Mountain West also include areas of exposed soils and weed infestations, considering their close proximity to an industrial area of the City.

Knox Mountain East is almost entirely natural in character, with the exception of a single location of anthropogenic development in the northwestern corner. Structures at this site include multiple water reservoirs and a cell phone monopole². Although the larger parcel has little anthropogenic development, there is evidence of unsanctioned activities including fire pits and unauthorized dumping.

In addition to individual development sites, anthropogenic effects are also felt throughout the park mainly through the proliferation of unsanctioned trails. In realizing efforts to protect and restore natural areas, Ecoscape has begun the fundamental exercise of identifying unsanctioned trails and has made recommendations for implementing an action plan that will successfully reduce the trail network (see Section 3.2).

² Figure 3 does not show this area as an anthropogenic site, since it is a smaller percentage of the TEM polygon, however its general location can be seen on the airphoto.

2.4 Flora

2.4.1 Potential for Rare Plant Species



Slender Hawksbeard (*Crepis atribarba* ssp. *atribarba*)

Photo Credit: © National Defence, Angela Knopp

A search of the BC Species and Ecosystems Explorer for Red/Blue-listed plants and/or Federally listed plants in cliff, conifer forest – dry, conifer forest- mesic, conifer forest – wet, grasslands, lake, marsh, old forest, pond/open water, riparian forest, rock/sparsely vegetation rock, urban/suburban habitats within the PPxh zone in the City of Kelowna results in eight (8) records (Appendix B) (BC CDC, 2022). Ecoscape understands that at least one of these rare plants has been previously documented within Knox Mountain

Park. Slender hawksbeard (*Crepis atribarba* ssp. *atribarba*), is a red-listed perennial herb in the Aster family that has a taproot, woody base and strap-shaped yellow flowers (E-Flora BC, 2010). Ecoscape is not aware of its current distribution within Knox Mountain Park; however, if this plant or other rare and endangered species are identified, then detailed mapping should be undertaken and appropriate mitigation measures employed to prevent encroachment and the loss of these species.

2.4.2 Presence of Non-native and Invasive Plants

A comprehensive invasive plant inventory has yet to be completed in Knox Mountain Park. In 2006 the City of Kelowna carried out an invasive plant inventory plan of areas impacted by the 2003 wildfires; however, Knox Mountain was not inventoried as apart of that assessment (Scott and Robbins, 2003). Detailed invasive plant inventories were beyond the scope of this environmental overview but are an important part of holistic parks management. Future inventories and mapping of invasive species should be undertaken as budgets allow.

In order to assess its ongoing effectiveness based on factual data rather than anecdotal evidence, the 2011 management plan outlined the need to establish an on-going monitoring program in the park in the form of an annual scorecard. The scorecard assessment has been conducted annually in June since 2012. Assessment parameters for measurement include: environmental condition criteria; vehicular traffic; frequency and

type of outdoor events; service requests and bylaw infractions. One component of the scorecard is a plant survey. The focus of the plant survey is to determine the relative abundance of native versus non-native species. Plant counts have been conducted annually in June since 2012 by a team of volunteers from the Central Okanagan Naturalists Club. There are five linear transects throughout the park where multiple plant plots are randomly placed along each transect to document native / non-native abundance.

Efforts to control pedestrian access have resulted in reestablishment of native vegetation at both the Apex and Front Face transects. Analysis done on the 2012-2017 plant data confirmed that some of the transects at the Apex have increased coverage of native species.

During field investigations for this assessment, Ecoscape documented the presence of several invasive plants and trees. Table 5 lists some of the common species that were encountered within the park boundaries. Invasive plants were most commonly noted at the interface of trails/roads, and within or adjacent to areas of disturbance.

Table 5. Invasive and Weedy Plant and Tree Species Documented Within Knox Mountain Park.	
Common Name	Scientific Name
Mustard	<i>Sisymbrium sp.</i>
Perennial Sow Thistle	<i>Sonchus arvensis</i>
Wild Buckwheat	<i>Polygonum convolvulus</i>
Common Dandelion	<i>Taraxacum officinale</i>
Sulphur Cinquefoil	<i>Potentilla recta</i>
Diffuse Knapweed	<i>Centaurea diffusa</i>
Spotted Knapweed	<i>Centaurea maculosa</i>
Dalmatian Toadflax	<i>Linaria genistifolia</i> ssp. <i>dalmatica</i>
Canada Thistle	<i>Cirsium arvense</i>
Bull Thistle	<i>Cirsium vulgare</i>
Great Mullein	<i>Verbascum thapsus</i>
Cheatgrass	<i>Bromus tectorum</i>
Whitetop	<i>Lepidium draba</i>
Tree of Heaven	<i>Ailanthus altissima</i>
Siberian Elm	<i>Ulmus pumila</i>



Disturbed hillside that was hydroseeded with crested wheatgrass



A non-hydroseeded portion of the slope that is overrun with invasive weeds

Within the Knox Mountain East there is a sizable slope that was likely cleared to facilitate development of the water reservoirs and associated roads. Most of the slope was hydroseeded with crested wheatgrass (first photo), and as a result there is very little weed establishment. However, in some of the smaller adjacent areas, no mitigative measures were undertaken and the resulting weed establishment is shown in the second photo. At least five (5) different weed species occur within this photo, and the area of weed establishment appears to be encroaching into the surrounding coniferous woodland. The use of a crested wheatgrass hydroseed could also be questioned given that it is not a native species. Furthermore, similar non-native associations were observed in the new parcels within Knox Mountain West with disturbed slopes adjacent to industrial development resulting in a dense establishment of whitetop, Siberian elm and tree of heaven, as well as evidence of seedlings crested wheatgrass. Within the frisbee golf area, there is a stand of planted Siberian Elm that is likely contributing to the spread of invasives within the Park and adjacent riparian habitats of Okanagan Lake.



View of Tree of Heaven encroaching upon grassland ecosystems in Knox Mountain West



View of Siberian Elm stand in Frisbee Golf area in Knox Mountain West

Areas of disturbance within parkland may be best mitigated with the use of a native grass seed mix, so that eventually the area may return to more natural conditions. Nevertheless, these photos clearly illustrate the benefit of hydroseed, whether native or not, to prevent the establishment of weeds.

2.5 Fauna

2.5.1 Wildlife Presence

The natural, relatively intact lands of Knox Mountain Park provide valuable habitat for a variety of native wildlife ranging from invertebrates to mammals. The interface of grassland, coniferous woodland and lacustrine ecosystems collectively provide a unique habitat mix that supports a diverse species group. Commonly encountered species include mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), yellow-bellied marmot (*Marmota flaviventris*), yellow-pine chipmunk (*Tamias amoenus*), Cooper's hawk (*Accipiter cooperii*), great blue heron (*Ardea Herodias*), great-horned owl (*Bubo virginianus*), and a variety of waterfowl and passerines. Less conspicuous species include reptiles such as Northern alligator lizard (*Elgaria coerulea principis*), Western skink (*Plestiodon skiltonianus*) common and terrestrial garter snakes (*Thamnophis sirtalis* and *Thamnophis elegans vagrans*, respectively), great basin gopher snake (*Pituophis catenifer deserticola*), Western Yellow-bellied racer (*Coluber constrictor*) and Western painted turtle (*Chrysemys picta*). Amphibians typically associated with lake and wetland features may include western toad (*Bufo boreas*), Pacific chorus frog (*Hyla regilla*), long-toed salamander (*Ambystoma macrodactylum*) and potentially the great basin spadefoot (*Spea intermontana*).



Great-horned Owl (*Bubo virginianus*) encountered in Knox Mountain East during 2021 field work.

Appendix C provides a fairly comprehensive listing of species including birds, mammals, amphibians and reptiles that are known to occur in cliff, conifer forest – dry, conifer forest-mesic, conifer forest – wet, grasslands, lake, marsh, old forest, pond/open water, riparian forest, rock/sparsely vegetation rock, urban/suburban habitats within the PPxh zone in the City of Kelowna³. The list also includes provincially listed invertebrates, but it is far short of a complete invertebrate listing. Given that the various habitats in Knox Mountain Park are

³ Although we have attempted to generate a comprehensive species list, it is likely that at least some species have been unintentionally excluded.

in good condition, it is likely that many of the species included in Appendix D may utilize the park for general living, feeding, reproduction, or as a migratory stopover.

2.5.2 Rare Wildlife Potential



Gopher Snake (*Pituophis catenifer deserticola*) in Knox Mountain Park

Habitats within Knox Mountain Park have the potential to support a variety of rare and/or endangered wildlife, ranging from invertebrates to mammals. To begin to ascertain the potential species, a search of the BC Species and Ecosystems Explorer was conducted for Red and Blue listed fauna associated with cliff, conifer forest – dry, conifer forest- mesic, conifer forest – wet, grasslands, lake, marsh, old forest, pond/open water, riparian forest, rock/sparsely vegetated rock, urban/suburban habitats within the

PPxh zone in the City of Kelowna (BC CDC, 2022). The search resulted in eighty-two (82) records that are displayed in Appendix D. Ecoscape then critically evaluated this list to further highlight a subset of the species that are most probable based on the specific ecosystems and habitats within the Park (Table 6).

Table 6. Red, Blue-listed and/or SARA listed Fauna Species most probable to occupy Knox Mountain Park.						
Group	Common Name	Scientific Name	Global Rank	Provincial rank	BC List	COSEWIC
Amphibian	Western Toad	<i>Anaxyrus boreas</i>	G4	S4	Yellow	Special Concern
	Great Basin Spadefoot	<i>Spea intermontana</i>	G5	S3	Blue	Threatened
Birds	Great Blue Heron, <i>Herodias</i> subspecies	<i>Ardea Herodias herodias</i>	G5T5	S3	Blue	
	American Bittern	<i>Botaurus lentiginosus</i>	G5	S3B, SNRN	Blue	
	Swainson's Hawk	<i>Buteo swainsoni</i>	G5	S2B	Red	
	Evening Grosbeak	<i>Coccothraustes vespertinus</i>	G5	S5	Yellow	Special Concern
	Olive-sided Flycatcher	<i>Contopus cooperi</i>	G4	S3S4B	Blue	Special Concern
	Horned Lark, <i>merrilli</i> subspecies	<i>Eremophila alpestris merrillie</i>	G5T4	S3	Blue	
	Barn Swallow	<i>Hirundo rustica</i>	G5	S3S4B	Blue	Special Concern

	California Gull	<i>Larus californicus</i>	G5	S2S3B	Blue	
	Lewis's Woodpecker	<i>Melanerpes lewis</i>	G4	S2S3B	Blue	Threatened
	Flammulated Owl	<i>Otus flammeolus</i>	G4	S3B	Blue	Special Concern
Invertebrates	Lance-tipped Darner	<i>Aeshna constricta</i>	G5	S2S3	Blue	
	Emma's Dancer	<i>Argia emma</i>	G5	S3S4	Blue	
	Vivid Dancer	<i>Argia vivida</i>	G5	S2S3	Blue	Special Concern
	Common Sootywing	<i>Pholisora catullus</i>	G5	S3	Blue	
Mammals	American Badger	<i>Taxidea taxus</i>	G5	S2	Red	Endangered
	Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	G4	S3S4	Blue	
	Western Small-footed Myotis	<i>Myotis ciliolabrum</i>	G5	S2S3	Blue	
	Little Brown Myotis	<i>Myotis lucifugus</i>	G3	S4	Yellow	Endangered
	Fringed Myotis	<i>Myotis thysanodes</i>	G4	S3	Blue	Data Deficient
	Western Harvest Mouse	<i>Reithrodontomys megalotis</i>	G5	S3	Blue	Endangered
Reptiles	Northern Rubber Boa	<i>Charina bottae</i>	G5	S4	Blue	Special Concern
	Western Painted Turtle – Intermountain - Rocky Mountain Population	<i>Chrysemys picta</i> pop. 2	G5T2T3Q	S3	Blue	Special Concern
	Western Yellow-bellied Racer, Mormon subspecies	<i>Coluber constrictor mormon</i>	G5	S2S3	Blue	Threatened
	Western Rattlesnake	<i>Crotalus oreganus</i>	G5	S2S#	Blue	Threatened
	Gopher Snake, deserticola subspecies	<i>Pituophis catenifer deserticola</i>	G5T5	S3	Blue	Threatened
	Western Skink	<i>Plestiodon skiltonianus</i>	G5	S3S4	Blue	Special Concern

1 Source: <http://www.env.gov.bc.ca/cdc/>

Yellow: Not at risk.

Blue: Of special concern (formerly vulnerable).

Red: Extirpated, endangered, or threatened.

2 Source: <https://www.cosewic.ca/index.php/en-ca/assessment-process/wildlife-species-assessment-process-categories-guidelines/status-categories.html>

Special Concern: A wildlife species that may become threatened or endangered because of a combination of biological characteristics and identified threats.

Endangered: A wildlife species facing imminent extirpation or extinction.

Threatened: A wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.

Data Deficient: A category that applies when the available information is insufficient (a) to resolve a wildlife species' eligibility for assessment or (b) to permit an assessment of the wildlife species' risk of extinction.

In addition to the information available on the CDC website, Ecoscape also attempted to gather recent rare species occurrences within the Park. Information was obtained through discussions with local experts, previous assessments and field inventories (Table 7).

Table 7. Rare and Endangered Species Occurrences in Knox Mountain Park.		
Common Name	Scientific Name	Observation/Comment
American Badger	<i>Taxidea taxus</i>	Based on Badger Recovery Team mapping, at least 3 individuals have been documented within close proximity to the Park (pers. com. Richard Weir)
Flammulated Owl	<i>Otus flammeolus</i>	An injured adult was rescued near the Pavilion Trail in the fall of 2006.
Great Basin Gopher Snake	<i>Pituophis catenifer deserticola</i>	Multiple young snakes were documented near the Apex in May of 2008.
Northern Rubber Boa	<i>Charina bottae</i>	Observed at the Park (pers. com., Mark Goddard).
Western Yellow-bellied Racer	<i>Coluber constrictor mormon</i>	Observed at the Park (pers. com., Mark Goddard).
Swainson's Hawk	<i>Buteo swainsoni</i>	Adults were observed soaring in the spring of 2009 and 2010 (Ecoscape).
Great Blue Heron	<i>Ardea Herodias herodias</i>	An individual observed at Kathleen Lake, summer of 2010 (Ecoscape)
Barn Swallow	<i>Hirundo rustica</i>	Multiple flying over head in proximity of the Okanagan Lake foreshore (Ecoscape).

2.6 Environmental Sensitivity

Numerous factors were considered when determining the environmental sensitivity of the various polygons within the Park. Using a suitability index, ecosystem community polygons were stratified and evaluated in terms of habitat/ecosystem rarity, wildlife habitat suitability, rare and endangered species occurrence potential, functional condition (e.g., ecological connectivity, level of disturbance, seral stage, structural stage etc.) and fragility. Four species at risk, including Flammulated Owl, Great Basin Gopher Snake, Lewis' Woodpecker and Swainson's Hawk were selected for use in the sensitivity index. Each species is provincially listed, is generally recognized as an umbrella species, and collectively, they utilize all broad ecological communities that occur within Knox Mountain Park (see Appendix E for species accounts). Discrete ecosystems were given a rating score based on the above criteria, and then each TEM polygon was weighted based on the percent composition of respective ecosystems within each polygon, thus deriving environmental sensitivity class (Very High, High, Moderate or Low) for each polygon (see Appendix F for the suitability matrix).

Vegetation community polygons within Knox Mountain Park were grouped into one of four Environmental Sensitivity classes: Very High, High, Moderate and Low. The connotation of each class is detailed below:

- **Very High** - These areas contain significant, intact vegetation and wildlife characteristics representing a diverse range of sensitive habitat. They substantially contribute to the overall function and connectivity of the Park and conservation is the primary objective for these areas.
- **High** – Ecosystems of High environmental sensitivity also contribute to the overall diversity and contiguous nature of the surrounding landscape. In many cases, the ecosystems and environmental features lumped into this category are as sensitive as those in the Very High classification, however they are downgraded because they do not provide the necessary habitats for the selected Species At Risk. Park development should generally avoid High sensitivity areas, however if encroachment does occur, significant portions of these habitats must be retained and in no cases should High sensitivity features (e.g., Kathleen Lake) be eliminated or heavily encroached upon. Furthermore, encroachments into these areas should be compensated for by restoration in other areas to work towards achieving a no net loss of Very High and High value habitats.
- **Moderate** – Ecosystems of moderate significance represent disturbed habitats or fragmented features. Moderate areas contribute to the diversity of the landscape, however their condition and adjacency may limit significant function.
- **Low** - These areas contribute little to no value with regard to habitat diversity and have limited potential for supporting significant wildlife. Park development should be focused to these areas before consideration is given to higher sensitivity ecosystems.

Generally, the polygons in the Knox Mountain Park were classified as having Excellent or Good landscape context. Because the area is designated as park, there is a level of certainty that limits fragmentation and anthropogenic influence. The Park, as it is located within the City core is limited with regards to landscape condition at a broad scale. Nevertheless, in comparison with other local ecosystems, those within the Park fair well, given the relative size of the protected area.

The condition of ecosystems within the Park included Fair, Good and Excellent, with most of the area classified as Good and Excellent condition. Significant anthropogenic disturbances are generally minimal when compared to conditions outside the Park boundary. Coverage of invasive plant species is low to moderate depending on the polygon being assessed. Invasive plants are, for the most part, limited to areas adjacent to park boundaries / development and existing trails. Although, recent forest harvesting due to

mountain beetle has also realized increases in weed invasions due to more wide-scale ground disturbance.

Given the favourable ratings for both landscape context and condition, in combination with the other assessed factors, it is not surprising that the majority of Knox Mountain Park is considered to have Very High and High environmental sensitivity (see Figure 4). Table 8 details the environmental sensitivity by area, percent of total and by the number of polygons included in each sensitivity class.

Table 8. Percent Composition of Environmentally Sensitive Areas within Knox Mountain Park.			
Environmental Sensitivity	Area (hectares)	Percentage (%)	Total Polygons
Very High	171.34	44.4	108
High	181.92	47.1	106
Moderate	30.15	7.8	37
Low	2.88	0.7	10

Almost ninety-two percent of the Park is classified as having either High or Very High environmental sensitivity. Steep sloped mature coniferous woodland and open grassland ecosystems account for much of the Very High classification. Other areas of sensitivity include the sparsely vegetated rock outcrops, Kathleen Lake, and moisture receiving sites.

Moderate and Low sensitivity areas account for only about 9% of the Park. These areas typically consist of anthropogenically influenced sites (e.g., the entrance to the park) and areas with previous disturbance.

3.0 CONSIDERATIONS FOR THE UPDATED PARK MANAGEMENT PLAN

3.1 Educational Opportunity

Knox Mountain Park occurs within the City of Kelowna and is immediately adjacent to the downtown core. Because of its central location, it is a highly accessible urban park that is visited by a variety of people with varying interests and knowledge of the surrounding natural lands. Because of its adjacency, it is probable that the park attracts more people with a limited knowledge of the local natural world, compared with other parks that are located further from the city. For this reason, Knox Mountain Park has the potential to act



Signage at the interface of Knox Mountain Park and Magic Estates

as an educational opportunity for many, but it is not fully taken advantage of due to a lack of educational infrastructure, personnel, and signage.

Currently, educational opportunities within the park are limited to signage posted near the Second Lookout in the vicinity of the pavilion that highlights some of the local plant and animal species, as well as signage that pinpoints the park boundary and suggests appropriate activities within.

Ecoscape strongly encourages an expansion of this type of educational material to more effectively promote and communicate the uniqueness of Knox Mountain Park including the many rare ecosystems and wildlife, indigenous culture, history, language and values, the reasons to protect the park, and specifically the tools in which the public can participate in its protection. In addition to the expansion of the general public's knowledge of our local environment, an effective educational program will work to minimize existing challenges currently faced within the park. Challenges such as unsanctioned trail development, unwarranted motorized access, and human/wildlife conflict will undoubtedly be more easily overcome by expanding the educational system within the park.

Signage is one of the most economical ways to educate the park user. Ecoscape identifies the following areas where additional signage would be beneficial:

- There is a need for signage at all park boundaries where sanctioned trails intersect the boundary. Especially where there is the potential for driving access from private lands. Signage at these locations should identify the park boundary, permitted activities and resultant fines for not adhering to permitted activities (e.g., no motorized vehicles). This is especially applicable with newly acquired lands associated with Knox Mountain East, where it is challenging for park users to determine when they are within the Park.
- Sensitive Park zones and permitted uses (see Section 3.3) should be identified with signage at highly accessible locations where there is potential for unwarranted access/activities.
- A large sign should be erected at the park entrance that welcomes park users and clearly defines the rules of the park. The existing information kiosk at the entrance to the park is out of date and should be updated.

- Signage could also be effective to inform the park user of trails that are being decommissioned or to direct the user to more appropriate locations.
- Finally, signage that educates the park user of the unique and rare wildlife, indigenous culture, history, language and values, vegetation and significant landforms that occur within the park.

In addition to signage, Knox Mountain Park would greatly benefit from a more formal educational facility such as an interpretive centre or minimally an educational kiosk. This facility should be located at the entrance to the Park. Placement of an educational facility at this location will target the majority of users prior to them entering the natural areas of the park, and it is an excellent venue to inform users of current park conditions (e.g., areas closed for restoration works, season for snake movement).

The inclusion of an actual interpretative centre will allow for additional educational opportunities such as school programs, facilitating community participation in park restoration and other enhancement events, establishing annual community events, and development of interactive educational programs. These types of programs are very effective at targeting existing park users, but are also important educational tools to connect with people who do not normally frequent natural parks.



Extensive dumping within the Knox Mountain East

Environmental educational initiatives could be centered on the following ideas:

- Kokanee Shore Spawning – The Paul's Tomb trail in Knox Mountain West is an excellent location to safely observe shore spawning kokanee without disrupting their natural behavior.
- Blooming of the arrow-leaved balsamroot (*Balsamorhiza sagittata*) (city official flower) – Knox Mountain Park is likely the best location within the city to appreciate this spring flower. Activities could include professional photos with the blooming hillsides as the background, kids activities and challenges, etc.
- A Grassland Conservation Day - An emphasis on the rare and unique grasslands in Knox Mountain Park with special attention brought to the extremely rare Big Sage – Bluebunch Wheatgrass (SW) ecosystem.

- Seasonal Interpretive Nature Walks – Local naturalist groups, summer students or similar, could develop and run seasonal nature walks at scheduled times throughout the year for the general public to learn more about the diverse flora and fauna in the Park.

In Knox Mountain East, the educational requirements are different given that the parcel is less known as a park resource and has a low number of visitors compared to Knox Mountain West. During field inventories, Ecoscape encountered at least three fire pits, one area of extensive garbage dumping, a higher incidence of off leash dogs, and several biking obstacle courses. Furthermore, the additions to Knox Mountain East and West also show signs of human disturbance, including bike obstacle courses, fire pits, forts, garbage and unsanctioned trails. Enhanced oversight and a management presence would likely reduce these types of activities. In addition, boundary signage and fencing at strategic locations are critical to prevent unwarranted access and sordid activities.

3.2 Access Management

One of the predominant recreational concerns in the Park is the increasing number and ever widening trails. Often new trails result from park users taking shortcuts, rather than staying on designated routes. The shortcuts then get established, and it becomes difficult to discern between sanctioned and unsanctioned trails. The proliferation of trails between the park entrance and the First Lookout is the



An example of redundant trails within Knox Mountain Park

most concerning, because of the steep terrain, the sensitivity of the ecosystem and the extensive trail expansion that has occurred in this area.

In addition to shortcut trails for hikers, this south facing slope has also become a favorite route for downhill bikers. Downhill biking is a much more intensive form of recreation that can generate soft soils, loss of vegetation, creation of narrow channels and erosion potential. Furthermore, Knox Mountain Drive facilitates the use of vehicles to shuttle mountain bikers to the Second Lookout; enabling a higher frequency of riding.

There are several concerns with regards to ever-expanding trail networks within Knox Mountain Park.

- Trail development often leads to the establishment of introduced and invasive plants. As the density of trails expand over relatively small areas, the individual plant invasions can meld together; completely displacing the native plant community.
- Trails, especially on steep sloped areas, act to facilitate the movement of water and can become hotspots for downcutting and erosion.
- Any trail crossing or road upgrades that would require a culvert (i.e., gully, stream), should be designed in accordance with the Guidelines for amphibian and reptile conservation during road building and management activities in British Columbia guidance document (BC MOE, 2020).
- The addition of new trails increases the probability of animal-human interactions, and possible collisions between passing wildlife and trail users.
- Trails can also negatively impact local species, often times resulting in a reduction of species richness and abundance. As an example, the Blue-listed Great Blue Heron is considered vulnerable because of their sensitivity to disturbance when nesting (Wildlife and Trees in BC, 2006). This species may avoid an otherwise optimal nesting site, due to the routine disturbance that originates from an adjacent trail. This example underlies the importance of ensuring that trails do not encroach upon critical wildlife features such as wetlands, significant wildlife trees, etc.



Superfluous downhill bike trails



Superfluous trails in newly acquired parcel in Knox Mountain East

In the 2011 management plan, the cumulative length of trails within just Knox Mountain West, approached 58,022 m, or approximately 205 m of trail for every hectare of park. Of this total trail length, 42,317 m (or 73%) was unsanctioned. A recent shapefile of the sanctioned trails within Knox Mountain Park was obtained from the City of Kelowna. Ecoscape then greatly expanded the database of trails by mapping unsanctioned routes using a hand-held GPS and recent ortho-imagery.

The cumulative length of trails within the entire Park is just over 75,000 m (including Knox Mountain Road), or approximately 196 m of trail for every hectare of park. A breakdown of sanctioned trails, unsanctioned trails, rehabilitated trails and roads within Knox Mountain East and Knox Mountain West is provided in Table 9. The various types of sanctioned trails are displayed in Figure 5.

Table 9. Existing Trail Network in Knox Mountain Park.			
Type of Trail	Knox Mountain West – Length (m)	Knox Mountain East – Length (m)	Total Knox Mountain Park – Length (m)
Sanctioned	24,428	4,342	28,770
Unsanctioned	31,489	3,373	34,862
Rehabilitated	7,698	0	7,698
Road	4,077	477	4,554
Total	67,692	8,192	75,884

Since 2011, the trail network within Knox Mountain West has increased by approximately 17% overall; yet, the total unsanctioned trail network in Knox Mountain West has decreased by approximately 26%. However, of the existing total trail network across the entire Park, approximately 46% is unsanctioned. Although there has been success in decommissioning previously unsanctioned trails in Knox Mountain West, nearly 50% of all trails throughout the Park are unsanctioned, which indicates that **unwarranted trail development is most likely the single greatest environmental issue within Knox Mountain Park and requires ongoing evaluation and management.**

To begin to address the ever-expanding trail network, Ecoscape recommends that currently unsanctioned trails either be decommissioned and rehabilitated or sanctioned. Criteria that can be utilized to identify trails suitable for decommissioning and rehabilitation include:

- Shortcut legs that occur across steep slopes;
- Smaller, unsanctioned trails that have the same end destination as an existing sanctioned trail;
- Trails that encroach on critical wildlife features (e.g., Kathleen Lake); and
- Any trails that are generally redundant.

The successful decommissioning of unsanctioned trails throughout the Park will be a very slow and difficult process that will require ample resources and personnel. Minimum elements of decommissioning will include educational signage, temporary split rail fencing or access barriers, a regular enforcement component and a frequent review of works to evaluate progress and to make changes as necessary.

The above criteria used to determine the trails for decommissioning are valid considerations; however, the criteria are not likely comprehensive. For example, there may very well be additional factors such as existing right-of-ways, maintenance route requirements, etc. **Therefore, a comprehensive access management plan should be developed for Knox Mountain Park to identify all relevant access issues, target a preferred trail network, and to implement an all-inclusive action plan to more effectively manage access throughout the Park. As part of the comprehensive access management plan, we strongly recommend that the trail network be reevaluated every three to five years to ensure any additional unsanctioned trails are caught early, before they become more established by park users.**

Ecoscape makes the following recommendations that could be incorporated into an access management plan or within the upcoming master plan.

- **Additional City bylaws should be developed that will prevent the use of unsanctioned trails and facilitate enforcement.**
- **The steep sloped areas between the park entrance and the second lookout is the priority location for decommissioning trails.** As previously discussed, this south facing slope maintains a rare grassland that is particularly sensitive to disturbance. In addition, trail development across the extreme grades enhances erosion potential.
- **In order to prevent downhill biking/hiking conflicts and the widening of multiple trails, a single challenging downhill biking route that extends from the Second Lookout to the entrance of the park has been sanctioned and designated for downhill biking only.** Down slope of the second lookout, this downhill bike trail has experienced significant widening. The extension of a split rail fence in this location should help to minimize the footprint. In other locations downslope of Knox Mountain Drive, the south facing slope now has multiple braided trails and short-cuts, that have developed over time. Furthermore, numerous other trails within the Park are regularly used by mountain bikers. Regular maintenance of these trails is imperative to ensure a minimal footprint, reduce impacts to wildlife and to prevent erosion potential in more ecologically sensitive areas within the Park. Ecoscape recommends that City staff and representatives of Mountain Bikers of the Central Okanagan (MTBCO) walk the regularly used mountain bike trails annually to ensure maintenance standards are met.
- **Within Knox Mountain East, Ecoscape documented at least three steep downhill mountain bike trails that originate from the peaks and extend downward to the valley bottom. These trails should be a priority for decommissioning, or a designated mountain bike loop trail should be established, with all other ad hoc**

trails decommissioned. Knox Mountain East is regularly used for mountain biking and designated trails with signage is imperative.

- **In addition to decommissioning trails, it is also critical to prevent the establishment of newly developed unsanctioned trails.** To successfully implement such works, it is essential to be highly familiar with the existing trail network and to regularly survey and monitor recreational activities/points of new trail development prior to their establishment. Due to personnel and resource limitations, it will likely be difficult to implement such a program across the entire park. The highest priority locations to prevent newly developed trails are steep sloped areas that have inherent erosion concerns and also within and adjacent to important ecological features that are sensitive and prone to disturbance (e.g., wetlands).

3.3 Proposed Park Use / Zoning Concept

As previously discussed, within Knox Mountain Park there are several broad ecosystem classifications with varying degrees of sensitivity, ecological importance and existing disturbance. Given this variability, the park should be managed in such a way that provides a greater protection for rare and sensitive ecosystems and also focuses recreational activities to less sensitive locations or areas that already have an existing level of disturbance. To achieve these goals, Ecoscape recommends the implementation of park zones based on the presence of the different ecosystems and their sensitivity to disturbance. The recommended park zones are as follows: 1) Conservation; 2) Nature; 3) Access; and 4) Recreation (Figure 6).

1) Conservation (CON) – Ecoscape recommends that “Conservation” zones be designated across representative areas of sensitive ecosystems of Knox Mountain Park. This zone is intended to protect provincially significant natural ecosystems for their intrinsic value, their contribution to the Park’s biodiversity and for long-term public appreciation. It specifically targets the Bluebunch Wheatgrass – Arrow-leaved Balsamroot grassland, Ponderosa Pine Parkland, Interior Douglas-fir – Pinegrass Woodland, Kathleen Lake, and the critically valued kokanee spawning shoreline of Okanagan Lake. In general, Conservation areas are considered highly fragile and sensitive to human disturbance and hence, the priority is protection/conservation. By minimizing recreational activities from the Conservation zone, ecosystems will remain in tact and species susceptible to disturbance (i.e., owls) will have better opportunities for general living and breeding. The Park Zoning Panel depicts five concept Conservation zones:

Knox Mountain West

- CON-1: South and Southwest Slopes Grasslands
- CON-2: Northwest Slopes Coniferous Woodlands

- CON-3: Kathleen Lake
- CON-4: Kokanee Spawning Area along Okanagan Lake

Knox Mountain East

- CON-5: Grassland plateaus and Open Ponderosa Pine Woodland.

The following general recommendations pertain to the Conservation Zone.

- **Any unsanctioned trails within this zone should be immediately decommissioned. Where unsanctioned access has degraded the natural condition, restoration efforts in conjunction with future access management should be implemented.**
- Native vegetation planting may be useful to speed up the process of trail decommissioning and to naturalize areas of enhanced disturbance.
- The Conservation zone should be evaluated for non-native and invasive plant species, and a weed management strategy should be implemented.
- **In order to prevent future site degradation, no additional park development should be permitted. However, sanctioning of existing trails is permitted but should be minimized to the greatest extent possible.**
- Mature trees, including those that are dead and/or decaying (snags) should be left standing, unless they pose an immediate public safety hazard.
- **There are only fragments of sanctioned trails that intersect the Conservation Zones (in CON-5 in Knox Mountain East, and a couple intersections with CON-1 in Knox Mountain West at the northwest corner of the park, near Paul's Tomb), and thus there should be little to no human activities within this zone.**
- **Where the Conservation area abuts other high use zones, spilt rail fencing with appropriate signage should be erected to delineate the Conservation zone and to discourage unwarranted access.**
- Habitat enhancement opportunities (i.e., construction of nesting platforms, nest boxes, etc.) for rare and endangered species should be undertaken. Kathleen Lake is the priority location for habitat enhancements.
- The Conservation area should be monitored annually to evaluate any enhancement progress and to identify areas at risk or that are in need of improvement.

2) Nature (NA) – This zone is inclusive of the remaining open coniferous woodland and other natural landscapes that exist within the Park. Minimal development is permitted, but

should be limited to the existing gazebos located at the First and Second Lookouts, signage necessary for route identification, and minimal interpretative facilities to support lower intensity recreational. Depending on the condition of individual sites, portions of the Nature zone should be temporarily closed off from park users to facilitate restoration activities and to decommission trails. The Park Zoning panel illustrates three concept Nature zones:

- **NA-1:** Due to the relatively steep nature of NA-1 zones, the permitted use is hiking on narrow sanctioned trails only. There are numerous, unsanctioned redundant trails within NA-1 zones that are currently utilized, but should be decommissioned.
- **NA-2:** Mixed low-intensity use: Hiking and cross-country biking on sanctioned trails should be permitted with this zone. Generally, NA-2 zones are less steep with wider trails to facilitate both forms of recreation. **Nevertheless, the NA-2 zone occurs directly adjacent to a Conservation zone (Kathleen Lake) and appropriate signage and split rail fencing should be erected to prevent recreationalists from encroaching into this sensitive ecological feature.**
- **NA-3a-c:** This zone is inclusive of sites that are either in need of immediate restoration or should be closely monitored to ensure restoration efforts previously completed are not lost. It includes the steep south facing slope near the park entrance, including the newly added south facing parcels in Knox Mountain West disturbed by invasives, exposed soils and cutbanks (NA-3a). NA-3b includes the area downslope of the second lookout, where restoration works are needed to narrow the downhill mountain bike trail (Apex Trail), and the isolated discharge basin (wetland) south of the Second Lookout (NA-3c) where an asphalt parking lot could be eliminated. Since 2011, split rail fencing was installed along trails south of both the First and Second Lookouts and was generally successful in rehabilitating trails and limiting new off trail disturbances consequently, reducing the spread of invasives allowing natives species to reestablish and flourish. The south facing slopes are deemed the highest priority sites for decommissioning unsanctioned trails and preventing any reversal of previous restoration efforts. It is recommended that additional split rail fencing be installed at the First Lookout, especially considering foot traffic in this area is anticipated to increase during the two-year vehicle access trial period. With concern to the newly added south facing parcels to Knox Mountain West, **given the level of restoration necessary, it is recommended that the entire hillside east of Jones Street within the NA-3a zone be excluded from recreational use until measures are put in place to discourage unsanctioned trail use and to allow the recovery of native vegetation. A comprehensive**

invasive species management plan / restoration plan should be developed for this area (see Section 3.6).

Ecoscape makes the following recommendations pertaining to the Nature zone:

- **The existing trail network within the Nature zones should be critically evaluated and reduced where possible.**
- Given the current density of trails, additional trail development is not encouraged.
- Critical wildlife habitat, specifically wildlife trees, should be retained whenever possible. The presence of these features ought to be considered when evaluating trails for decommissioning and if any new trails are to be designed. Ideally trails should avoid higher risk areas adjacent to mature trees with high wildlife value (e.g., potential nest cavities, and perches) to mitigate the need for hazard tree management.
- Where existing sanctioned trails bisect areas deemed high risk with respect to hazard trees (notably mature pine and fir), options should be considered to realign portions of trails to avoid the need for tree removal or management practices that may otherwise have high impacts – especially if trees are providing important nest cavities and roosts for species at risk.
- All low impact, human activities (walking/hiking/cross country biking) should be restricted to sanctioned trails only.
- Signage should be posted to encourage proper use.

3) Access (AC) - This zone will act as a staging area to service the remaining portions of the park. Existing development is limited to roads (dirt and paved), small parking lots and may also be inclusive of infrastructure (e.g., water reservoirs). The Park Zoning panel shows the following concept Access zones:

- **AC-1: Knox Mountain Drive** extending from the park entrance to the Second Lookout.

- **AC-2: Knox Mountain East Access Roads** – Because there is currently no formal access for vehicles within Knox Mountain East, Ecoscape has delineated access routes based on already established dirt roads that traverse the park in both the north/south and east/west directions. These existing routes provide sufficient access for park maintenance without creating additional disturbance. Within this AC-2 zone are also two water reservoirs and a monopole for cellular coverage.



North/south access route on the western edge of Knox Mountain East

- **AC-3: Maintenance Access Roads/Infrastructure** – Includes dirt and paved access roads to water reservoirs in Knox Mountain West. The areas of infrastructure and associated disturbance (e.g., water reservoirs) are also included.

4) Recreation (REC) and Points of Interest – The sites pinpointed within this zone are currently experiencing the most intensive recreational use. **Future recreational development and expansion such as frisbee golf, off leash dog parks, playgrounds, etc. should target the Recreation zone, prior to the consideration of other park zones.** In addition to the recreation zone, there are several other points of interest that also attract numerous park users. Below we make recommendations to reduce the environmental impact of park users at these sites.

Recreation Zones

- **REC-1: Dayuse Parkland at Park's Entrance (Knox Mountain West)** – Much of this area is turfed and therefore it is optimal for more intensive types of recreation. Existing activities include tennis and disk golf.

Points of Interest

- **First Lookout:** The First Lookout is a popular destination for park users that access the park via vehicle on Knox Mountain Drive. There are parking stalls at this location, and it also acts as a starting point for several popular trails (e.g., trail to Paul's Tomb). The following are recommendations to lessen the impact of park users at this location:
 - The numerous unsanctioned trails extending down slope from the first lookout should be decommissioned.

- Signage should be erected that directs the park user to the appropriate sanctioned route.
 - Similar to the Second Lookout, much of this area consists of sparsely vegetated rocky outcrops. Currently, park users are sprawling across the entire area, rather than using a single route. **Split rail fencing should be erected to prevent access to these sensitive features and culturally significant species.**
 - Down slope of the rocky outcrops, Ecoscape encountered a substantial amount of garbage (e.g., broken beer bottles). Signage should be posted to educate the park user of appropriate activities and a sufficient number of garbage cans should be located at this location.
- **Second Lookout:** The Second Lookout is located at the apex. The Second Lookout has been accessible by road previously, but a Council resolution in the Fall of 2021 determined that vehicle access would be restricted to the First Lookout for a two-year trial period. Destinations in the general area include the pavilion and gazebo where there are excellent views of the surrounding landscape. The following are recommendations to lessen the impact of park users at this location:
 - Due to the sparsely vegetated nature of the apex, park users tend to sprawl across the entire area rather than using a designated trail. A single trail alignment has been selected and delineated with fencing to prevent unwarranted access to the remaining parts of the Second Lookout. This minimal fencing effort has resulted in vegetation re-establishment and a healthier ecosystem. Similar fencing should be undertaken at other sparsely vegetated sites where there are existing trails.
 - The downhill mountain bike trail, which starts near the Second Lookout, has widened over time and is now the width of a road. This trail should be narrowed by extending the split rail fencing further down slope.
 - Several rare juvenile gopher snakes have been documented in the vicinity of the apex. Given the number of park users that frequent this location, it is important to provide the users with educational materials that direct appropriate behavior if a snake is encountered.

- **Paul's Tomb:** Paul's Tomb is located in the remote north western corner of the park and is also a favourite destination of park users. This site is particularly unique because it is surrounded by two Conservation zones. The sensitive Kokanee Red and Black Zones of Okanagan Lake are immediately west of Paul's Tomb; and it is the only accessible portion of the Okanagan Lake foreshore from Knox Mountain Park. The lake accessibility is likely the main attractant for park users (especially for those people and dogs who like to swim). This same stretch of foreshore provides critical habitat for kokanee shore spawning and thus there must be a balance between recreational activities and the natural state of the foreshore. The following are recommendations to lessen the impact of park users at this location:
 - The natural state of the larger area surrounding Paul's Tomb has diminished over time with unsanctioned trail development, commonly encountered off leash dogs, and the proliferation of invasive plants. Similar to the other points of interest, signage, decommissioning of unsanctioned trails, and split rail fencing will be instrumental to lessen the environmental impact.
 - Signage should be erected to remind park users that their dogs must be leashed and that this is not an off-leash dog beach. Furthermore, **the signage should indicate that this is a vital Kokanee spawning area and that there is to be no in water use by Park users between October 1st and May 31st to ensure the protection of Kokanee eggs. Kokanee are a Federally protected fish and any harmful alteration, disruption or destruction of fish or fish habitat would be in contravention of the *Federal Fisheries Act*.**
 - Conservation zone signage should be posted at the interface of both CON-2 and CON-4 zones that discourages entry.
 - Invasive plant monitoring and removal should be undertaken in the Paul's Tomb area.
 - Sanctioned access routes (trails) within the Paul's tomb day use area should be better defined using woodchips or gravel to delineate preferred walking paths.

3.4 Edge Effects

Forest edge is the area where one ecosystem type meets another (e.g., where a forest meets a meadow, boundary between a harvested area and old-growth forest, or a gap in the forest canopy). Edge effects include increased rates of predation and competition on the existing flora and fauna from exotic animals (cats, starlings) and plants (weeds in general) that are associated with the modified habitat (Andren & Anglestam, 1988; Wilcove, 1985; Barratt, 1995; Pauchard and Alaback 2004). Reflected heat from asphalt can lead to drying of microclimate conditions. Often, there is a difference in microclimate conditions (such as temperature, humidity, light, snow/moisture accumulation, and wind) that can penetrate 100-200 metres from an edge into the intact forest. Changes to moisture regimes, such as increased runoff from paved areas, and localized climate resulting from differences in land use (development) can also affect the vegetation composition of forest edges (Broszofski et al., 1997).

Edge effects are currently being felt at both the micro- and macro-scale. Within the Park, numerous redundant trails bisect natural ecosystems and create edge effects within internal core areas of natural habitats. A reduction of the trail network would lessen these edge effects and may improve species utilization and overall biodiversity.

At the macro-scale, Knox Mountain Park has limited connections to other natural lands. The urban footprint continues to expand around Knox Mountain Park; with ongoing development including: the build out of the Wilden subdivision near the northern edge of the Knox Mountain East; the build out of the High Point subdivision on the south side of the Knox Mountain West; build out of the Shearwater development on the northern edge of Knox Mountain West, and; several planned multifamily developments along Clifton Road.

With the completion of these planned subdivisions, the parcels of Knox Mountain Park will effectively become islands of natural land surrounded by urbanization. **One way to lessen the effect is to at least establish a natural connection for movement between the parcels.** The recently added parcels to Knox Mountain East extends the Park north and west in a relatively undisturbed coniferous woodland habitat. Any east-west connection of the Park parcels would be somewhat limited given that Clifton Road runs in the north/south direction along the entirety of the park boundaries and effectively separates the parcels. **Nevertheless, it would still be beneficial to connect the Park parcels through further acquisition of land that would be designated as park.** A forested connection to Clifton Road would likely encourage the safe movement of larger wildlife during periods of reduced road use (e.g., night time). If the City of Kelowna is successful in connecting Knox Mountain West and Knox Mountain East, then other considerations should include the establishment of safe movement corridors for slower moving wildlife (i.e., box culverts with directional fencing). **Land acquisition in the general vicinity of Blair Pond may be the most optimal for several reasons.** First, there is already existing park land adjacent to the pond that could

be incorporated into the overall connection. Second, Blair Pond is an additional hotspot for species richness; maintaining species such as the Blue-listed Western Painted Turtle (*Chrysemys picta bellii*) (Hawes and Bekhuys, 2002). The painted turtle is known to migrate between ponds with successful overland homing distances of up to 3 km (COSEWIC, 2006). Therefore, an adequate reptile crossing similar to that which has been recommended within the Wilden Development (Olson and Hawes, 2008), may be effective at this location to facilitate migration of Western Painted Turtle between Blair Pond and Kathleen Lake.

3.5 Human-Wildlife Conflict

Human-wildlife conflict is defined as any interaction between wildlife and humans which causes harm, whether it's to the human, the wild animal, or property (i.e., vehicles). In the case of Knox Mountain Park, harm is most commonly felt by wildlife, with recurrent interactions felt from humans, domestic pets and vehicles.

Although the City of Kelowna has a leash law in Knox Mountain Park, Ecoscape commonly encountered unleashed dogs in the more remote forested areas of the park and especially within Knox Mountain East. Many of the pet owners live in adjacent neighborhoods and let their dogs run off leash once entering the less traveled parts of the park. Unleashed dogs are also regularly encountered near Paul's Tomb where dog owners often allow dogs to fetch sticks from Okanagan Lake. From an ecological standpoint, dog-wildlife interactions are the biggest concern regarding off leash dogs. Documented interactions include off-leash domestic dogs chasing deer causing injury and death, off-leash domestic dogs attacking deer resulting in injury or death, and off-leash dogs entering wetlands and chasing waterfowl and disrupting avian nest sites specifically ground nesting sites.



The remains of a Great Basin gopher snake.



An injured fawn that was apparently struck by a vehicle on Knox Mountain Drive in June 2009

Off-leash domestic dogs are not the only domestic pet that negatively impacts wildlife in the park; outdoor cats also roam and hunt within the Park boundaries. Cats that are either permitted to roam outside or feral cats are estimated to kill between 105-348 million birds and destroy 2 million bird nests in Canada every year. Cat predation is the largest single source of human-caused mortality of mammals and birds in North America, with free roaming cats having predation rates from 14-100 prey items each year and feral cats have a significantly greater predation rate. Not only do cats prey on birds, but also small mammals and herptiles. The most effective stewardship practices to mitigate cat predation is to promote keeping cats indoors and spaying and neutering (Pearson et al., 2016).

Human-wildlife conflicts have also been documented on Knox Mountain Drive as a result of vehicles. Wildlife most at risk from vehicles include deer and several species of reptiles, most of which are rare or endangered. Vehicle usage data for Knox Mountain Drive including volume and average speed of traffic has been collected and is available for analysis. In November 2021, City Council voted to restrict vehicle access to the First Lookout only for a two-year trial period following feedback from the community from a public survey. Wildlife are most active during the cooler parts of the day, so wildlife would best benefit from road closures during the am (e.g. until 10 am) and in the late afternoons (e.g. after 4 pm). As such, vehicles are only permitted to use the road between noon and 8 pm daily. It was found that during the pandemic, daily use of the road by walkers, hikers and cyclists increased by more than 55% during the week and 63% on the weekends, and as such, maintaining vehicular access to the Second Lookout was also a public safety risk.

Finally, Ecoscape is aware of some unsubstantiated evidence of direct human-wildlife conflict as a result of interactions between people and snakes. Many people fear snakes and therefore snakes are often persecuted by humans. Given the imperiled state of many of BC's reptiles, it is critical that parks such as Knox Mountain are safe places for reptiles.

In order to minimize human-wildlife conflict, Ecoscape makes the following recommendations:

- **Ecoscape recommends the development of a comprehensive program to address off-leash dogs. The program would include the following main components:**
 - **Signage that cites the leash law should be posted at all entry points into the park** from adjacent residential subdivisions, including Magic Estates, Glenmore, Wilden, High Point and Shearwater developments.
 - **Ecoscape understands that owners of pets that come into conflict with a wild animal are liable for a \$345 fine.** However, off leash activities may be more effectively curbed if pet owners are more regularly fined when encountered with off leash pets, rather than waiting for a conflict to occur. **Therefore, bylaw enforcement will be essential to the success of the program.**

- **Education is a key element in reducing human-wildlife conflict.** Educational materials should be distributed at the kiosk at the park entrance to inform park users of appropriate behavior when encountering wildlife and public awareness should be promoted throughout the City. Furthermore, educational/interpretive signage should be erected at high-risk areas (i.e., Paul's Tomb, Kathleen Lake, First and Second Lookouts) of the impacts off-leash dogs can have on nesting birds and small mammals as to inform and discourage Park users from letting their dogs off leash. The signage should also indicate disturbing wildlife is illegal in BC, particularly actively nesting birds (i.e., *Wildlife Act*). Human-wildlife conflict is most likely to occur in late spring/early summer during dispersal and nesting seasons. Educational measures and bylaw enforcement should be ramped up during this period.
- **The two-year trail period on restricting vehicular access to the Second Lookout should be closely monitored to determine how a reduction in vehicle traffic impacts human-wildlife interactions. Following the trial period, vehicle usage data for Knox Mountain Drive should be critically analyzed to determine the most appropriate times of the day when vehicles could be excluded.** A reduction in traffic on Knox Mountain Drive will likely result in less human-wildlife conflict.

3.6 Invasive Species Management

The greatest impact of invasive species is the displacement or competitive exclusion of native species (Gayton, 2007). Gayton (2007) cites several examples in British Columbia, where invasive species have not only displaced natives, but have dramatically altered the nature and function of the ecosystem. At least one of those examples, cheatgrass invasions was documented as being a problem within Knox Mountain Park. If this invasion is allowed to continue unchecked, it has the potential to dramatically alter ecosystem function and may result in displacement of native species and an overall loss of biodiversity.

Ecoscape recommends that a Knox Mountain Invasives Control Plan be developed and implemented to manage invasive species throughout the Park. The plan would include, but not be limited to, the following components:

- First, an invasive plant mapping exercise should be undertaken to thoroughly characterize the number of species present and their extent of invasion to understand baseline conditions.
- Following the mapping exercise to understand the extent and species assemblage of the invasive species, a detailed weed management plan can be developed, which will include species-specific management protocols. For example, diffuse knapweed is a provincially noxious tap-rooted biennial or short-lived perennial which has heavy

seeds that are readily dispersed by wind, seed drop, humans, animals and vehicles. Diffuse knapweed can produce as many as 18,000 seeds per year and flowering of diffuse knapweed occurs in July, with seed set in August. **It is important invasive species are managed in a species-specific manner (i.e., specific timing and management strategies), otherwise it would be very easy to further spread an invasive plant while trying to manage it.** Species-specific management protocols can be found from the Invasives Species Council of BC. Removal of plants by hand pulling is recommended earlier in the season, not only for the ease of pulling, but also to prevent seed dispersal.

- Known invasive plant populations within that Park that should be prioritized in the Invasives Control Plan are described in Table 10.

Table 10. Known invasive plant populations that should be prioritized in the Knox Mountain Invasives Control Plan	
Location of Invasive Plant Population	Recommendations
Lands surrounding Kathleen Lake	Historic logging and development activities took place surrounding the lake prior to the City purchasing the parcel. As such, the existing ecological communities should be evaluated and a subsequent restoration plan developed. Much of the restoration should focus on narrowing roads, decommissioning trails and restoring native grasses, shrubs and trees.
NA-3 South Facing Slopes	The steep south facing slope between the park entrance and the First Lookout and the newly added south facing parcels should have a site specific management plan developed to prevent further disturbances to the cryptogamic soil crust and further spread of invasive plants.
The newly acquired parcels a part of Knox Mountain West	These areas include rare grasslands ecosystems that are being infiltrated by invasives species via edge effects. The Siberian Elm, Tree of Heaven, and Whitetop populations should be addressed immediately, following best management practices for these noxious species.
Knox Mountain West at the end of Royal View Court cul de sac	Tree of Heaven was observed infiltrating this area and should be removed immediately before it outcompetes some sensitive vegetation in the area (i.e., sagebrush).
Frisbee golf area near Park entrance	The planted Siberian Elm stand should be removed and replaced with a suitable native alternative. The number of mature Siberian Elms in this location is likely significantly contributing to the seed bank in the surrounding area of this highly invasive species.
Northwest corner of Knox Mountain East	Extensive weeds were documented adjacent to the access road that originates from Rio Drive. Weeds are already well established, and hence a comprehensive inventory should be undertaken, with subsequent removal, monitoring and restoration with suitable native species.

- The City Parks Department has a Dryland Restoration Mix that is Certified Agricultural Grade 1 and is a mix of native species and quick establishing, competitive species and does not include white sweet clover and alfalfa. These species tend to be invasive and can displace native grass communities.
- Education is a key element in controlling the impact of invasive species on biodiversity (Gayton 2007). Gaining public awareness and support is critical for any concerted action against invasive species, and is especially the case in a park situation where the public has direct access. **Signage, split rail fencing, brochures**

and verbal communication are all effective strategies for the protection of restoration areas and prevention of invasive species establishment and must be a key component of the Knox Mountain Invasives Control Plan to promote successful implementation.

3.7 Balancing Wildfire Protection with Critical Wildlife Habitat

The ongoing mountain pine beetle infestation has resulted in numerous Ponderosa pines within the Park becoming infested. Tree removal has been actively undertaken over the last decade.

Ecoscape understands that a Sustainable Urban Forest Strategy was developed for 2011-2021 to guide management of Kelowna's urban and parkland trees (Brown and Needoba, 2011). It is a delicate balance to control wildfire potential and public safety, while also maintaining critical wildlife habitat and the integrity of existing ecosystems.

The wide-spread removal of trees presents a 2-fold problem.

- 1) Ground disturbance from tree removal can result in erosion and weed infestations; and
- 2) Removal of dead or dying trees reduces critical habitat for many species groups including birds and bats.

Approximately 85 North American avian species excavate nesting holes, use natural decaying cavities or utilize holes created by other species in dead or deteriorating trees. Dead trees, often referred to as snags, are typically considered undesirable from a forest and park management perspective, as they may harbor insect pests (e.g., mountain pine beetle), and create the potential for fire and safety hazards. Nevertheless, the removal of such trees results in long-term adverse effects for important species such as woodpeckers, swallows, wrens, nuthatches, owls and others (Scott et al., 1977).

Previous studies have attempted to qualify the most important types of dead trees for avian use. Those which are most frequently used are trees that are dead for six or more years, are more than 18 inches diameter at breast height, and have more than 40 percent bark cover. This is a general qualifier that could most likely be narrowed further by targeting the specific species of trees that occur in Knox Mountain Park, namely Ponderosa pine and Interior Douglas-fir. By knowing the snag characteristics most important for critical habitat, park managers can selectively maintain critical wildlife trees, while also reducing risks to wildfire and public safety. Furthermore, the contributions of avian species in controlling insect pests should not be underestimated. The majority of cavity nesting birds are insectivores, and they do play an important role in the control of insect pests. Woodpeckers are especially important predators of the bark beetle.

Ecoscape makes the following recommendations to ensure that critical wildlife trees are maintained and that logging efforts do not result in weed establishment and erosion concerns.

- **The City of Kelowna should develop a danger tree/wildlife database to ensure the long-term maintenance of critical wildlife trees.** This database should be created using a data dictionary that can be utilized with GPS technology, in order to allow individual trees to be accurately mapped. The database should include information such as tree species, year of death, diameter at breast height, proximity to water/infrastructure (e.g., trails), level of risk to public safety, slope and gradient, accessibility, etc. This level of detailed data will allow Park Managers to make informed decisions regarding tree removal/maintenance. Similar works are currently underway by Regional District of Central Okanagan, and having comparable databases will facilitate data sharing and comparison.
- **Ecoscape discourages the wide-spread removal of mature infested trees within the Conservation areas.** There are only fragments of sanctioned trail within this zone and therefore, public safety is less of an issue. Ideally, mature trees will be left and will continue to provide critical habitat far into the future.
- **Ecoscape encourages that mature trees be modified vs. fully removed whenever possible,** when assessed as dangerous by a certified Wildlife Danger Tree Assessor. It is recommended that the BC Ministry of Environment Best Management Practices for Tree Topping, Limbing and Removal in Riparian Areas and their recommendations for tree modifications be adhered to. **When trees must be removed, it is strongly encouraged this is completed during the winter when there is snow to protect the ground from disturbance and outside of the nesting bird window (February 18th to September 12th; Birds Canada, 2021).**
- **Locations with substantial ground disturbance following tree removal should be planted with appropriate bunch grass plugs to prevent weed establishment and erosion. Dying trees on extremely steep slopes that are difficult to access should not be removed.**

3.8 Annual Scorecard

The 2011 management plan update outlined the need to establish an on-going monitoring program in the Park in the form of an annual scorecard in order to assess Park conditions and trends and whether they are consistent with the management plan objectives. Annual monitoring has been conducted since June 2012 as a means of evaluating the implementation of the management plan objectives, and to determine the effectiveness of management actions. Monitoring provides a means to establish the initial or baseline condition of specific values within the Park and change in the condition of those values over time. The score card audits performance of following through on management direction and provides a score for both condition and trend of specific values that are reflective of the ecological health and function of the Park. Individual scorecard criteria has been developed specifically for Knox Mountain Park and includes, but is not be limited to the following:

1. Annual assessment of five specific location plots – to include a photographic record, invasive weed count of targeted species, state of trail conditions, and an assessment of biodiversity (e.g., plant succession, snag count, frog calls or bird counts). Plot locations are as follows:
 - The Front Face of Knox Mountain West
 - The Second Lookout
 - Kathleen Lake
 - Discharge basin
 - Knox Mountain East
2. Annual interview with the Outdoor Events Coordinator at Recreation & Cultural Services to determined number of sanctioned / permitted events per year and other related matters.
3. Annual interview with the Knox Mountain Park Caretaker to obtain on-road wildlife mortality records, dog / wildlife conflicts; instances of unauthorized motorized vehicle use, and a general impression of size of deer population, off-leash infractions, vandalism, etc.
4. Annual interview with the Bylaw Division to obtain annual bylaw infraction data (i.e., type, location, date etc.)
5. Traffic counts over the course of a week during higher traffic periods (e.g., late spring)

6. Annual interview with Urban Forestry Supervisor to determine quantities of hazardous and pine beetle tree removals, extent of insect infestations, fire damage, general complaints, etc.
7. Assessment to determine if works are on track with the priorities identified in the management plan.
8. Annual memo to Council touching on highlights and dashboard measurements.

The annual scorecard assessment has been conducted annually between June 2012 and June 2019. The scorecard was designed to be assessed by city personnel who are intimately familiar with Knox Mountain Park (e.g., a Parks Planner and / or Natural Area Park Coordinator). Assessment criteria includes environmental condition criteria via avian points counts, vegetation counts hazardous tree removals and trees planted; vehicular traffic; frequency and type of outdoor events; service requests and bylaw infractions. The assessment parameters were ranked for their overall condition and general trend as described in Table 11.

Table 11. Summary of score card ratings for each park indicator.	
Condition	Trend
<i>Good</i> : the condition of the indicator / measure is satisfactory.	<i>Improving</i> : the condition of the indicator / measure is improving.
<i>Fair</i> : there is concern regarding the state of the indicator / measure.	<i>Stable</i> : the condition of the indicator / measure is not changing.
<i>Poor</i> : the condition of the indicator / measure is poor or low.	<i>Declining</i> : the condition of the indicator / measure is declining.
*The above scoring methodology was modified from the State of the Parks Report (Parks Canada).	

General results and trends of the environmental condition assessment criteria documented annually between 2012 and 2019 are as follows:

- Avian point counts at all five stations have shown a steady Condition rating of Fair and Trends have been Stable across all seven years;
- Vegetation counts took place at all five sites between 2012 and 2017 and was reduced just the Second Lookout and Front Face of Knox Mountain West in 2018 and 2019. In 2017, the last year all sites were counted, the Condition had declined to poor after staying Fair between 2012 and 2016 and Trends in 2016 and 2017 were declining;
- Significant tree removals occurred in 2012 and 2013 (1,105 in total) due to pine beetle infestation. The Condition has improved since 2013, with a total of 260 tree removals occurring over the next six years;

- Tree planting varied between Excellent, Fair and Good Condition ratings between 2012 and 2016 where many Ponderosa pine seedlings were planted but has shown a declining Trend in 2018 and 2019 when no trees were planted. Hardly any trees were removed in 2018 and 2019, so the limited planting could be thought of as positive. Survivability of plantings should be considered in the future as a better indicator of success.

Ways to improve and enhance the annual scorecard and associated assessment parameters are currently being explored. Current considerations include incorporating indigenous traditional ecological knowledge and practices in the following way:

- Tracking bitterroot (*Lewisia rediviva*) populations throughout the Park. Bitterroot or *spíł̃əm* (Spitlem) has been a reverend plant to many Indigenous people, including the Okanagan/ syilx people. It has been used as a medicine, nutritious food source, important in trade, and is culturally and spiritually significant to many First Nations as one of the four food Chiefs and the Chief of all Roots (ISCBC, 2021; SFU, 2022). Unlike picking flowers, picking the roots without proper traditional harvesting techniques, which was the practice of the syilx, kills the plant. Historical harvest sites remained abundant due to the ways in which the syilx harvested and managed the land (ISCBC, 2021). ***As such, it is recommended that in partnership with our local indigenous partners, that bitterroot populations in the Park are monitored annually and managed, and that cultural harvesting practices be reintroduced to Knox Mountain.***
- ***It is recommended to document the survival rates of planted pine seedlings on a 1-, 5- and 10-year time frame to ensure that new plantings are adequately offsetting tree removals.***
- ***It is recommended to initiate a database of significant wildlife trees that provide critical habitat for species at risk, including Lewis's Woodpecker and Flammulated Owl, and to conduct annual surveys of the significant trees for wildlife nesting and use during the spring nesting season.***

3.9 Summary of Considerations

In summary, Table 12 provides a comprehensive list of the key management recommendations provided in this report to be included in the Knox Mountain 2021 Management Plan.

Table 12. Summary of Considerations for the Updated Knox Mountain Park Management Plan

Recommendations	Details
Interpretive Signage	Ecoscape strongly encourages an expansion of interpretive/educational signage throughout the park to more effectively promote and communicate the uniqueness of Knox Mountain Park including the many rare ecosystems and wildlife, indigenous culture, history, language and values, the reasons to protect the park, and specifically the tools in which the public can participate in its protection.
Permitted Activities / Bylaws Signage	Sensitive Park zones and permitted uses should be identified with signage at highly accessible locations where there is potential for unwarranted access/activities.
	A large sign should be erected at the park entrance that welcomes park users and clearly defines the rules of the park.
	Signage to inform the park user of trails that are being decommissioned/remediated and are not to be disturbed or to direct the user to more appropriate locations.
	<p>Education/permitted uses signage should be erected at the following high-risk areas:</p> <ul style="list-style-type: none"> • Paul's Tomb – focus on impacts to spawning Kokanee and the federal <i>Fisheries Act</i>. • Kathleen Lake – focus on domestic-dog wildlife conflicts, importance of wetlands and <i>Wildlife Act</i> • First Lookout – focus on protection of cryptogamic crust and associated rare and fragile grassland ecosystems and cultural significant flora. • Second Lookout – focus on protection of cryptogamic crust and associated rare and fragile grassland ecosystems and cultural significant flora. <p>Signage should indicate the leash bylaw but also describe the impacts off-leash dogs can have on nesting birds, small mammals, spawning Kokanee, and herptiles as to inform and discourage Park users from letting their dogs off leash. The signage should also indicate disturbing wildlife is illegal in BC (<i>Wildlife Act</i>), and any harmful alteration, disruption or destruction of fish or fish habitat is illegal in Canada (<i>Fisheries Act</i>). Human-wildlife conflict is most likely to occur in late spring/early summer during dispersal and nesting seasons. Educational measures and bylaw enforcement should be ramped up during this period.</p>
Information Kiosk/Structure	Knox Mountain Park would greatly benefit from a more formal educational facility such as an interpretive center or minimally an educational kiosk. This facility should be located at the entrance to the Park. Placement of an educational facility at this location will target the majority of users prior to them entering the natural areas of the park, and it is an excellent venue to inform users of current park conditions (e.g., areas closed for restoration works, season for snake movement, Kokanee spawning).

Educational Initiatives	Kokanee Shore Spawning – The Paul's Tomb trail in Knox Mountain West is an excellent location to safely observe shore spawning kokanee without disrupting their natural behavior.
	Blooming of the arrow-leaved balsamroot (<i>Balsamorhiza sagittata</i>) (city official flower) – Knox Mountain Park is likely the best location within the city to appreciate this spring flower. Activities could include professional photos with the blooming hillsides as the background, kids activities and challenges, etc.
	A Grassland Conservation Day - An emphasis on the rare and unique grasslands in Knox Mountain Park with special attention brought to the extremely rare Big Sage – Bluebunch Wheatgrass (SW) ecosystem.
	Seasonal Interpretive Nature Walks – Local naturalist groups, summer students or similar, could develop and run seasonal nature walks at scheduled times throughout the year for the general public to learn more about the diverse flora and fauna in the Park.
Park Boundary Delineation	There is a need for signage at all park boundaries where sanctioned trails intersect the boundary. Signage at these locations should identify the park boundary, permitted activities and resultant fines for not adhering to permitted activities (e.g., no motorized vehicles).
Development and Implementation of a Comprehensive Access Management Plan	A comprehensive access management plan should be developed for Knox Mountain Park to identify all relevant access issues, target a preferred trail network and to implement an all-inclusive action plan to more effectively manage access throughout the Park. As part of the plan, we strongly recommend that the trail network be reevaluated every three to five years to ensure any additional unsanctioned trails are caught early, before they become more established by park users.
	Unsanctioned trails should either be decommissioned and remediated or sanctioned as a primary action item of the plan. Minimum elements of decommissioning will include educational signage, temporary split rail fencing or access barriers, a regular enforcement component and a frequent review of works to evaluate progress and to make changes as necessary.
Split Rail Fencing Installations	Where the Conservation areas abuts other high use zones, split rail fencing with appropriate signage should be erected to delineate the Conservation zone and to discourage unwarranted access. This is particularly relevant between CON-3 (Kathleen Lake) and NA-2 to prevent recreationalists from encroaching into this sensitive ecological feature.
	Surrounding the First Lookout to prevent trampling the cryptogamic crust and facilitating the spread of invasives and to prevent the destruction of rare/ fragile grassland habitats.
	Surrounding the Second Lookout to prevent trampling the cryptogamic crust and facilitating the spread of invasives and to prevent the destruction of rare/ fragile grassland habitats.
	Surrounding Paul's Tomb to prevent trampling the cryptogamic crust and facilitating the spread of invasives and destruction of rare and fragile grassland habitats.
	Any restoration / trail remediation sites.

Development and Implementation of a Knox Mountain Park Invasives Control Plan	An invasive plant mapping exercise should be undertaken as the first step to thoroughly characterize the number of species present and their extent of invasion to understand baseline conditions.
	A detailed weed management plan should be developed once the extent and invasive species assemblage within the park has been mapped, which would include species-specific management protocols. It is important invasive species are managed in a species-specific manner (i.e., specific timing and management strategies), otherwise it would be very easy to further spread an invasive plant while trying to manage it. Species-specific management protocols can be found from the Invasives Species Council of BC.
	Known invasive plant populations within the Park that should be prioritized in the Invasives Control Plan are described in Table 10.

4.0 CLOSURE

This overview report has been prepared for the exclusive use of the City of Kelowna. Ecoscape has prepared this report with the understanding that all available information on the past, present, and proposed conditions of the Park have been disclosed.

If you have any questions or comments, please contact the undersigned at your convenience.

Respectfully Submitted,

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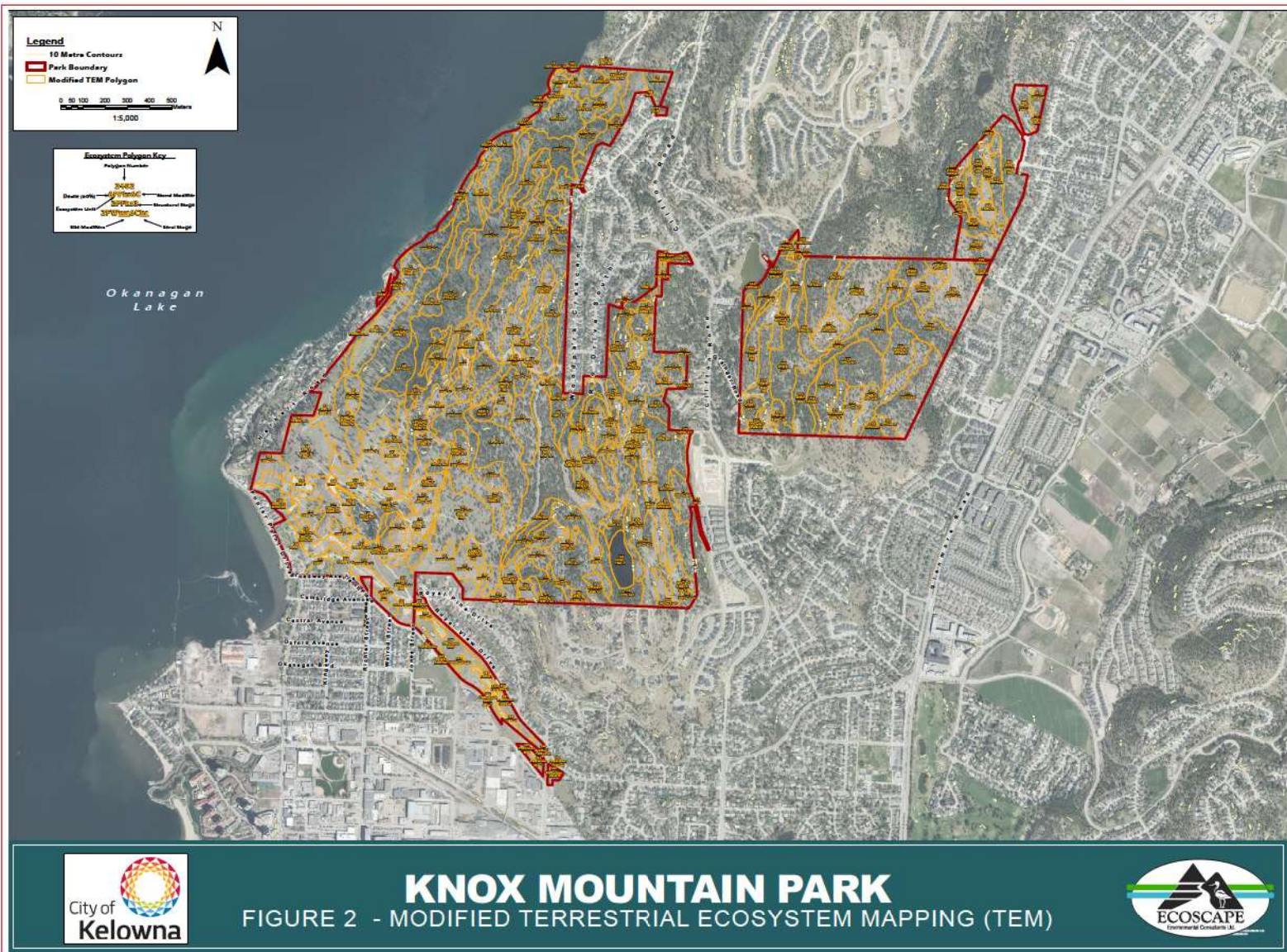
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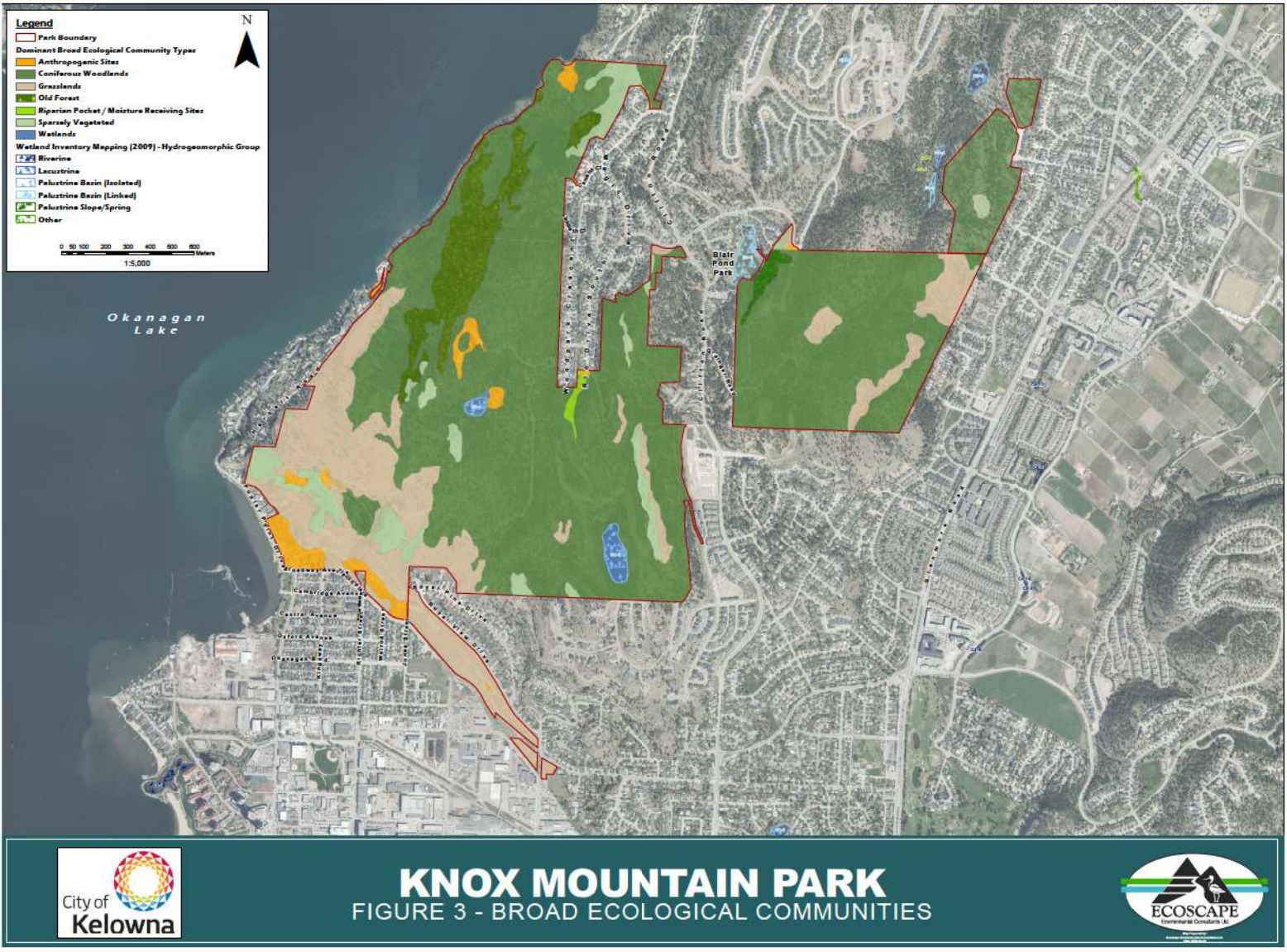
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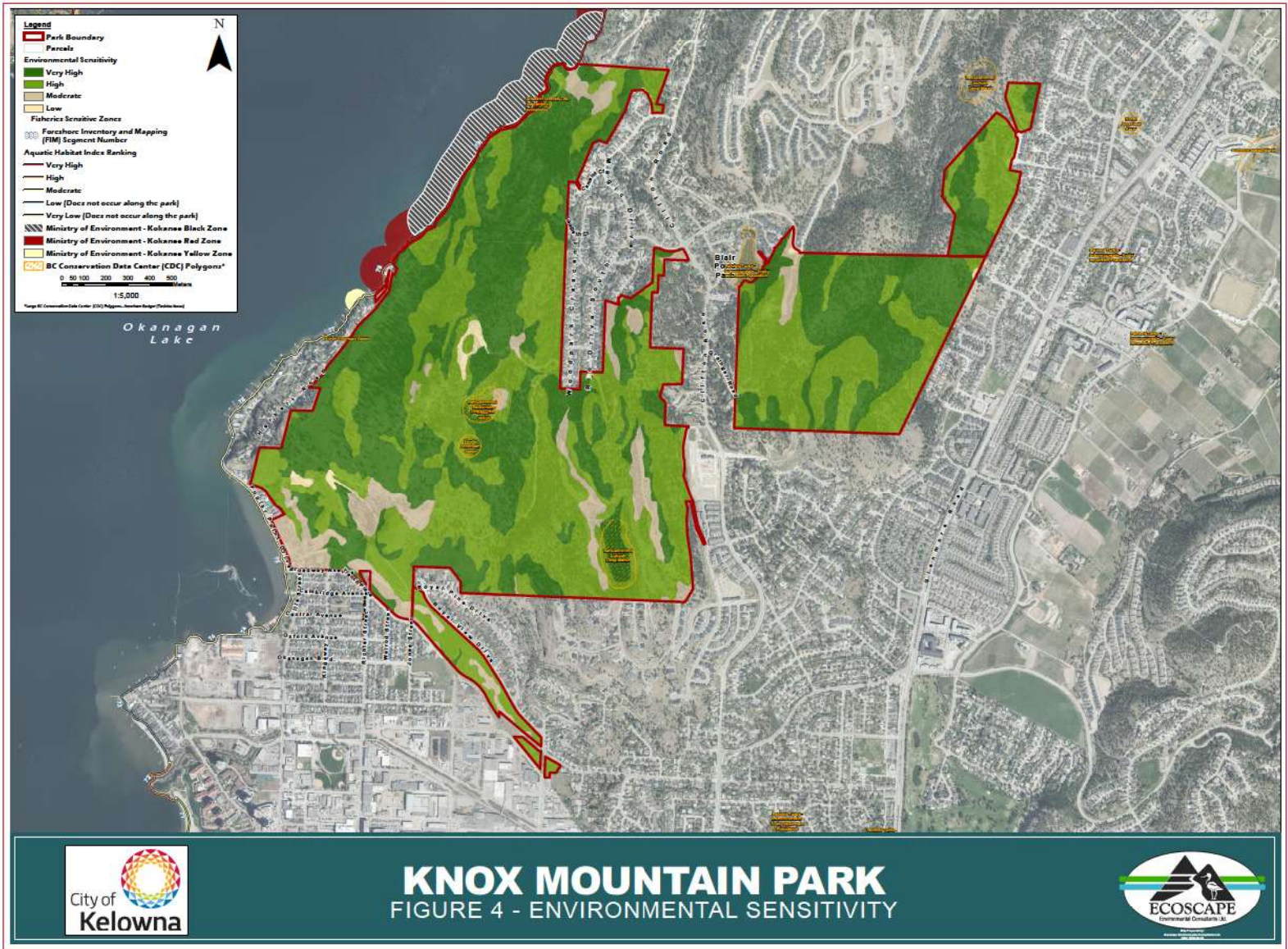
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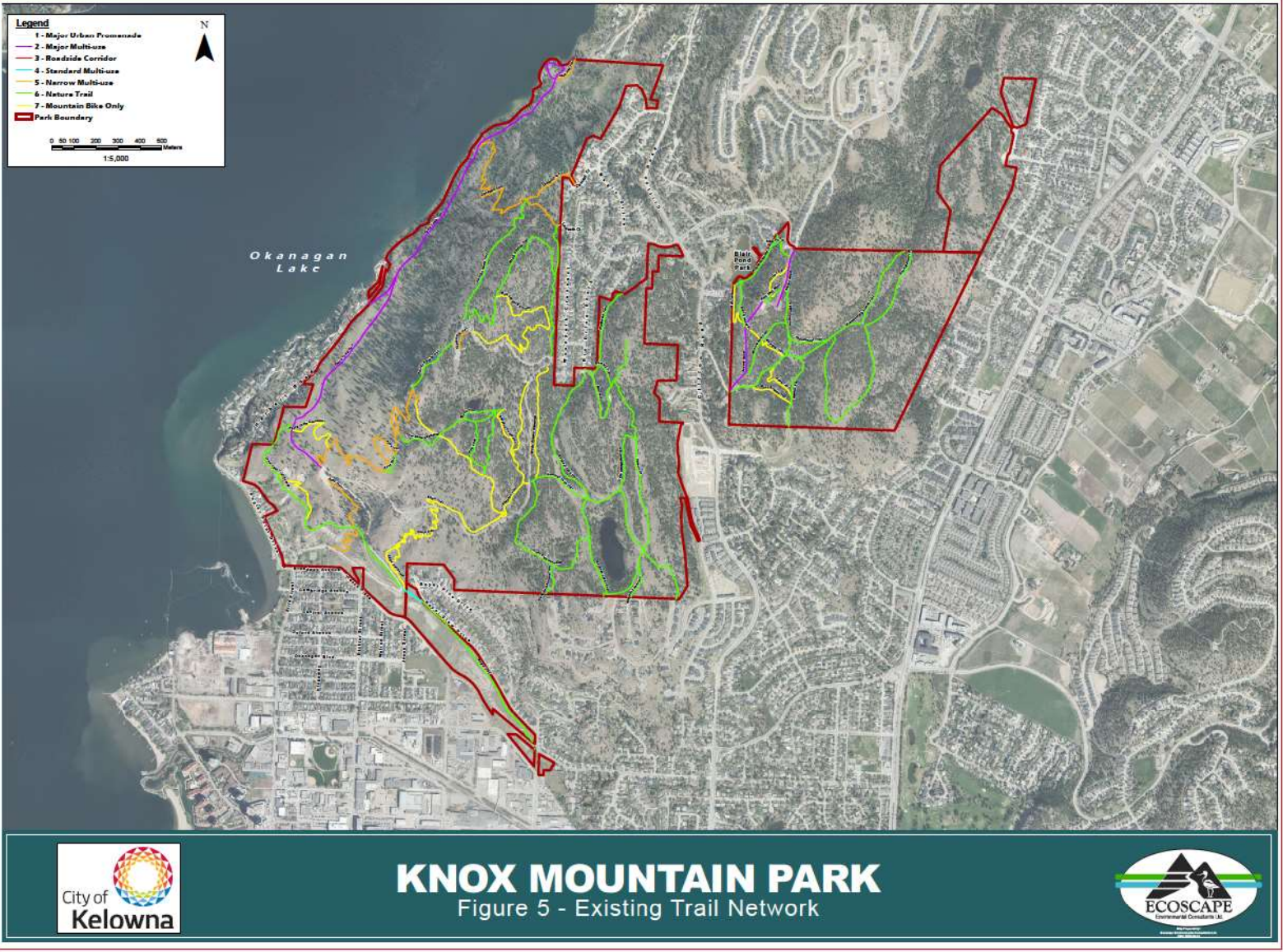
FIGURES













KNOX MOUNTAIN PARK
FIGURE 6 - PROPOSED PARK USE AND ZONING CONCEPTS





Knox Mountain Park Management Plan Update Report to Council

June, 2022

Knox Mountain Management Plan Update – 2011 to 2021

1999
First
KMMP

2011
Update
KMMP

2022
Update
KMMP

Process

Spring 2021

Public Engagement – Knox Mt. Drive Strategy



Summer/Fall 2021

Biological Inventory and Status Assessment



November 2021

Knox Mountain Drive Strategy – Two Year Trial

Council



Winter/Spring 2022

Management Plan Draft and Engagement



June 20, 2022

Council – KMMP Update Report

Council



July 2022 onward

Implementation

2022 Update

What we have done

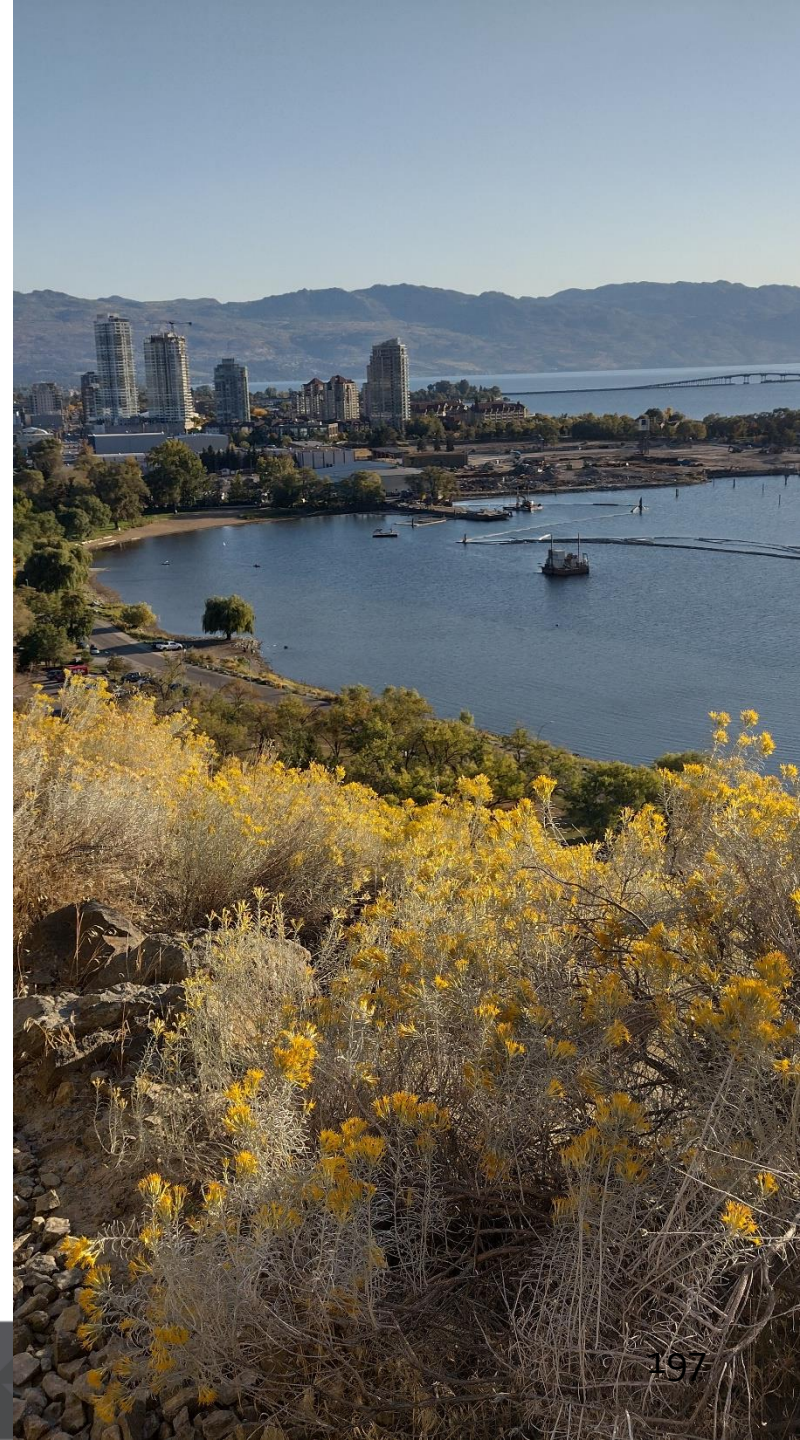
- 19 Projects Completed

Where we are

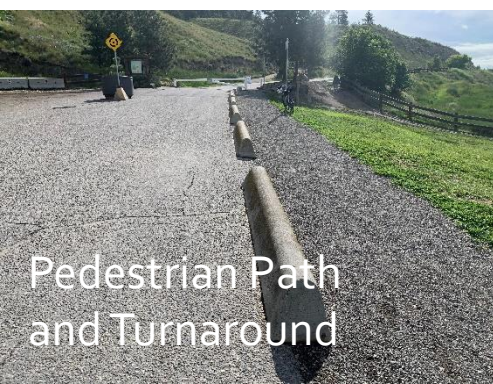
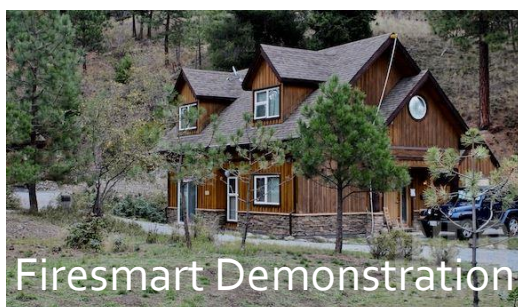
- Current trends and issues

Where we want to be

- 20 Capital Items
- 8 Operational Items



What We Have Done





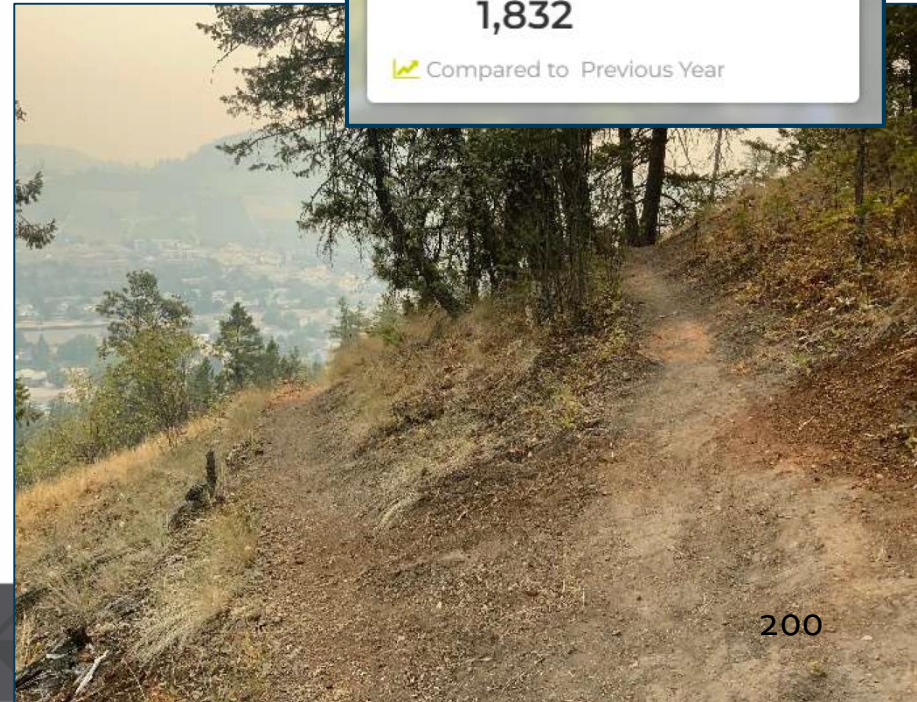
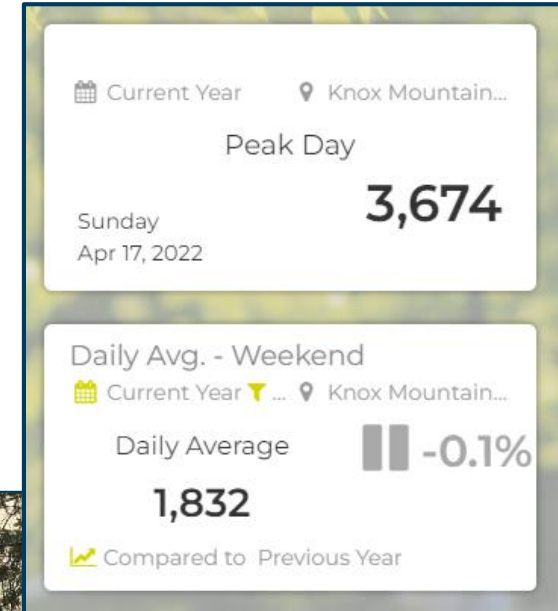
2012



Access Management & Ecosystem Protection
2021

Where We Are – Current Issues

- ▶ Increased use of park
- ▶ Unsanctioned trail habitat damage
- ▶ Wildlife / Human conflicts
- ▶ Off-leash dog impacts



Vision

Knox Mountain Park reveals the wonder and diversity of the Okanagan landscape. It is a symbol of Kelowna, a place of unique and remarkable natural beauty within our city's park system, a place where nature is able to flourish and evolve. Residents and visitors participate in the life of the park, establishing healthy and sustainable relationships between themselves and the natural environment.

Strategic Goals

- A Place for Nature
- A Place for People
- A Place for Stewardship

Ecosystem Fragility



Risks

- Rare ecosystems and species
- Dry ecosystems difficult to rehabilitate
- Climate change / weed invasion

Key Capital Initiatives

- ▶ First Lookout Improvements
- ▶ Signage Renewal – Interpretive / Wayfinding
- ▶ Knox East Staging Area Improvements (parking / signage)
- ▶ Trail Maintenance and Decommissioning Rogue Trails
- ▶ Off-leash Dog Strategy



Key Operational Initiatives

- ▶ Wildfire Fuel Mitigation Activities
- ▶ Implement Urban Forest Strategy Measures
- ▶ Summer Students – Weeding / Park Ambassadors
- ▶ Washroom Maintenance
- ▶ Caretaker



2022 Update Budget

- ▶ 20 Capital Items
 - ▶ \$1.96 M
- ▶ 8 Operational Items
 - ▶ \$1.49 M



Ongoing Planning

- ▶ Knox Mountain Drive Two-Year Trial
 - ▶ Operational Strategy
 - ▶ Potential Improvements
- ▶ Sutherland Bay Park / Knox Mountain Park Base
 - ▶ North End Plan Integration
 - ▶ Waterfront



KMPMP

Next Steps

- ▶ Rockfall Mitigation
Paul's Tomb Trail
- ▶ Knox East Trail
Improvements
- ▶ First Lookout
Improvements
- ▶ Signage Renewal
- ▶ Stewardship



Resolution

- Receive, the report for information; and
- Endorse the report; and
- Directs staff to begin implementing the recommendations and actions.



Questions?

For more information, visit kelowna.ca.

Report to Council



Date: June 20, 2022

To: Council

From: City Manager

Subject: 2040 OCP: Educational / Institutional Future Land Use for 1205 High Road

Department: Policy and Planning

Recommendation:

THAT Council receives for information, the report from the Policy & Planning Department dated June 20, 2022 regarding the Future Land Use for 1205 High Road.

Purpose:

To provide Council with the rationale for designating the property located at 1205 High Road as Educational / Institutional as part of the 2040 Official Community Plan Process.

Background:

A Public Hearing was held to hear from the public on matters regarding the 2040 Official Community Plan on October 26, 2021. During the Regular Meeting that followed the Public Hearing, Council endorsed the following resolution:

Previous Council Resolution

Resolution	Date
THAT Council direct staff to bring forward, upon adoption of the OCP 2040, the rationale for the OCP 2040 Map 3.1 Future Land Use designation for 1205 High Road; AND THAT Council direct staff to bring forward, upon adoption of the OCP 2040, the rationale for the OCP 2040 Map 3.1 Future Land Use designation for 4998 Gordon Drive: AND FURTHER THAT Council direct staff to bring forward, upon adoption of the OCP 2040, the rationale for the OCP 2040 Downtown Building Heights Map 4.1, specifically the east side of Ellis Street from Bernard Avenue to Clement Avenue.	October 26, 2021

This report serves to address the portion of Council's resolution that speaks to the Future Land Use Designation for 1205 High Road.

Discussion:

Background

The 2040 Official Community Plan (OCP) focuses approximately 73% of Kelowna's future growth in the city's five Urban Centres and surrounding Core Area, while outward growth in the form of new suburban neighbourhoods is limited. The OCP Pillar "Focus investment in Urban Centres" directs investments to serve this expected population growth in Urban Centres and the surrounding Core Area with the ingredients that are critical to providing a high quality of life. These investments include, but are not limited to, parks, transportation and schools.

As required by Section 476 of the *Local Government Act*, staff engaged with School District #23 during the development of the OCP to determine anticipated needs for school facilities, including their location. As part of this process, the property located at 1205 High Road was signaled for Educational / Institutional (EDINST) uses in Map 3.1 (see Attachment 1). This location was selected to achieve the following goals:

- To allow the existing programming and school site use to be optimized by enhancing the land assembly adjacent to Bankhead Elementary;
- To allocate school space to serve the growing population as the Downtown Urban Centre is projected to grow by approximately 7,500 people by 2040;
- To reduce car dependency and encourage utilization of active transportation routes for travel to and from school. The site is adjacent to amenities such as transit, the OK Rail Trail active transportation corridor and supported by walking infrastructure.

This Future Land Use Designation allows for future expansion of the adjacent Bankhead Elementary School to accommodate anticipated growth Downtown and surrounding Core Area neighbourhoods while investing public infrastructure in alignment with active transportation corridors. Signaling the property as EDINST in the 2040 OCP allows School District #23 to plan and seek funding for new and expanded school facilities. As such, School District #23 may have the opportunity to purchase the parcel in the future to expand their existing land base to accommodate a more intensive school to serve the Downtown. Larger parcels of land are rare in the Downtown, especially ones located immediately adjacent to an existing school. This future land use designation advances opportunities to provide greater school capacity in a rapidly growing area of Kelowna, offering a higher quality of life for existing and future residents.

The property is zoned I2-General Industrial and continues to operate as a private storage facility. The zoning has not changed with the adoption of the 2040 OCP and the business can continue to operate. Moving forward, any rezoning applications for the property will need to be consistent with 2040 OCP policies, including the EDINST designation.

If this property was not designated, a new school site would need to be identified Downtown, which would prove challenging. If unsuccessful in designating an alternative site, the City would risk School District #23 choosing a more suburban school location which would not directly serve the Downtown. Should Council consider amending the OCP's Future Land Use Designation for 1205 High Road, an Alternative Recommendation is provided within this report.

Subject Property Map: 1205 High Road



2040 OCP Policy

Future Land Use Designation: Educational / Institutional (EDINST)

Growth Strategy Role: The location of key educational and institutional uses, such as schools, post-secondary institutions and hospitals, is critical to the quality of life of Kelowna residents. As neighbourhoods evolve and change as the city grows, the City, senior levels of government and other key institutions must be well positioned to offer their services in areas that are close to areas targeted for growth, easy to access by modes other than the automobile and be well designed and integrated into the surrounding neighbourhood.

Increasing development pressure may result in the loss of institutional lands, making it more difficult for those uses to be accommodated in the future. Any proposals for new uses, such as residential development, should be considered carefully on a site by site basis.

Supported Uses and Typologies: The Educational / Institutional designation signals where key educational, cultural, government and religious activities take place. The designation is characterized by schools, hospitals, places of worship, recreation centers and other facilities that provide public services delivered by governments or not-for-profit institutions.

Conclusion:

Identifying future school sites in consultation with the local school district is consistent with the *Local Government Act* requirements for OCP reviews and directs some of the most critical decisions for accommodating growth to 2040. The designation of the subject property as EDINST signals the necessary investments in school facilities to serve a rapidly growing Downtown and surrounding neighbourhoods.

Should Council disagree with the future land use designation based on the explanation provided by staff, an alternate recommendation has been provided which would direct a change back to the current equivalent of the Industrial designation that previously existed.

Alternate Recommendation

THAT Council direct staff to bring forward a proposed amendment to Map 3.1 in the Kelowna 2040 – Official Community Plan Bylaw No. 12300 from EDINST to IND future land use designation.

Internal Circulation:

Divisional Director, Planning and Development Services
Department Manager, Development Planning

Existing Policy:

Imagine Kelowna
2040 Official Community Plan

Attachments:

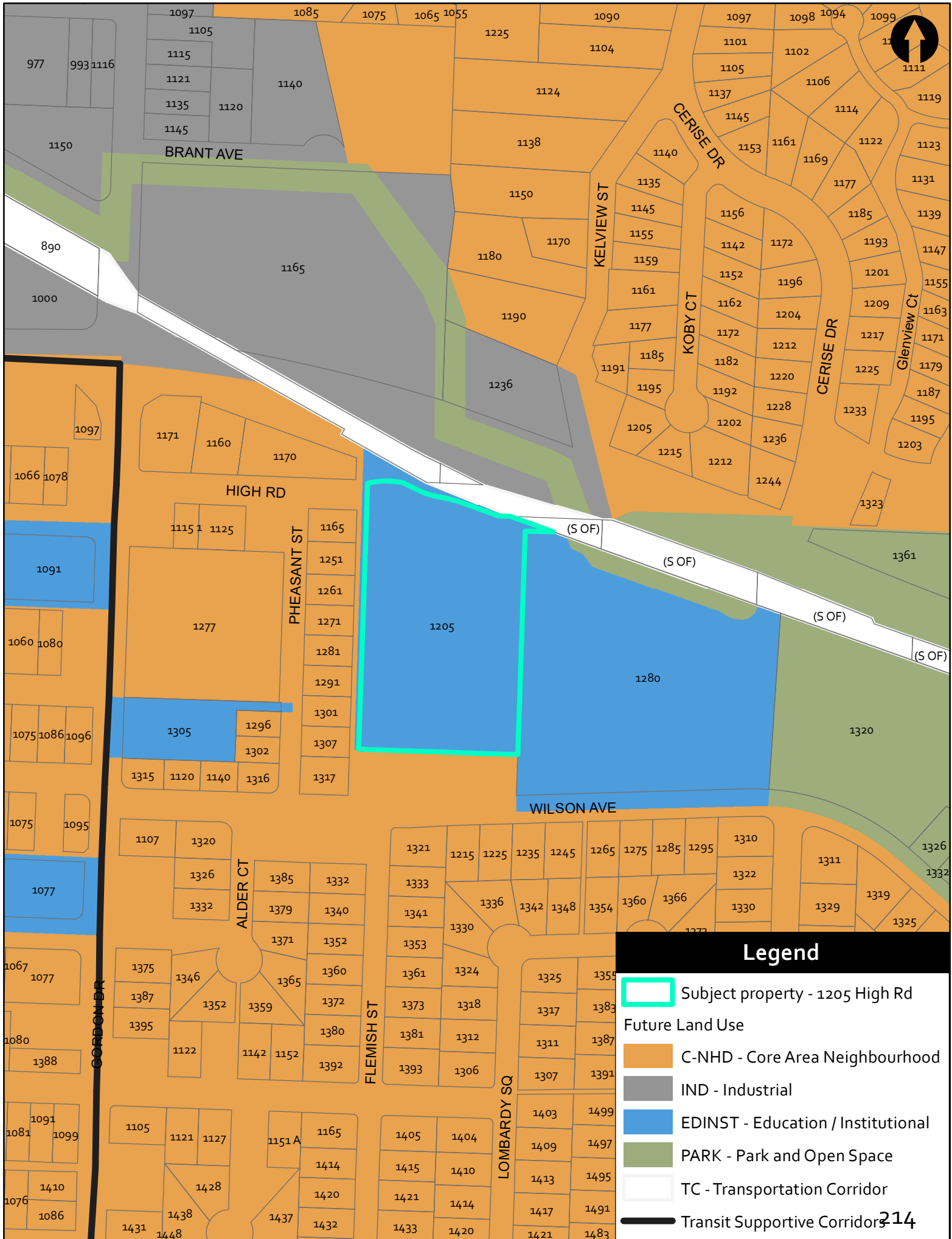
Attachment 1: 1205 High Road Location and Future Land Use

Submitted by: R. Miles, Long Range Policy Planning Manager

Approved for inclusion:



D. Noble-Brandt, Dept. Manager of Policy and Planning





2040

Official
Community Plan

Future Land Use for 1205 High Road

Proposal

To consider a staff recommendation that Council receives for information the report from the Policy & Planning Department dated June 20, 2022 regarding the Future Land Use for 1205 High Road.

Subject Property Map





Staff Recommendation

Staff recommends that Council receives the report for information.



City of
Kelowna

2040

Official
Community Plan

Report to Council



Date: June 20, 2022

To: Council

From: City Manager

Subject: 2040 OCP: Suburban – Multi Unit Future Land Use for 4998 Gordon Drive

Department: Policy and Planning

Recommendation:

THAT Council direct staff to bring forward a proposed amendment to Map 3.1 in the Kelowna 2040 – Official Community Plan Bylaw No. 12300 by changing the Future Land Use designation of 4998 Gordon Drive from Suburban – Multiple Unit (S-MU) to Village Centre (VC) future land use designation.

Purpose:

To provide Council with the rationale for designating the property located at 4998 Gordon Drive as Suburban – Multi Unit as part of the 2040 Official Community Plan Process.

Background:

A Public Hearing was held to hear from the public on matters regarding the 2040 Official Community Plan on October 26, 2021. During the Regular Meeting that followed the Public Hearing, Council endorsed the following resolution:

Previous Council Resolution

Resolution	Date
THAT Council direct staff to bring forward, upon adoption of the OCP 2040, the rationale for the OCP 2040 Map 3.1 Future Land Use designation for 1205 High Road; AND THAT Council direct staff to bring forward, upon adoption of the OCP 2040, the rationale for the OCP 2040 Map 3.1 Future Land Use designation for 4998 Gordon Drive: AND FURTHER THAT Council direct staff to bring forward, upon adoption of the OCP 2040, the rationale for the OCP 2040 Downtown Building Heights Map 4.1, specifically the east side of Ellis Street from Bernard Avenue to Clement Avenue.	October 26, 2021

This report serves to address the portion of Council's resolution that speaks to the Future Land Use Designation for 4998 Gordon Drive.

Discussion:

The subject property is currently zoned C₃ – Community Commercial on its northern half (acknowledging its use as a real estate sales centre) and A₁ – Agriculture 1 (vacant) on the remainder. The draft Zoning Bylaw 12375 identifies the property as Core Area Mixed Use (CA₁) with the intent of aligning zoning as closely as possible with the existing C₃ zoning in place. This new zone would allow a mix of commercial and residential uses.

Staff have considered the correspondence received as part of the 2040 OCP's Public Hearing alongside the likelihood that the property would develop using existing zoning for guidance. Given these factors, staff support the initiation of a process to amend the 2040 OCP to apply the VC Future Land Use designation to the subject property that more closely aligns with the commercial/mixed use zoning currently permitted.

Staff had recommended a different future land use in the 2040 OCP because of a new approach being introduced for the City's Village Centre nodes which included consideration of adjustments to Village Centre boundaries and new policies to provide a clear vision and guidance for future development applications in these secondary hubs. During the development of the 2040 OCP, it was noted that 4998 Gordon Drive (the subject property) could be challenged to develop with the mix of uses and densities that were consistent with the new VC designation due to its size and its separation from the rest of the Village Centre by Gordon Drive. Given that Gordon Drive is a major arterial that divides this property from the Village Centre to the east, it was considered a potential barrier to connect with parks, plazas and other public realm improvements that are more pragmatically achieved with contiguous properties to create a more vibrant pedestrian environment. As such, the Suburban – Multi Unit (S-MU) Future Land Use designation was selected for the subject property's future land use designation, offering a housing form that could benefit from proximity to the Village Centre amenities and conveniences.

The S-MU designation would have allowed for multi-unit development on the property without necessitating a commercial component but with lower density (~1.3 FAR) than the 2.0 FAR that the VC designation enables. The 2030 Official Community Plan (OCP) had previously applied a Commercial Future Land Use designation to the subject property which was consistent with the original Neighbourhood 3 Area Structure Plan.

Subject Property Map: 4998 Gordon Drive



2040 OCP Policy

Future Land Use Designation: Suburban – Multi Unit

Growth Strategy Role: Suburban - Multiple Unit lands support a greater variety of multi-unit housing in the Gateway and Suburban Neighbourhoods, located strategically to support the viability of local commercial areas, Village Centres and, in some cases, transit service, schools and other community amenities. Some Suburban - Multiple Unit lands are located in the Rural Lands District to reflect existing multi-unit development only.

Supported Uses and Typologies: Suburban - Multiple Unit lands support various forms of single and two family residential, ground oriented multi-unit housing, including house-plexes, row housing and low rise apartments. Small scale commercial or institutional uses may be incorporated into Suburban Multiple Unit lands where they are integrated into the larger residential component.

Future Land Use Designation: Village Centre (VC)

Growth Strategy Role: Village Centres act as smaller hubs of activity in the city serving their immediate surroundings, providing basic day-to-day services within a short walking or biking trip. This contributes

to the overall livability of Core Area, Gateway and Suburban Neighbourhoods by providing these options closer to residents. Village Centres in the Core Area would typically have a larger commercial component, servicing a more densely populated neighbourhood, while Village Centres in Suburban Neighbourhoods would likely have a smaller commercial component and serve a more sparsely populated neighbourhood.

Supported Uses and Typologies: Village Centres should support a mix of commercial and multi-unit residential uses that form an activity hub, serving nearby neighbourhoods. Commercial floor space is typically between 3,000 and 15,000 square metres. Residential uses are supported at grade and commercial uses would be located at grade along key transportation routes or as signaled in more detailed policy.

Conclusion:

The designation of the subject property as VC reflects the current zoning of the site and is within close proximity to the Village Centre to benefit from amenities and day-to-day conveniences that achieve complete communities. The designation change also continues the alignments of the property's future land use with the original Neighbourhood 3 Area Structure Plan.

Internal Circulation:

Divisional Director, Planning and Development Services
Department Manager, Development Planning

Existing Policy:

Imagine Kelowna
2040 Official Community Plan

Attachments:

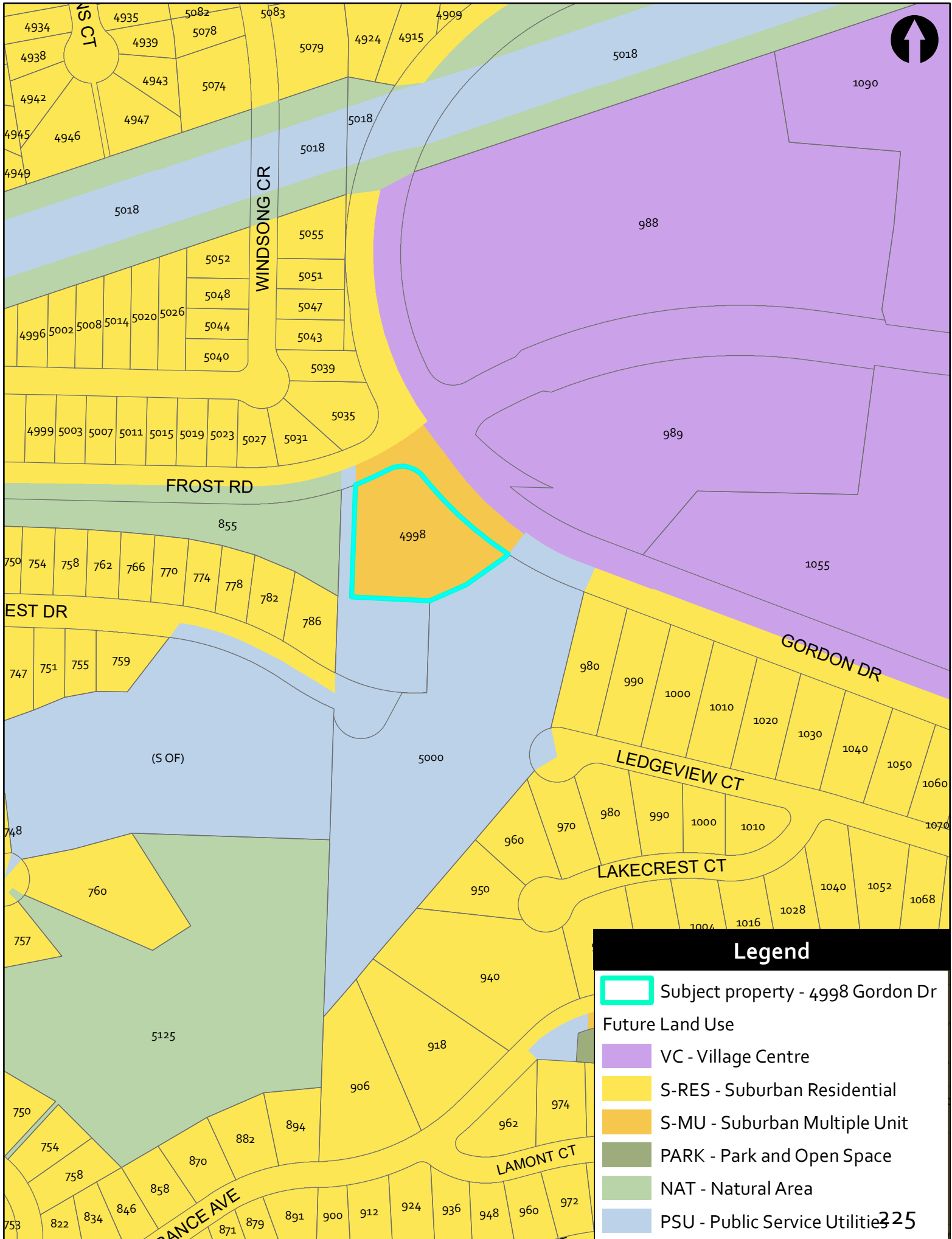
Attachment 1: 4998 Gordon Drive Location and Future Land Use

Submitted by: R. Miles, Long Range Policy Planning Manager

Approved for inclusion:



D. Noble-Brandt, Dept. Manager of Policy & Planning





2040

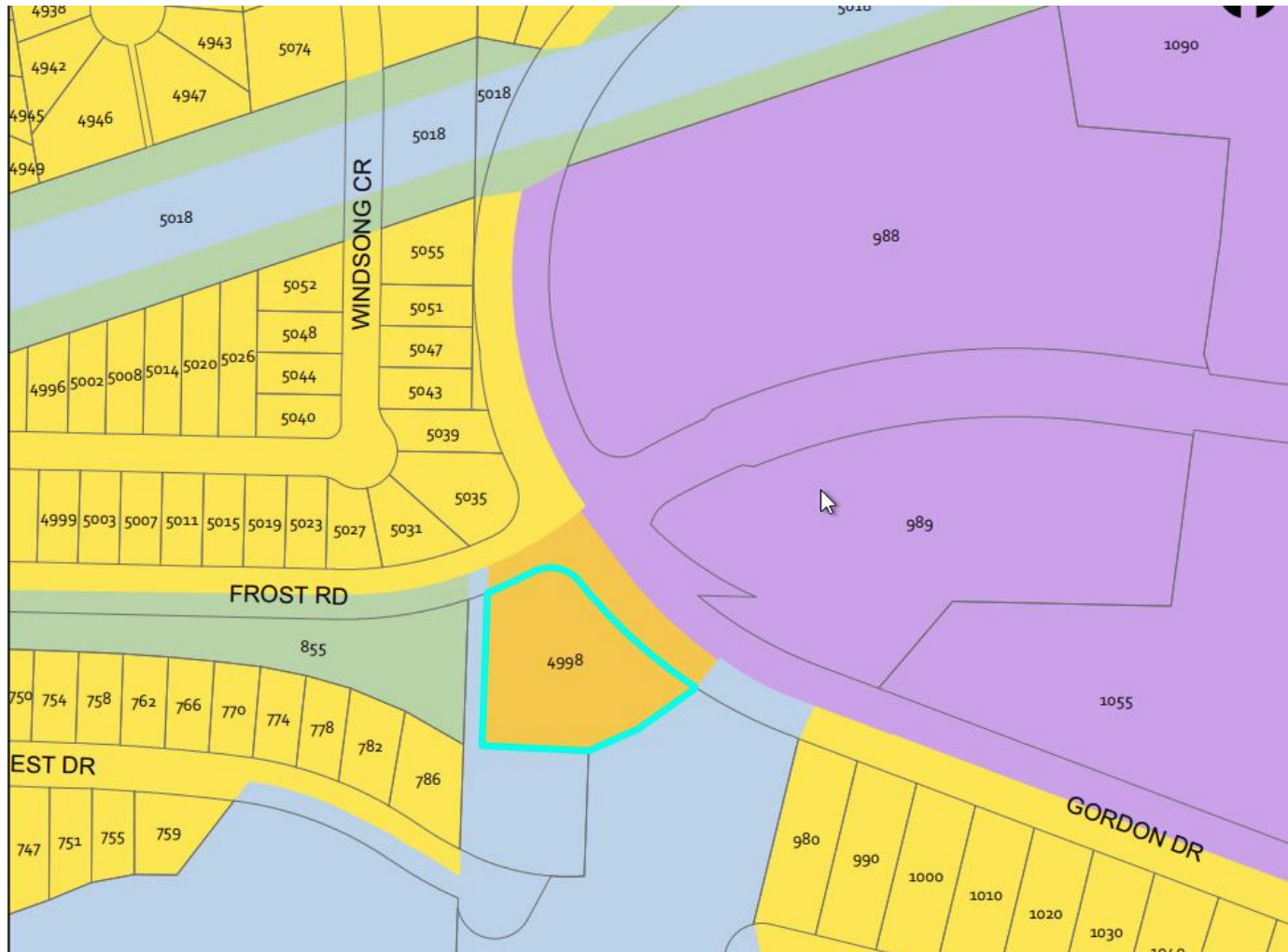
Official
Community Plan

Future Land Use for 4998 Gordon Drive

Subject Property Map



Future Land Use



Staff Recommendation

THAT Council direct staff to bring forward a proposed amendment to Map 3.1 in the Kelowna 2040 – Official Community Plan Bylaw No. 12300 by changing the Future Land Use designation of 4998 Gordon Drive from Suburban – Multiple Unit (S-MU) to Village Centre (VC) future land use designation.



City of
Kelowna

2040

Official
Community Plan

Report to Council



Date: June 20, 2022

To: Council

From: City Manager

Subject: Climate Modelling: GHG Reduction Targets and Next Steps for the Climate Resilient Kelowna Strategy

Department: Policy & Planning

Recommendation:

THAT Council receives for information, the report from the Policy & Planning Department dated June 20, 2022, with respect to Climate Modelling: GHG Reduction Targets and Next Steps for Climate Resilient Kelowna Strategy;

AND THAT Council direct staff to update the 2040 OCP with new GHG reduction targets as outlined in the report;

AND THAT Council direct staff to use these new GHG reduction targets as a basis for developing a Climate Resilient Kelowna Strategy;

AND FURTHER THAT the 2022 Financial Plan be amended to include \$95,000 to complete the *Climate Resilient Kelowna* strategy from Intact Insurance's Municipal Climate Resiliency Grant program, if successful, or \$80,000 from the Climate Action Reserve should the grant not be approved, as outlined in the report.

Purpose:

To update Council on initiatives to support the development of the Climate Resilient Kelowna strategy, the outcomes of the GHG Modelling Study and to recommend new greenhouse gas emission reduction targets.

Background:

In 2018 Council endorsed Kelowna's *Community Climate Action Plan (CCAP)*, a five-year GHG emissions reduction strategy which targets 4, 25, and 80 per cent GHG emissions reduction below 2007 levels by 2023, 2033 and 2050 respectively. Understanding how the community has progressed on these targets has been challenging due to issues with data availability.

As part of a recently completed GHG Emissions Modelling Study, emission inventories were updated for 2007 and 2016, and a new inventory was created for 2018 as illustrated in Table 1. The community reduced absolute GHG emissions nearly four per cent between 2007 and 2016, however, emissions rose nearly four per cent above 2007 levels in 2018. While an absolute reduction in GHG emissions is critical to reduce the impacts of climate change, progress is being made on a per capita basis. By 2018, the community achieved nearly 17 per cent reduction in per capita GHG emissions compared to 2007, providing a basis for future GHG reduction success.

	Absolute GHG emissions (tonnes CO ₂ e)	
	Total Emissions	% absolute change since 2007
2007	841,789	-
2016	808,874	↓ 3.9%
2018	874,156	↑ 3.7%

Table 1: Kelowna GHG Emission Inventories Summary

Soon after Council's endorsement of the CCAP significant changes happened because of the Intergovernmental Panel on Climate Change (IPCC) findings on the significant action needed to limit global warming below 1.5 degrees Celsius. As illustrated in Figure 1, governments at all levels have responded, adopting more aggressive emission reduction targets and actions. Kelowna's current plan and targets no longer align with the evolving policy landscape, and as it approaches the end of its span, staff have initiated a process to update the CCAP that is more encompassing. Developing a *Climate Resilient Kelowna* strategy will put the community on the path to a low carbon future while preparing to be resilient to the forecasted changes in climate.

Phase 1 of the strategy development recently concluded – a *GHG Emissions Modelling Study* to understand how the community could reduce its share of GHG emissions to align with senior government and IPCC 1.5 degrees Celsius pathway.



Figure 1: Changes to climate policy and targets since endorsement of Kelowna's Community Climate Action Plan (2018)

Discussion:

Working with a consultant, the *GHG Emissions Modelling Study* modelled the low carbon actions that could be undertaken to help the community align with long-term national and international climate targets (see Appendix A for an Executive Summary).

Towards 2030: how Kelowna can meet more ambitious targets

The *GHG Emissions Modelling Study* assessed three community GHG emissions scenarios for Kelowna, compared to a business as usual (BAU) scenario. The scenarios, which each build on the results of the previous, estimate the potential GHG emission reduction possible in the community due to senior government announced initiatives, City policies and plans (such as the Official Community Plan and Transportation Master Plan) and what would be needed to align with the senior government targets and the IPCC's 1.5 degree Celsius pathway.

As illustrated in Figure 2, the modelling shows the importance of the local implementation of provincial and federal climate policies, but that additional action is needed. Overall, the modelling demonstrates the possibility for community GHG emissions reduction targets to align with provincial and federal targets. Some of the larger GHG emission reductions could be achieved through:

- Reduction in vehicle kilometers travelled
- Mode shift
- Cleaner fuel
- Electric vehicle uptake
- Net zero emission in the electricity grid
- Efficiency improvements in new and existing buildings
- Increased tree canopy.

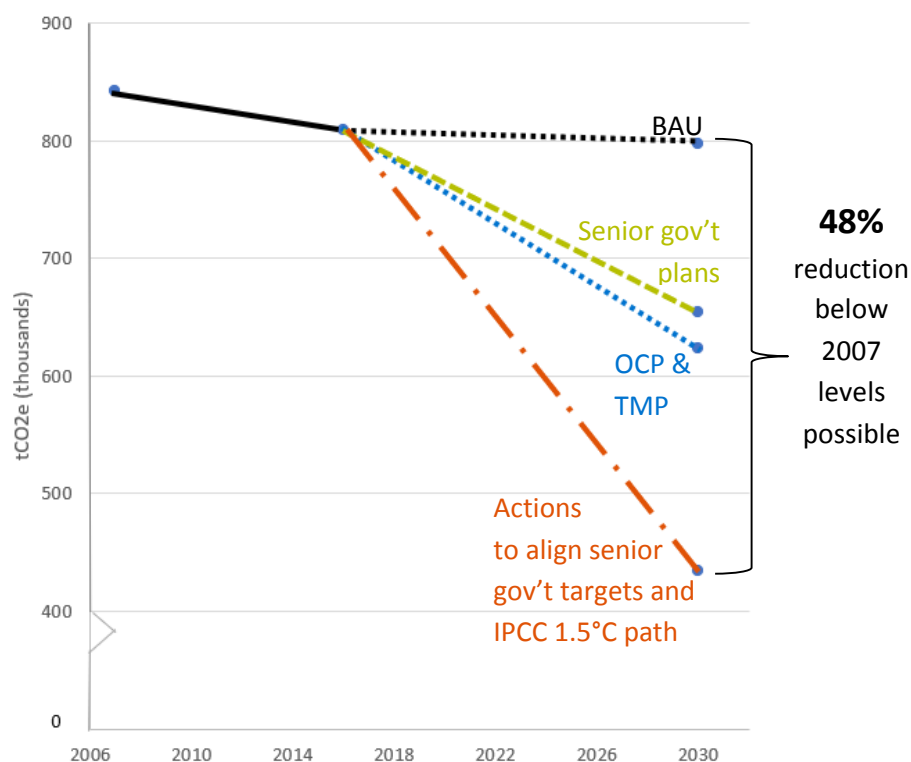


Figure 2: Potential GHG emission reductions possible by 2030

Climate Action yields multiple benefits

A low carbon future has benefits that extend far beyond reducing GHG emissions to curb climate change impacts as illustrated in Figure 3. The *GHG Emissions Modelling Study* modelled two of these benefits in a longer time horizon out to 2050 and showed:

- Over \$2 billion in savings for the community due to energy efficiency savings, less maintenance, avoided carbon taxes and renewable energy revenues.
- Up to 33,000 person years of employment (1,200 annually), many of which attributed to the building sector due to retrofits and installation of more efficient heating systems.

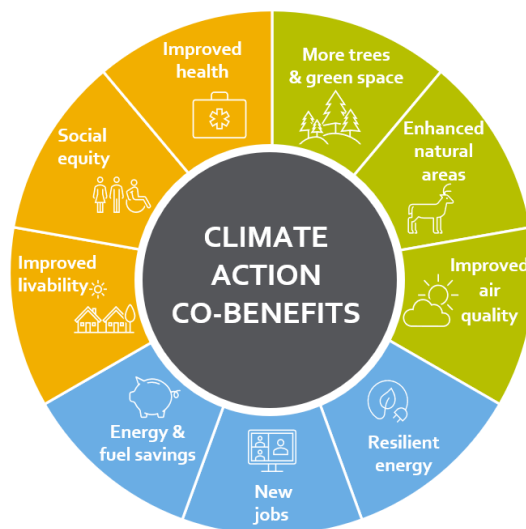


Figure 3: Co-benefits of climate action

A new path forward:

Recommended updates to Kelowna's GHG emissions reduction targets

Based on the results of the *GHG Emissions Modelling Study*, staff recommend updating Kelowna's community GHG emission reduction target from 4 per cent, 25 per cent and 80 per cent below 2007 levels by 2023, 2033 and 2050 respectively to the following.

In partnership with senior governments; local citizens and businesses; non-profits; external agencies; and utility providers; work towards reducing absolute community greenhouse gas emissions

- ***40 per cent below 2007 levels by 2030; and***
- ***Achieve net zero by 2050.***

Revising the targets would align Kelowna with senior government direction and is best practice for communities across the province. In fact, a review of mid to larger BC municipalities targets, as illustrated in Appendix B, revealed that most communities who adopted targets post 2018 have at minimum selected targets that align with provincial direction. Achieving net zero on or before 2050 has also become common practice. Benefits of aligning with provincial targets could include:

- Positioning the City of Kelowna to be more favorably considered for select grant funding;
- Aiding in infrastructure resiliency planning;
- Advancing community partnerships that have a shared mandate to achieving climate goals and public health; and
- Long term financial savings.

Next Steps:

Completion of the GHG emission modelling concludes the first phase in developing a resilience strategy. The next two phases, which will also be informed by community engagement, include:

- **Phase 2: Climate Vulnerability and Risk Assessment.**

Working with a consultant, staff recently commenced a climate vulnerability and risk assessment which will provide the technical basis for climate adaptation planning. Using a combination of public input and data and GIS analysis, the assessment will examine the climate changes Kelowna is exposed to, the community's sensitivity to these changes, potential impacts, and the local capacity to adapt. The results of this assessment will also inform the development of the 2040 Infrastructure Plan highlighting what infrastructure and services could be at risk or be needed to address climate change events (e.g., wildfire, floods, storms, drought). This assessment will allow for the integration of climate considerations into long-range infrastructure capital planning processes.

- **Phase 3: Climate Resilient Kelowna Strategy.** This phase is a culmination of the first two phases to develop a *Climate Resilient Kelowna* strategy. The timing for implementation of Phase 3 is subject to funding. Staff have applied for a grant for \$95,000 through Intact Insurance's Municipal Climate Resiliency Grant program and if successful, work will begin late fall. Should the grant not be successful, staff recommend utilizing \$80,000 from the Climate Reserve (with the remainder covered from existing budgets) to continue the project's momentum and target completion of the *Climate Resilient Kelowna* strategy by mid-2023. An equity lens will be applied to this process to ensure that as the strategy is developed, it provides a just distribution of resources to alleviate unequal burdens created by climate change, providing fair opportunities to those most impacted.

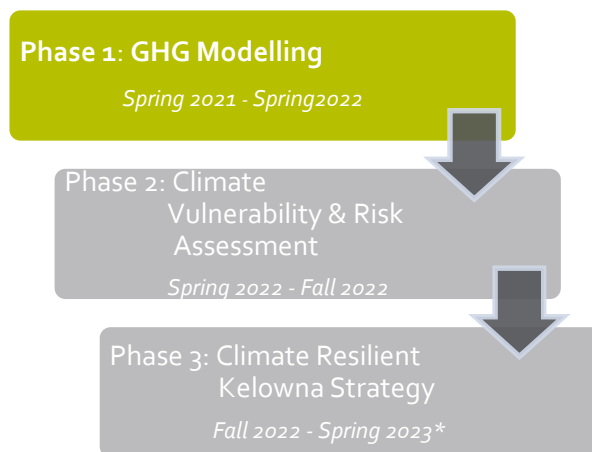


Figure 4: Climate Resilient Kelowna Strategy Phases

**subject to successful grant application or budget consideration*

It should be noted that the City's Champion of the Environment is reviewing current City policies, programs, systems, and resources with respect to the broader climate and environment portfolio and investigating opportunities for improvement. Findings and recommendations from this review will be presented to Council this summer.

Conclusion:

2021's combination of wildfire, drought, heat and flooding in British Columbia provided insight into the potential impacts climate change could have on our region and on our province. Significant impacts like these underscore the urgency for climate resilience planning and take more aggressive action to reduce greenhouse gas (GHG) emissions and to be prepared. Governments, businesses, utilities, academia, and others are responding with new legislation, policies, programs, and technologies. The completion of the *GHG Emissions Modelling Study* demonstrates a path for Kelowna to align with other communities from across the province, to target more aggressive GHG emissions reduction to help do our part to keep global warming below 1.5°C. The study also highlights that to be successful, this is not something that can be done in isolation. The vast majority of GHG emissions reduction can only be

achieved through joint action – by local, provincial, and federal government, various stakeholders, and the broader community.

Council's direction on GHG emissions reduction targets is needed to develop a *Climate Resilient Kelowna* strategy. These targets, together with the outputs of the GHG emission reduction modelling and the upcoming vulnerability and risk analysis, will provide direction on what action is necessary to create a low-carbon and resilient community. Ultimately, the final strategy will seek to identify actions with multiplier effects - those that deliver on both climate mitigation and adaptation, reduce emissions while improving affordability, and help the community adapt while enhancing livability.

Internal Circulation:

Planning & Development Services
Strategic Transportation Planning
Utility Planning
Utility Services
Urban Forestry
Solid Waste
Energy Management
Data Services & Analytics
Fleet Services
Financial Services
Communications
Partnership Office
Asset Management & Capital Planning

Considerations applicable to this report:

Existing Policy:

2040 Official Community Plan

- **Policy 12.1.1 GHG Emissions Reduction Targets.** In partnership with senior government; local citizens and businesses; non-profits; external agencies; and utility providers; work towards reducing absolute community greenhouse gas emissions below 2007 levels by:
 - 4% by 2023;
 - 25% by 2033; and
 - 80% by 2050.

Council Priorities

- Environmental protection: Greenhouse gas emissions are decreasing

Imagine Kelowna

- Goal: Take Action in the face of climate change

External Agency/Public Comments:

Summarized below is engagement from other past projects which provides some insight into support for more aggressive targets.

Imagine Kelowna

One of the goals resulting from the 4,000 resident contributions, is to “take action and be resilient in the face of climate change.”

OCP Phase 2 Engagement – Pick Your Path

With respect to climate action, the OCP Phase 2 Pick Your Path showed that the top two actions the 577 respondents are willing to take to reduce their impact on climate change are to walk, cycle, carpool or take transit more often (34 per cent) and upgrade their home to be more energy efficient (19 per cent).

Similar to other respondents, the most important thing the 222 student participants (35 per cent) are willing to do to reduce their impact on climate change is to walk, cycle, carpool or take transit more often.

OCP Phase 4 Engagement - Survey

With respect to survey questions on the “taking action on climate change” pillar, 74 per cent of the 450 respondents indicated that the key directions listed fully (52.8%) or mostly (21.4%) support the vision of demonstrating leadership and accountability on climate action, while building community resilience in the face of climate change. When asked how the key directions might be improved, common responses included:

- More aggressive timelines and goals related to climate action
- More energy efficient buildings
- Concerns that the pace of growth may negatively impact the environment due to congestion/vehicle emissions and unsustainable building practices or building types.

OCP Phase 4 Engagement – Climate action and environment focus group

More aggressive timelines and stronger emission targets were identified during the focus group discussion, as well as different actions to support GHG emissions reduction.

TMP Phase 5 engagement

One frequent theme from the Phase 5 engagement was the draft TMP was not ambitious enough to respond to the climate emergency. Participants thought that climate action should underpin every recommendation in the plan, or should have been highlighted in its own chapter or section

Legal/Statutory Authority:

Division 4, Section 473 (3) of the *Local Government Act* states that “an official community plan must include targets for the reduction of greenhouse gas emissions in the area covered by the plan, and policies and actions of the local government proposed with respect to achieving those targets.”

Focus Group #1: Climate action and environment

DO MORE TO LIMIT SPRAWL DENSITY/CENTRALIZED GROWTH
PROTECTING SENSITIVE LANDS/SPECIES AT RISK AG EMISSIONS
GREENER CONSTRUCTION METHODS REDUCING CAR-DEPENDENCY
SOLAR PROJECTS VALUES-ALIGNED REGIONAL APPROACH
PRESERVING OKANAGAN LAKE STRONGER WORDING/CLARITY
TREE COVER CAR-FREE ZONES ENHANCING BIODIVERSITY
MORE AGGRESSIVE TIMELINES ADDRESSING ENERGY POVERTY
ACTIVE TRANSPORTATION STRONGER EMISSIONS TARGETS
ONGOING EDUCATION/OUTREACH/PROGRAMMING DATA/MONITORING
EV STATIONS IN NEW BUILDINGS PASSIVE HOUSE DESIGN
IMPLEMENTATION/FOLLOW THROUGH/STICK TO PLAN

Figure 5: OCP Phase 4 engagement climate action and environment focus group feedback

Financial/Budgetary Considerations:

Based on high level estimates, it is anticipated to cost \$155,000 to complete the climate resiliency strategy. Council approved funds in the 2022 budget process for the climate vulnerability and risk assessment phase, and a grant application has been submitted to the Intact Municipal Climate Resiliency Grant program for \$95,000 to cover the remainder of the costs. If the City is not selected for Intact's grant, staff recommend utilizing \$80,000 from the Climate Reserve, with the remainder of the required funds repurposed from existing budgets, to continue the project's momentum and target completion of the *Climate Resilient Kelowna* strategy by mid-2023.

Submitted by:

T. Guidi, Sustainability Coordinator

Approved for inclusion:



D. Noble-Brandt, Dept. Manager, Policy & Planning

Attachments:

Appendix A: GHG Emissions Modelling Study Executive Summary

Appendix B: Emissions reduction targets of mid and large sized BC communities

Appendix A:

Kelowna GHG Emissions Modelling Study

May 2022



Executive Summary

A lot has changed since Kelowna's 2018 Community Climate Action Plan was endorsed. Since the Plan's development, new Intergovernmental Panel on Climate Change (IPCC) research stresses the urgent need for immediate action to reduce greenhouse gases (GHGs). The IPCC asserts that a global GHG reduction of 40 to 45 per cent below 2010 levels by 2030 and reaching net-zero by 2050 is needed to limit global heating below 1.5 degrees Celsius to avoid catastrophic impacts. In response, federal and provincial climate change directives have been updated, adopting more aggressive emissions reduction targets and timelines. Federally, the Canadian Net-Zero Emissions Accountability Act (2021) targets a 40-45 per cent reduction in emissions below 2005 levels by 2030 and attaining net-zero emissions by 2050. Provincially, GHG reduction targets of 40, 60, and 80 per cent reductions below 2007 levels by 2030, 2040, and 2050 respectively have been legislated. Last fall, the Province released its CleanBC Roadmap to 2030, an aggressive plan to put BC on the path toward net-zero emissions by 2050.

As the City prepares to develop its next climate plan to 2030, a better understanding of how the community could reduce its GHG emissions to align with these climate targets is required. The *GHG Emissions Modelling Study* determined Kelowna's GHG emissions inventories for 2007 and 2016, and modelled the local potential emission reductions of senior government initiatives. Understanding that even greater ambition is required to reach the current targets, the study also modelled the reduction potential of additional low-carbon actions that could be taken locally to help the community align with national and international climate targets.

Kelowna's GHG Emissions

Emissions inventories were completed for 2007 and 2016. 2007 serves as the base year to align with Provincial GHG emissions reduction targets. The scenario modelling was based on the 2016 inventory as more robust and current data is available for that year.

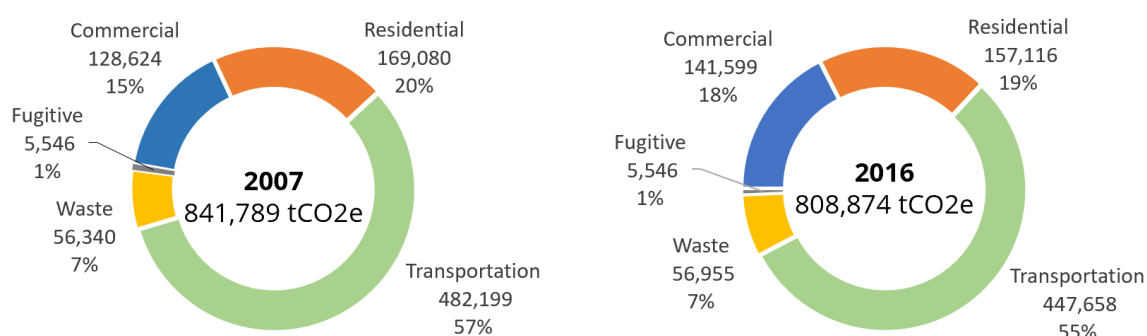


Figure A. Kelowna's 2007 and 2016 GHG emissions inventories.

It should be noted that while 2016 demonstrates a 3.9 per cent decrease in GHG emissions this may not be indicative of a consistent trend, as GHG emissions can vary widely year-over-year due to external factors such as weather. This is illustrated in the 2018 inventory which has a 3.7 per cent increase in GHG emissions over 2007 levels (provided in Appendix 5).

Modelling Scenarios

Kelowna's GHG Emissions Modelling Study assessed four community emissions scenarios to determine the local emission reduction potential of senior government policies announced to date, as well as the potential of additional local policies needed to achieve reductions aligned with the IPCC 1.5 degrees Celsius pathway. Each scenario builds on the results of the previous.

1. **Business as usual (BAU)** – Includes the emissions impacts of Kelowna's increasing population, housing, commercial spaces, and vehicles, and assumes land use, transportation habits, and average dwelling size maintain current trajectories.
2. **CleanBC Actions** – Includes emissions reductions possible through the implementation of the provincial CleanBC and CleanBC Roadmap plans, such as the Energy Step Code and net zero-emissions electricity grid. Some federal mandates, such as 100 per cent zero-emission light-duty vehicle sales by 2035 are also included.
3. **City Plans** – Includes emissions reductions resulting from the recently adopted 2040 Official Community Plan (OCP), 2040 Transportation Master Plan (TMP), and the corporate Green Fleet Strategy.
4. **Low-carbon Scenario (LCS)** – Includes additional local actions that could be taken to achieve emissions reductions aligned with senior government and internationally accepted targets.

While the report focuses on energy and emissions outlooks in the near term to 2030, outlooks to 2050 were also modelled (Appendix 6).

Modelling Results

As illustrated in Figure B, the BAU scenario projects a slight decline in emissions between now and 2030. Over a longer time horizon, however, BAU emissions increase with the growing population. The biggest reduction potential by 2030 is from the transportation sector, due to cleaner fuel (required by BC's Renewable & Low Carbon Fuel Requirements Regulation) and the uptake of electric vehicles. Other major reductions are achieved through BC's requirements for net-zero emissions in the electricity grid by 2030. New and existing buildings are also a major sector for reductions to 2030 through efficiency improvements and converting to low-carbon fuel sources. Through implementing a combination of senior government and local actions, the low carbon scenario modelling demonstrates that the community could achieve GHG emission reduction targets beyond provincial or federal targets. These include major low-carbon shifts in all sectors.

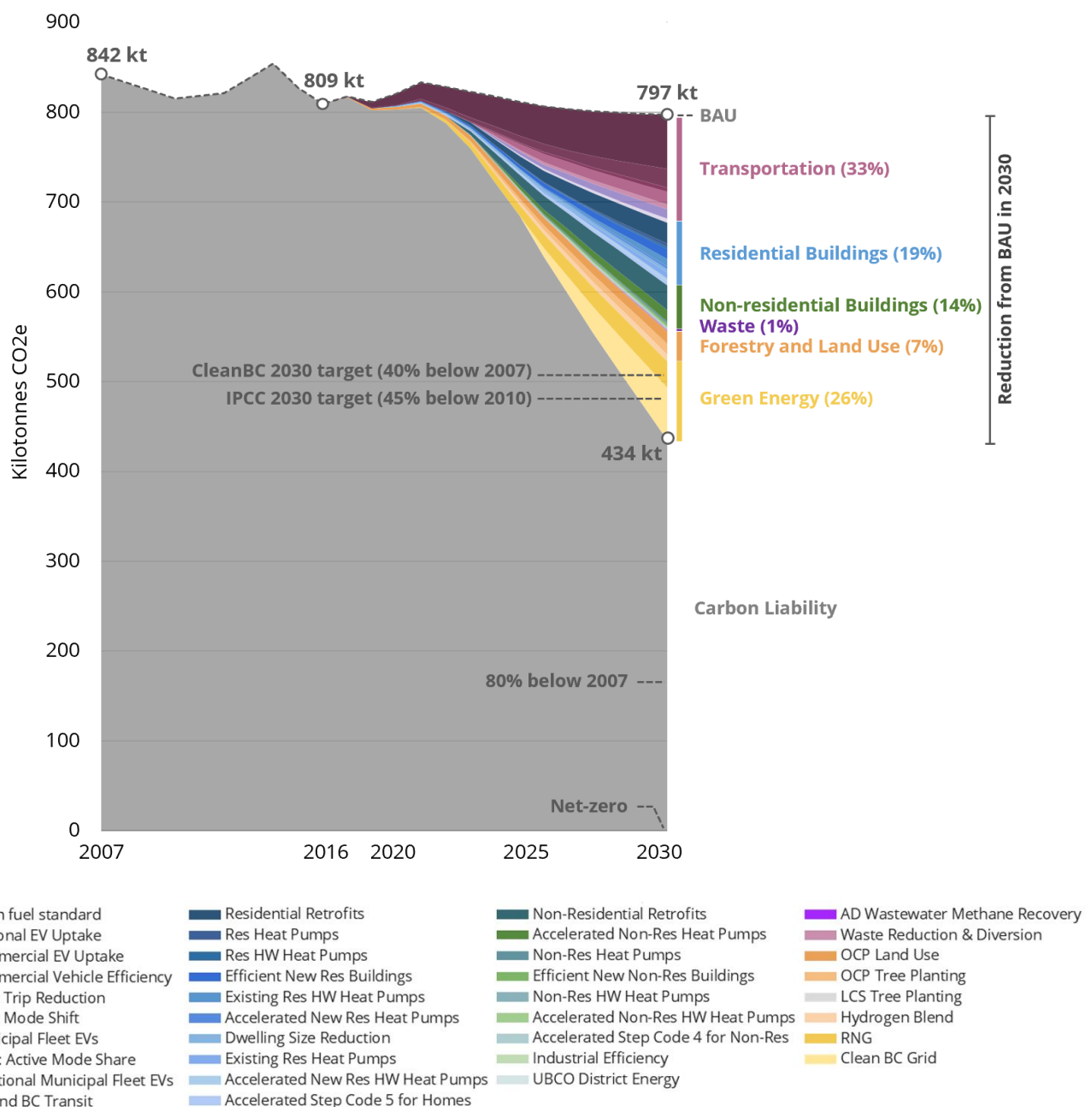


Figure B: Potential emissions reductions to 2030, by sector.

Figure C demonstrates the significance of supporting the local implementation of the CleanBC climate plan. This, in combination with the community reaching its own growth and transportation targets, will result in a 26 per cent emission reduction below 2007 levels. (It should be noted that early implementation of City plans provides long-term reduction benefits). To align with senior government targets, the modelling shows that additional ambitious low-carbon actions are required. Those modelled could achieve a 48 per cent reduction below 2007 levels by 2030.

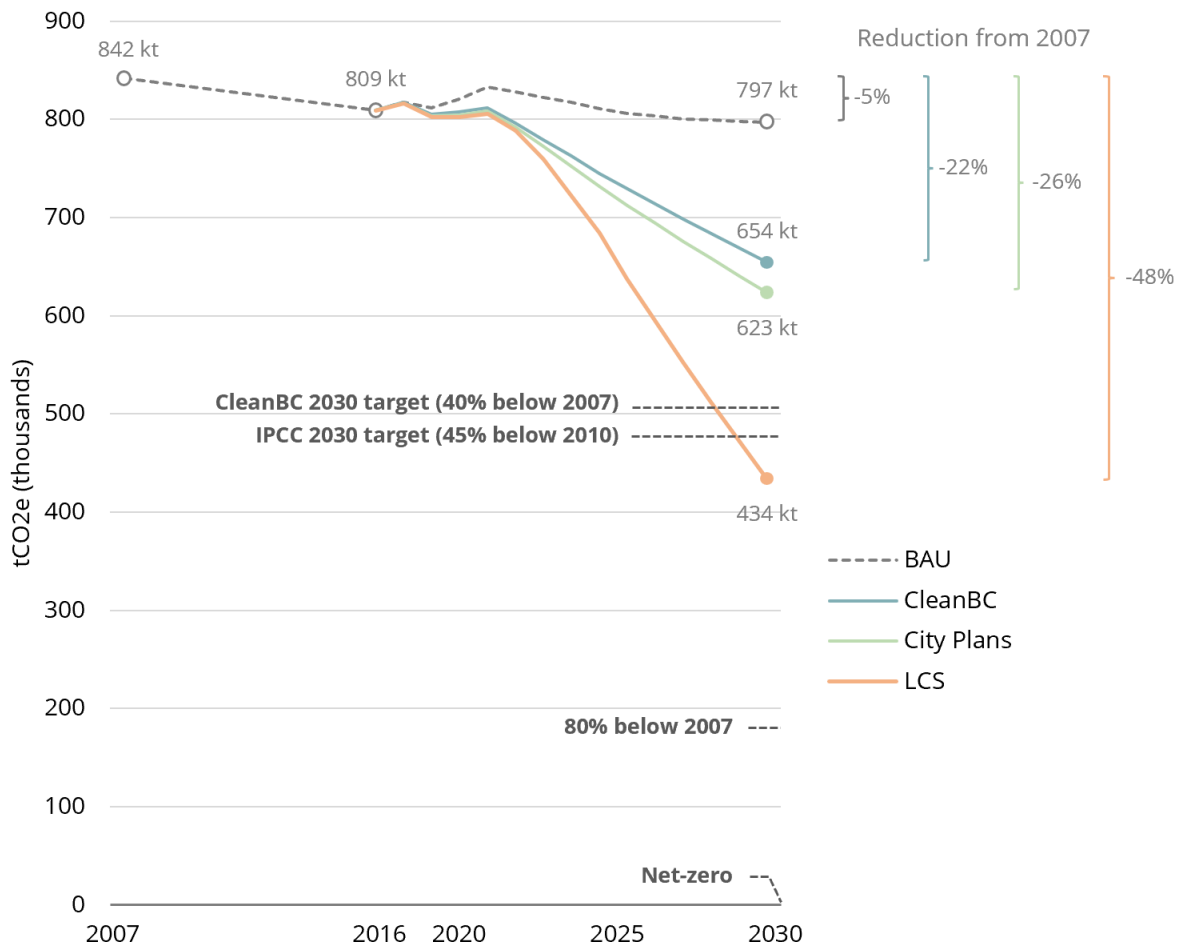


Figure C: Modelled emissions trajectories of four scenarios. The low-carbon scenario (LCS) includes emissions reductions from greening the BC grid by 2030.

Financing the Low-Carbon Transition

To understand the financial implications of reducing GHG emissions, the costs and potential savings for implementing the full suite of low-carbon scenario actions were modelled to 2050. These costs and savings represent those incurred by municipal, private, and public sectors and are additional to those that would occur in the BAU scenario. The black trendline shown in Figure D represents net annual costs and indicates that the break-even point across all action investments could be 2032, at which point energy efficiency, energy systems that require less maintenance and have longer lifespans, revenues from renewable energy sales, and avoided carbon taxes (from reduced fossil fuel purchases) provide ongoing savings, achieving almost two billion dollars in cumulative savings by 2050.

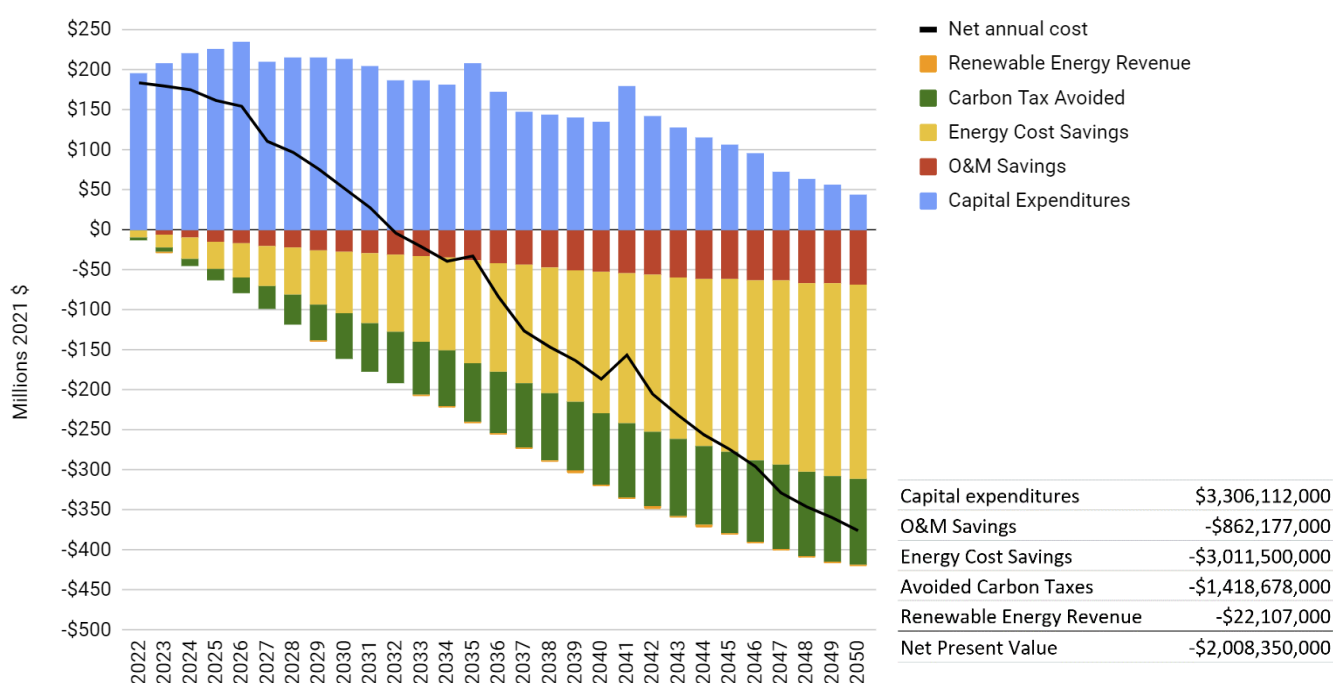


Figure D: Modelled year-over-year expenditures and savings of low-carbon scenario actions implementation, over and above those that would be incurred in the BAU scenario.

In Closing

To reduce the severity of expected climate change impacts locally and across the globe, GHG emissions must be reduced across all sectors. From the international to local stage, action is needed by governments, businesses, industries, and the public. This modelling analysis demonstrates that relying solely on federal and provincial policies and mandates will be insufficient for Kelowna to achieve the IPCC 1.5 degrees Celsius pathway and 2030 senior government emissions reduction targets. With further local low-carbon actions, the community could surpass these targets and achieve a 48 per cent reduction below 2007 levels by 2030. Achieving this will require substantial investment and coordination between governments, citizens, businesses, and other entities, but over the long term the financial savings, as well as other economic, social, and environmental benefits provided by emissions reduction actions, will far outweigh the investment.

Appendix B: Emission reduction targets of mid and large size BC communities

Government	Year target adopted	Base Year	2030 Target	2050 Target
IPCC findings to limit warming below 1.5°C	-	2010	40-45%	Net-zero
Canada	2021	2005	40-45%	Net-zero
Province of BC	2018	2007	40 %	80% ¹
Abbotsford ²	2016	2007	20% (2025)	40% (2040)
Burnaby	2019	2007	45%	Net-zero
Central Saanich	2019	2007	45%	Net-zero
Coquitlam	2012	2007	45%	Net-zero
Delta	2019	2007	45%	Net-zero
Kamloops	2021	2007	30%	80%
Kelowna	2018	2007	25% (2033)	80%
Langley (Township)	2021	2007	50%	Net-zero
Nanaimo	2019	2010	50-58%	94-107%
Nelson	2020	2007	75%	Net-zero
New Westminster	2019	2007	45%	Net-zero
North Vancouver (District)	2019	2007	45%	Net-zero
North Vancouver (City)	2019	2007	-	Net-zero
Penticton	2021	2007	40%	Net-zero
Prince George	2020	2005	30%	Net-zero
Richmond	2022	2007	50%	Net-zero
Saanich (District)	2020	2007	50% (2025)	Net-zero (2040)
Vancouver	2020	2007	50%	Net-zero ³
Vernon	2021	2017	50%	Net-zero
Victoria	2021	2007	50%	80%

¹ The CleanBC Roadmap to 2030 puts the Province of BC on the path to achieve net zero emissions by 2050.

² Unlike most communities, Abbotsford's GHG reduction targets are based on a per capita reduction, not an absolute reduction.

³ The City of Vancouver plans to be net-zero prior to 2050



City of
Kelowna

Climate Resilient Kelowna

GHG Emissions Reduction

June 2022

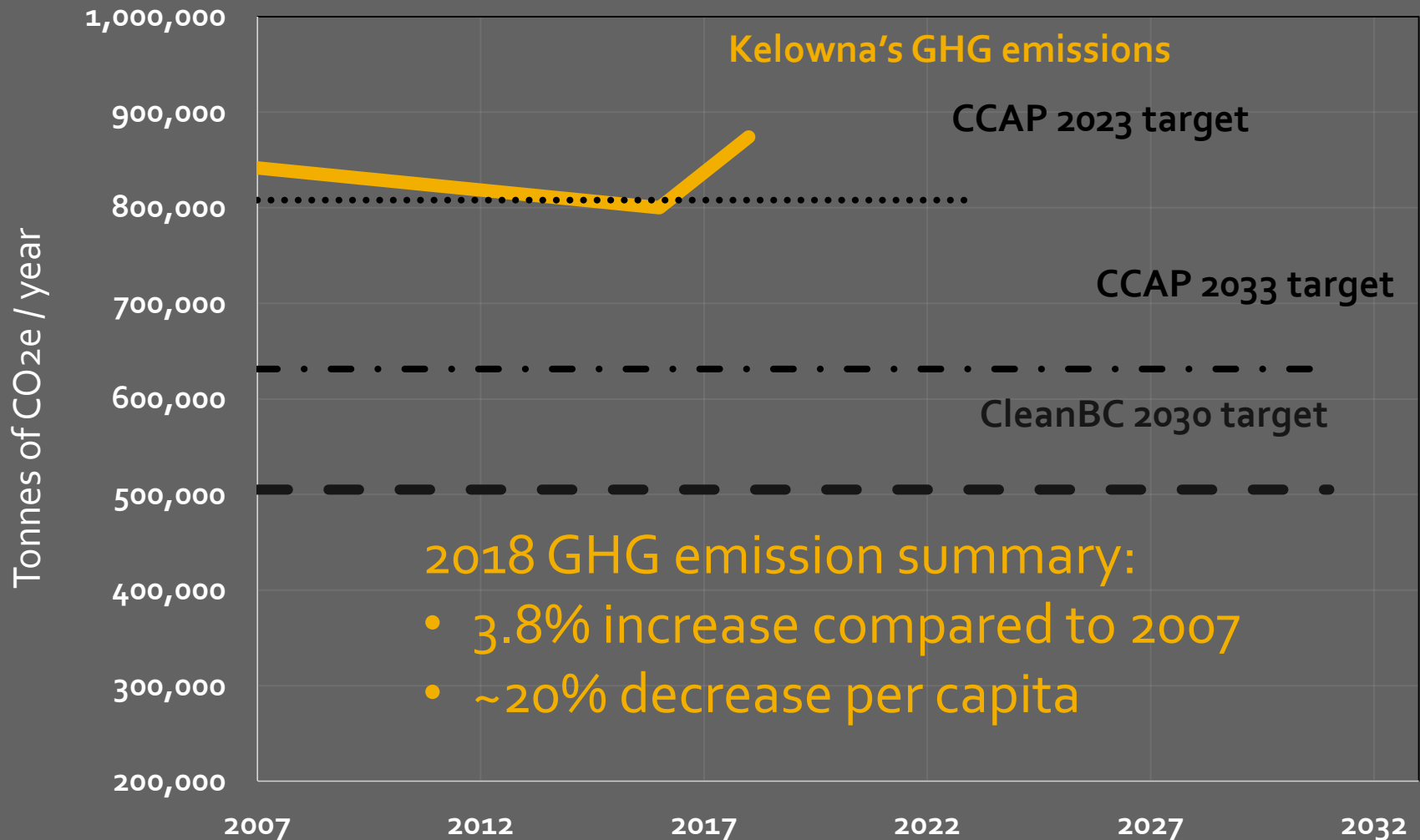
Kelowna's CCAP

5-year strategy to reduce GHG emissions below 2007 levels by:

- 4% by 2023
- 25% by 2033
- 80% by 2050



Kelowna's GHG Emissions

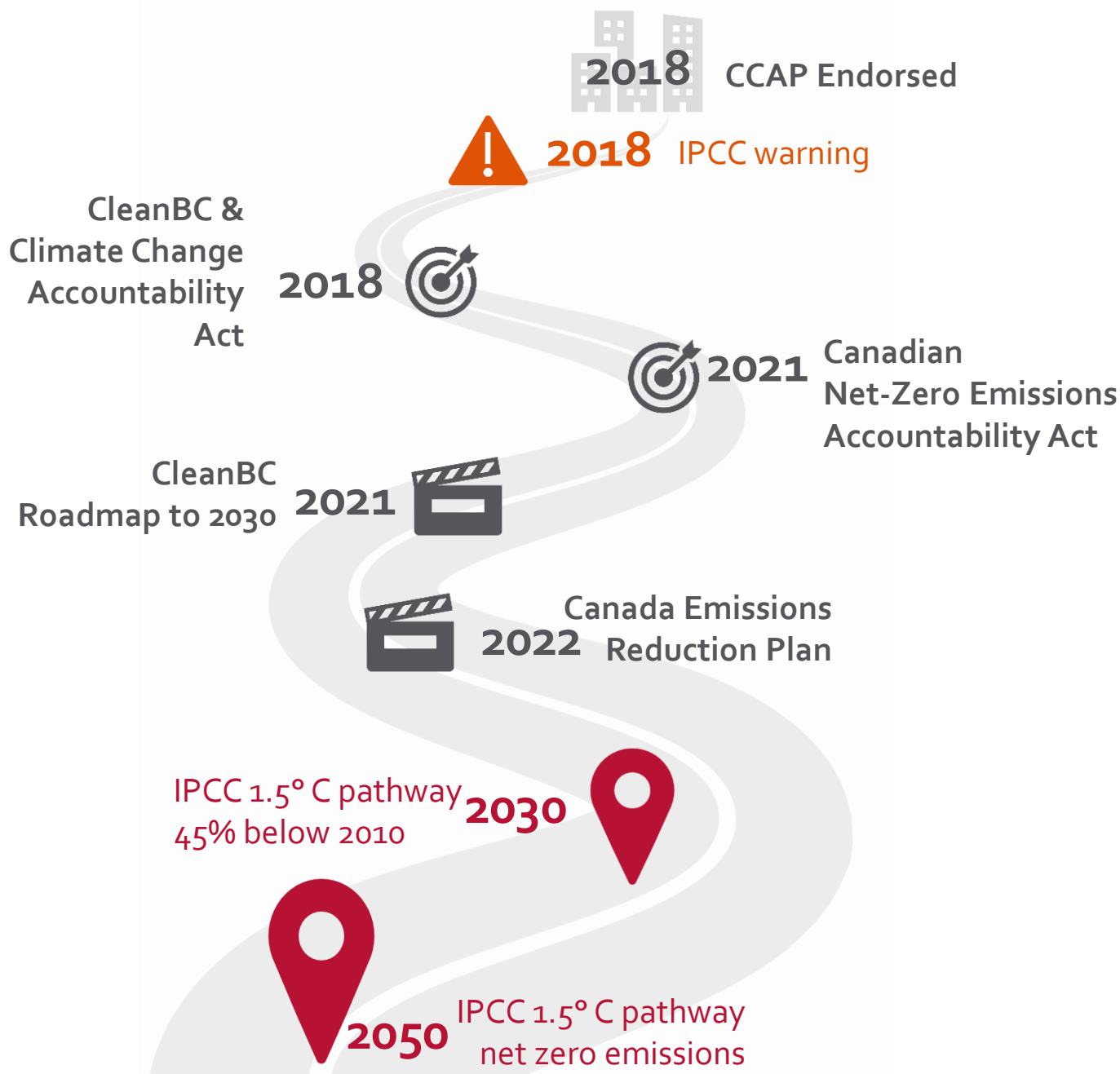


Why now?

- Current targets lapse in 2023
- LG Act requires OCP to have targets
- Climate impacts felt across province
- Significant change to climate policy landscape
- Aligns with many aspects of City business

Climate Resilient Kelowna

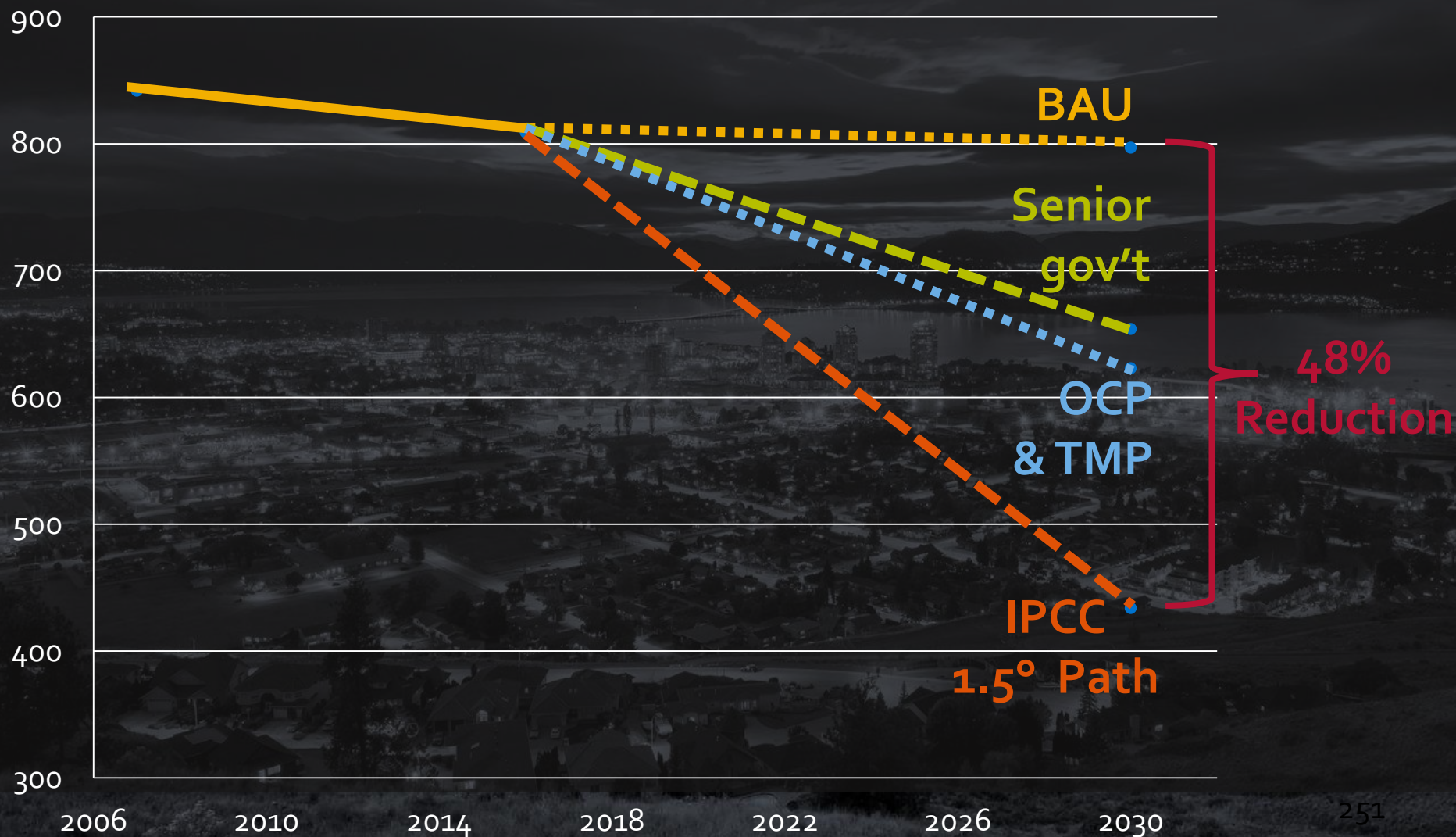




Changes in Climate Policy

Towards 2030

A more ambitious path



BC Comparison

Government	Base Year	2030 Target	2050 Target
IPCC Findings	2010	40-45%	Net-zero
Canada	2005	40-45%	Net-zero
BC	2007	40%	Path to Net-zero
Burnaby	2007	45%	80%
Kamloops	2007	30%	80%
Penticton	2007	40%	Net-zero
Vernon	2007	50%	Net-zero
Average	2007	45%	Net-zero
Kelowna <small>current</small>	2007	25% (2033)	80%
Kelowna <small>proposed</small>	2007	40%	Net-zero ₂₅₂

A new path forward: recommended target updates

In partnership with senior governments; local citizens and businesses; non-profits; external agencies; and utility providers; work towards reducing absolute community GHG emissions

- **40% below 2007 levels by 2030;** and
- Achieve **net zero by 2050.**

Reduction Opportunities

Areas for action

1

Low Carbon
Transportation



2

Low Carbon
Buildings



3

Waste and
Renewable
Natural Gas



4

Complete
Communities



5

Green
Infrastructure



6

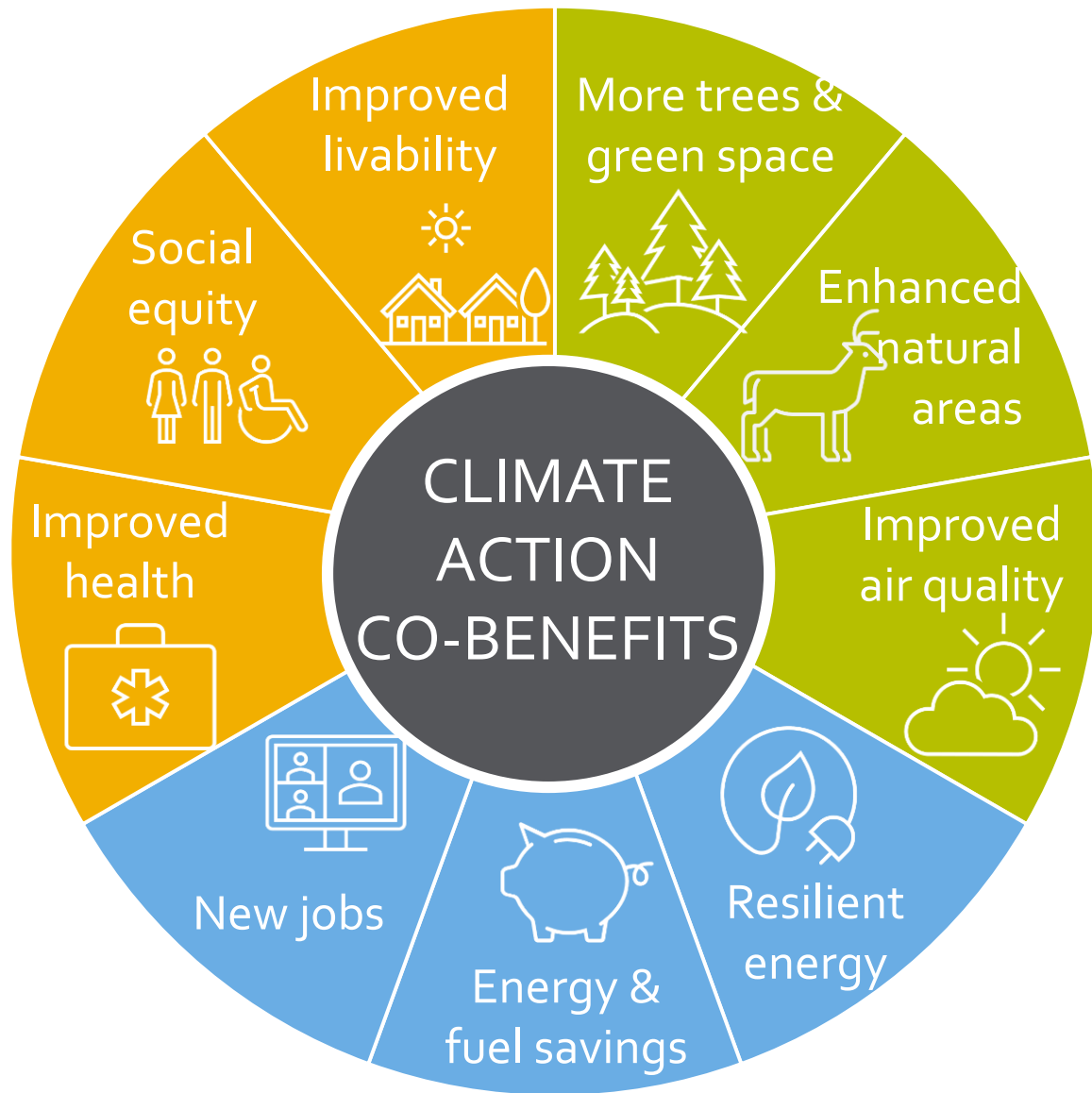
City
Operations



Climate action co-benefits

To 2050

- \$2 billion in savings
- 33,000 person years of employment



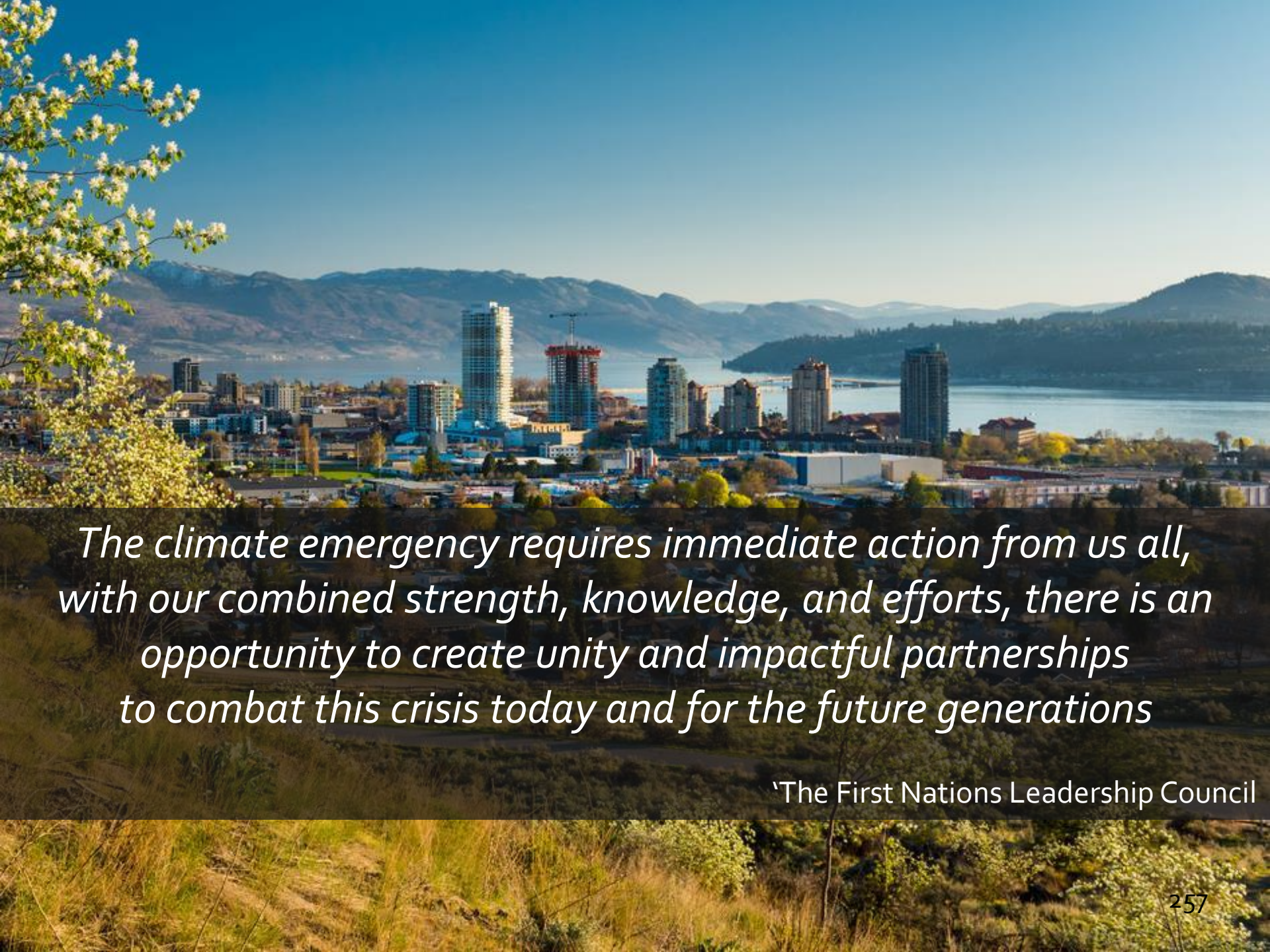
PHASE 1:
GHG
Modelling
Study



PHASE 2:
Vulnerability
& Risk
Assessment



PHASE 3:
Climate Resilient Kelowna strategy



*The climate emergency requires immediate action from us all,
with our combined strength, knowledge, and efforts, there is an
opportunity to create unity and impactful partnerships
to combat this crisis today and for the future generations*

'The First Nations Leadership Council



Questions?

For more information, visit kelowna.ca.

Report to Council



Date: June 20, 2022
To: Council
From: City Manager
Subject: Infill Housing & UBCM Grant – Project Update
Department: Policy and Planning

Recommendation:

THAT Council receives, for information, the report from Policy and Planning dated June 20, 2022 with respect to the UBCM Local Government Development Approvals Program Grant and the Infill Options Project;

AND THAT Council direct staff to report back on the results of stakeholder engagement and concept development for policy and bylaw changes that would expand ground-oriented infill housing in Core Area Neighbourhoods consistent with the direction of the Official Community Plan.

Purpose:

To provide Council with an update on workplan and objectives for the Infill Options project funded by the UBCM Local Government Development Approvals Program Grant.

Background:

In Spring 2021, Council directed staff to apply for grant funding from the UBCM Local Government Development Approvals Program towards an "Infill Housing Approvals Process Review". In Fall 2021, the City of Kelowna was a successful recipient of a \$142,000 grant. The UBCM grant is "to support the implementation of established best practices and to test innovative approaches to improve development approvals processes". It is part of the broader provincial push¹ to improve on the supply side of housing.

The City's approach to this grant funded project – called *Infill Options* – is focused on expanding permissions and streamlining approvals for infill housing. This initiative is a direct response to the pressing need for more supply and would support creation of more attainable market housing.

¹ Other related Provincial projects include the 2019 [Development Approvals Process Review](#) and the 2021 "[Final Report of the Canada-British Columbia Expert Panel on the Future of Housing Supply and Affordability](#)".

Supporting increased supply is one tool that municipalities have at their disposal to provide relief to a constrained market, notwithstanding that widespread affordability challenges facing Kelowna and cities across the country are also driven by demand side factors. Infill housing can address attainability as units are usually priced lower than single-detached homes. Further, third party research suggests that increased supply can tame rising real estate prices.

Responding to infill housing needs with supportive policy is both imperative and opportune. Senior levels of government are pushing for municipal changes that would increase housing supply. The province has made early suggestions of new legislation to impose such changes. However, those same governments are also supporting housing initiatives with grant funding, such as the UBCM grant, and the announcement of the 2022 Federal Budget Housing Accelerator Fund. Taking action towards infill housing growth through the Infill Options project will put the City of Kelowna in prime position to take advantage of these potential opportunities while responsibly addressing the needs of growth.

Project scoping and background research have been underway since the grant award. This report provides Council with 1.) the definition and policy context of infill housing; 2.) the goals of the project; 3.) proposed objectives, deliverables and workplan; and 4.) a brief summary of precedent examples.

Previous Council Resolution (relevant portion of)

Resolution	Date
<p>THAT Council receives, for information, the report from the Planning & Development Services Department dated April 19th with respect to the UBCM Local Government Program Services for the Local Government Development Approvals Program;</p> <p>AND THAT Council support the current proposed activities and endorse staff to provide overall grant management.</p>	<p>April 19, 2021</p>

Discussion:

Infill Housing: Definition and Policy Context

Infill development, in broad terms, is new development within already established areas of the City. Infill housing, more specifically, is usually understood to be higher density residential development implemented in a form that does not significantly change neighbourhood character.

OCP 2040 specifically supports infill housing development as a way of gently increasing housing density within the Core Area Neighbourhood designation (C-NHD). This strategic policy direction is fundamental to the City’s growth strategy of directing growth to the Core Area. 25% of the City’s growth to 2040 is expected to be in the form of infill housing in Core Area neighbourhoods. This translates to a need for approximately 6,400 units for between 11,000 - 13,000 people (Figure 1).

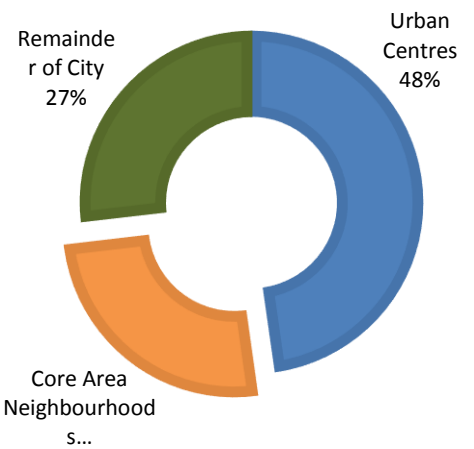


Figure 1 - Housing Growth Distribution: 2022 - 2040

In Core Area neighbourhoods (C-NHD), the pattern and size of new infill development is expected to be generally consistent with the existing character of neighbourhoods in terms of scale and lot configuration. The OCP defines expected types of infill as *ground-oriented* housing. This is development where each unit has an exterior facing, ground floor front door. Examples include duplexes, houseplexes (3+ units), and row-housing (side-by-side, front-to-back or both). Existing fourplex developments within the City's RU7 zoning design are another good example.

This type of infill replaces existing single-detached homes on existing lots with multiple units. It usually becomes strata ownership. It does not involve lot assemblies, buildings over three stories, or buildings which have lobbies or shared hallways. It is intended to complement other types of existing development such as carriage houses and duplexes and would be interspersed amongst existing single-detached homes.

This type of infill housing integrates various Official Community Plan priorities across growth management, transportation efficiency, housing diversity, infrastructure re-investment, climate considerations, and improving affordability. Infill housing also supports other major policy objectives:

- The Transportation Master Plan objectives of shifting away from a car-centric culture by adding new housing near existing services, as well as improving the viability of additional neighbourhood street improvements.
- The Healthy Housing Strategy Key Direction of *Right Supply* by providing lower priced developments and increasing the diversity of market housing. Increasing supply in the market segment of the Housing Wheelhouse can provide relief in other areas of the wheelhouse as persons are able to take move within different types of housing options within the housing wheelhouse.

Infill Options Project: Background and Goals

Despite the broad OCP policy direction in support of expanding infill housing, the single-detached home is the easiest type housing to construct in the City right now. More than 90% of residential lots in Core Area neighbourhoods are restricted by zoning to having only a single-detached home (most with the option for suite or carriage house). In these instances, a rezoning is required before any additional infill development can be realized.

The rezoning process is a known barrier to infill housing supply due to the time, complexity and risk involved. These issues can be more readily managed in large-scale projects. However, overcoming these for small infill development projects on a case-by-case basis is a disincentive. It is also a burden on City staffing resources. In the context of growing housing demand within the Core Area, this creates a supply constraint. It hinders the City's growth strategy and potentially puts upwards pressure on housing costs. It also emphasizes development of apartments or single-detached homes, which will not be suitable housing for all residents.

In the context of this need, and existing policy, the Infill Options project responds with a simple goal of removing regulatory barriers as a means to support increased supply of ground-oriented infill housing.

The definition of *ground-oriented* provided in the previous section guides the type of infill considered for this project. Locations on transit supportive corridors, which are expected to develop more dense and larger buildings, are not included in this work. Also out of scope are mixed/commercial land uses, existing stratas (including bare-land), and development in Urban Centres.

The project has been titled the *Infill Options* project to reflect its expected outcomes: an increase in the range of permitted housing options and an increase in the speed of delivery infill housing. Achieving the goals of this program would ultimately provide more options for the development community, more options for homebuyers, and make it easier to develop ground-oriented infill.

Infill Options Project: Objectives and Workplan

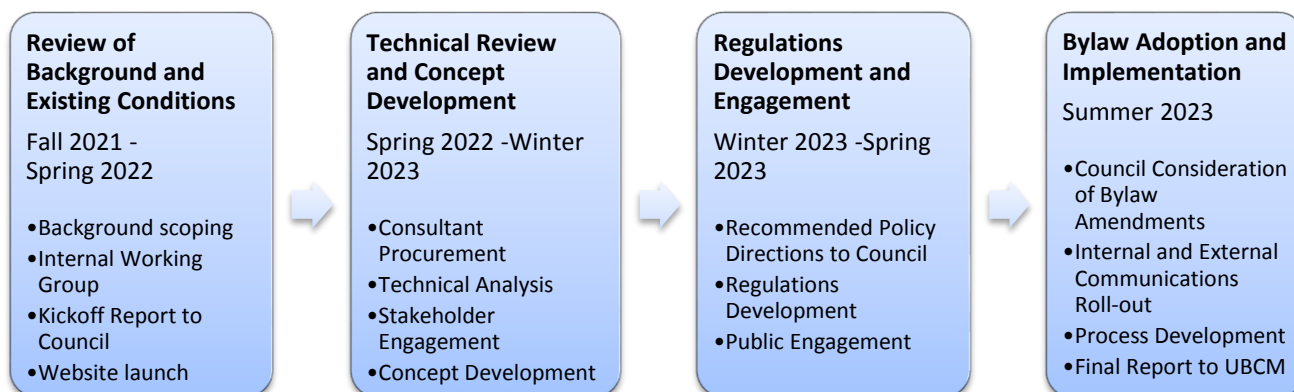
Building on precedent research and collaboration with other departments, Policy and Planning staff have developed five objectives to guide the Infill Options project towards its goals. These are:

- I. Accommodate infill development in core area neighbourhoods (C-NHD) by investigating and introducing zoning regulations for infill housing (3+ units);
- II. Develop processes and policy that support shorter timelines for development review and permit issuance;
- III. Identify and respond to infrastructure constraints and challenges with revised policy, guidelines, and funding mechanisms;
- IV. Incorporate considerations for improved affordability into processes and outcomes; and
- V. Conduct public and stakeholder engagement at IAP2 levels of 'Consult' and 'Involve'.

The scope of work will involve considerable cross-department collaboration and technical analysis. A working group of multiple City departments will facilitate this communication. To further support the project, the UBCM grant funding would be used to engage the expertise of a multi-disciplinary consultant team. The specific deliverables this project would provide are expected to include:

- Recommendations to Council in the form of zoning and other bylaw amendments to support ground-oriented infill housing in more of the Core Area;
- Technical analysis to identify infrastructure challenges (water/sewer/roads) and solutions;
- Economic analysis to understand impact of new regulations on land values and explore options for affordability;
- Recommendations for process improvements to streamline development approvals;
- Urban design analysis and building models to inform design guidelines;
- A revised frontage works funding and financing program; and
- Communications materials to support implementation.

The summarized workplan below outlines phases and milestones of the project. Progression will follow a “research – consult – report back – revise” format. This allows for touchpoints with the community and Council at multiple points in the process. Further updates to Council are anticipated in Quarters 1 and 3 of 2023. The project is moving into Phase 2 and a procurement process is underway.



Preliminary public engagement will take place on the City's 'Get Involved' site. This is intended to raise awareness of the project, gather preliminary feedback, and identify areas of concern. As the project progresses, a detailed engagement and communication plan will be developed to support more specific opportunities for community feedback. Engagement will build on the support for infill that was demonstrated during OCP 2040 consultations, but dive deeper with specific questions to understand how the public views proposed policy options. Directed stakeholder engagement will also inform the project.

Infill Housing: Precedent Examples

There are several notable examples of comprehensive initiatives to expand infill housing across large portions of other cities, including Toronto, Victoria, Vancouver, Edmonton, Portland, Minneapolis, and Cambridge (MA). Key takeaways from these and other examples identified in Attachment #1 have informed the scope and process of the Infill Options project, as follows:

- Comprehensive pre-zoning for houseplexes is best approached at a large scale;
- Incorporating economic analysis is important to match regulations with economic reality and to also allow for policy that incorporates affordability options;
- Infill policy will need to consider limitations and 'trade-offs' (i.e. balancing parking needs with desire for on-site trees);
- Policy that discourages 1:1 housing replacements and incentivizes houseplexes is common; and
- Infrastructure needs resulting from infill can be proactively addressed through funding models.

Conclusion:

The Infill Options project will better prepare Kelowna for 20 years of infill housing growth in Core Area neighbourhoods. It will serve as a step towards other future infill strategies and programs in Urban Centres and along Transit supportive Corridors. Achieving the goals of the Infill Options project would make it easier to develop ground-oriented infill across a larger area of the city, provide more certainty to the development community, and provide more options for low-impact infill growth and a larger supply of attainable housing for existing and future residents.

By approaching this regulatory change at the scale of the entire Core Area, the impact of new infill regulations would be spread out across the city, allowing change to occur incrementally and diminishing land speculation. By removing regulatory barriers and simplifying the approvals process, the Infill Options project would help to increase new infill housing supply. This project will build on the success of the RU7 zoning while incorporating other new considerations for improved integration across land use, transportation, and housing policy goals that were explored most recently in the Infill Design Challenge 2.0.

Internal Circulation:

Community Planning
Transportation Engineering
Infrastructure Engineering
Development Engineering
Utilities Engineering
Utility Services
Building Inspection & Licensing

Considerations applicable to this report:

Existing Policy:

Official Community Plan

- *Core Area Neighbourhood (C-NHD)* Definition and Growth Strategy Role: Core Area Neighbourhoods will accommodate much of the city's growth through sensitive residential infill, some low rise buildings permitted in strategically located properties, and more opportunities for local commercial and institutional development. Except where located along a Transit Supportive Corridor, new development would be largely in keeping with the existing scale and building orientation of the neighbourhood to maintain the overall feel, particularly in Heritage Conservation Areas. Residents of Core Area Neighbourhoods would have easier access to Urban Centres and Village Centres for many of their day to-day shopping and employment needs while their alignment along Transit Supportive and Active Transportation Corridors would make it easier to reach other areas of the city without a car.
- *Policy 5.3.1 Ground Oriented Infill:* Ground Oriented Infill. Encourage gentle densification in the form of ground-oriented residential uses such as houseplexes, townhouses and narrow lot housing to approximately 2 storeys, maintaining residential uses and setbacks that reflect the existing development pattern.
- *Policy 5.3.6 Small Lot Development:* To encourage residential infill development in Core Area Neighbourhoods and transition areas that reflect the existing neighbourhood context, discourage large lot consolidations except where properties front or directly abut a Transit Supportive Corridor, Active Transportation Corridor, or an Arterial Road.
- *Implementation Action #21:* Develop a Residential Infill Strategy

Transportation Master Plan

- *Policy 2.1:* Prioritize renewal and enhancement of existing infrastructure over the construction of new infrastructure, where possible.
- *Policy 1.8:* Update Core Area streets with sidewalks, drainage, boulevards, and trees as neighbourhoods fill in. Explore implementation strategies and fair ways to share costs between developers, existing residents, and the City.
- *Recommended Projects #8:* Local Street Urbanization Program

The TMP recommends creating a new Local Street Urbanization Program to pool contributions from development, local residents and the City to build complete local urban streets, including sidewalks, more quickly.

Healthy Housing Strategy

- Actions related to key Direction of *Build The Right Supply*:

Create more sensitive infill of lots in existing neighbourhoods

Support a greater variety of infill housing forms

Community Climate Action Plan

- *Land Use Action 4 (LU4)*: Coordinate land use and transportation planning through the OCP, Transportation Master Plan and the Regional Strategic Transportation Plan updates to ensure policy and actions make it easier for people to choose sustainable travel modes.
- *Land Use Action 9 (LU9)*: Investigate incorporating a policy into the Official Community Plan to design neighbourhoods such that the site design, construction of buildings and corresponding infrastructure achieves more efficient energy and water use through a systems approach.

Considerations not applicable to this report:

Communications Comments:

Financial/Budgetary Considerations:

Legal/Statutory Authority:

Legal/Statutory Procedural Requirements:

External Agency/Public Comments:

Submitted by:

D. Sturgeon, Planner Specialist

Approved for inclusion:



James Moore, Infill & Housing Policy Manager

Attachments:

Attachment #1: Infill Housing Precedent Review Summary

Attachment #1: Infill Housing Precedent Review Summary

Location & Name	Description
City of Kelowna <i>Infill Design Challenge 1.0</i>	Following a design competition, rezoned 800 urban lots to permit up to 4 units, relative to lot size/width, in a houseplex format. Winning designs (2) could be 'fast-tracked' to building permit, other proposals subject to delegated Development Permit. Reduced parking requirements to 1 stall per unit.
City of Victoria <i>Missing Middle Initiative</i>	City-wide process to comprehensively identify and maximize areas to rezone for infill. Focus on public engagement, affordability options, urban design/landscaping and economic feasibility.
City of Toronto <i>"Expanding Housing Options In Neighbourhoods"</i>	Process underway to explore rezoning for up to 4 units on lots currently only permitted for single family, in areas designated as 'neighbourhoods' (35% of City). Incorporating considerations for design, landscaping, parking, economic feasibility. Public consultation focused on both existing and future residents.
City of Vancouver <i>"Making Room" and "Making Home"</i>	<p>Existing policy ("Making Room") allows duplexes across most areas of the City, which can each contain a suite. FAR can be increased if existing building is repurposed. Parking not required for suites smaller than 320 sq.ft.</p> <p>"Making Home" proposes up to 6 units on up to 2,000 existing single-detached lots. Proposes utilizing density bonus structure for permanent affordability of some units.</p>
City of Edmonton <i>"Infill Roadmap"</i>	Comprehensive action plan incorporates a suite of policy changes over time to strategically expand infill housing in the City and align with other policy as well as infrastructure investments, permitting processes, engagement. Process incorporated typologies from triplex through to apartments, with rezoning in place for some smaller typologies. Density minimums in place to incentivize multi-unit developments over single-detached replacements.
City of Coquitlam <i>"Housing Choices Program"</i>	Rezoned 700+ lots to permit up to 4 units. Zoning limits the size of a single-detached replacement to incentivize houseplex construction instead of 1:1 single-detached replacements. Incorporates street revitalization program with cost sharing for infrastructure upgrades. Ongoing program monitoring is aimed at improving application process and making subsequent regulatory changes.
City of New Westminster <i>"Infill Housing (Duplex, Triplex and Quadraplex): Interim Development Review Policy"</i>	2 phase program to implement carriage homes followed by houseplex infill. Phase 2 deferred, process currently guided by interim policy and considering infill (2+ unit) proposals on a case-by-case basis via site-specific rezoning applications. These pilot proposals will help inform future policy and processes.
City of Portland <i>"Residential Infill Project"</i>	5-year process culminating in pre-zoning in almost all single-detached home areas of the city to permit four-unit houseplexes and up to 6 units in some cases. Policy features sliding FAR scale density bonus structure which incorporates permanent affordability in 4+ unit scenarios. Parking policy waives requirements in some cases. Limits size of single-detached homes to incentivize houseplex development.

Infill Options Project

Project Update

Regular Council Meeting

June 20, 2022



Today

Background: Project Grant, Context

Infill Housing: Definition and Policy Context

Infill Options Program: Objectives and Workplan

Summary

Canadian context

- ▶ Housing supply
- ▶ Speed up approvals process
- ▶ Improve housing affordability
- ▶ Responding to population growth



Spiraling housing prices are an 'intergenerational injustice', says Canada's deputy PM

VICTORIA NEWS

Public hearing on Victoria's missing middle proposal eyed for mid-summer

POLITICS

B.C.'s housing inventory lacking 'right supply' to resolve affordable housing crisis



By Taya Fast • Global News
Posted March 23, 2022 5:54 pm



House sales are down but prices are up across the Okanagan in the month of February 2022, compared to the same month last year. (THE CANADIAN PRESS/Graeme Roy)

Lack of inventory continues to drive up Okanagan home prices



World Canada Local Politics Money Health Entertainment Lifestyle

CANADA

Benchmark price for home in Central Okanagan reaches \$1.1 million

Vaughn Palmer: Eby again signals he will wield stick if B.C. cities don't accelerate housing starts

Background

- ▶ 430k UBCM Grant
 - ▶ DAPR: Development Approvals Process Review
 - ▶ New ways to improve supply side
 - ▶ 288k: “Artificial Intelligence Chatbot”
 - ▶ 142K: “Infill Options Project”
- ▶ Infill Design Challenge 1.0



Opening doors: unlocking
housing supply for affordability

Final report of the Canada-British Columbia Expert
Panel on the Future of Housing Supply and Affordability




Infill Options Program


- ▶ Goal:
 - ▶ Remove regulatory barriers to support an increased supply of ground-oriented infill housing.
- ▶ A response to supply constraints & OCP policy direction
- ▶ Build on previous success
- ▶ Improve *attainability*



A note on terminology:



- Affordable housing:
 - Typically subsidized rental
 - Non-market
 - Below-market rents @ no more than 30% income
 - Operated by non-profit
- Attainable housing:
 - Market housing
 - Lower priced
 - More achievable
 - Can incorporate below-market options through control mechanisms
 - Housing agreements
 - Covenants
 - Offset through incentives
- Infill Options = more attainable options




6 days ago 

\$785,000



#1 745 Morrison Avenue,,
Kelowna, British Columbia


3  2 




\$699,900

#1 734 Kinnear Avenue,,
Kelowna, British Columbia



3  3 




4 days ago 

\$775,000



#3 795 Stockwell Avenue,,
Kelowna, British Columbia

3  3 



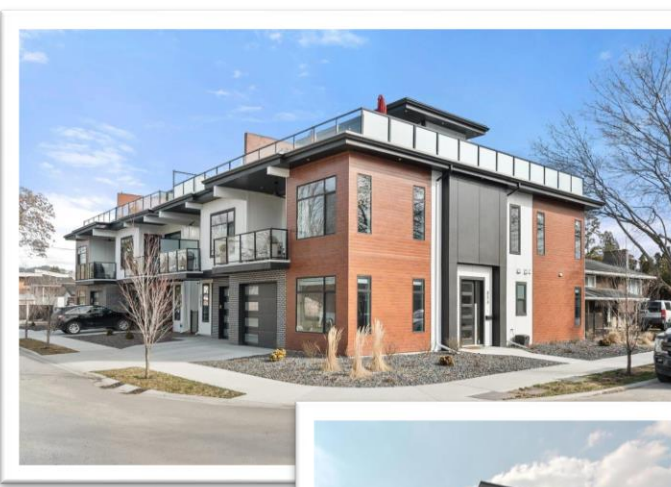
\$799,000

#3 1046 Martin Avenue,,
Kelowna, British Columbia

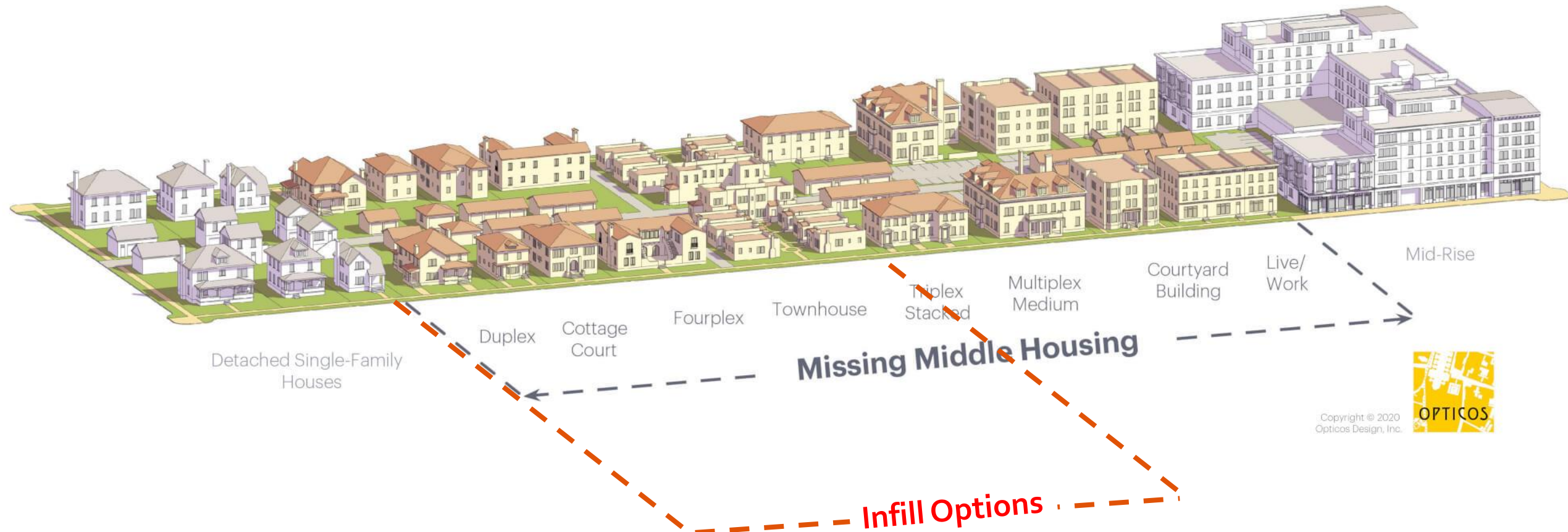
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What kind of infill?

- ▶ OCP definition of “ground-oriented infill”
 - ▶ residential only
 - ▶ 3 or fewer stories
 - ▶ individual, at grade entrances
 - ▶ Uses existing lot configuration (no consolidations)
- ▶ “Missing Middle” housing

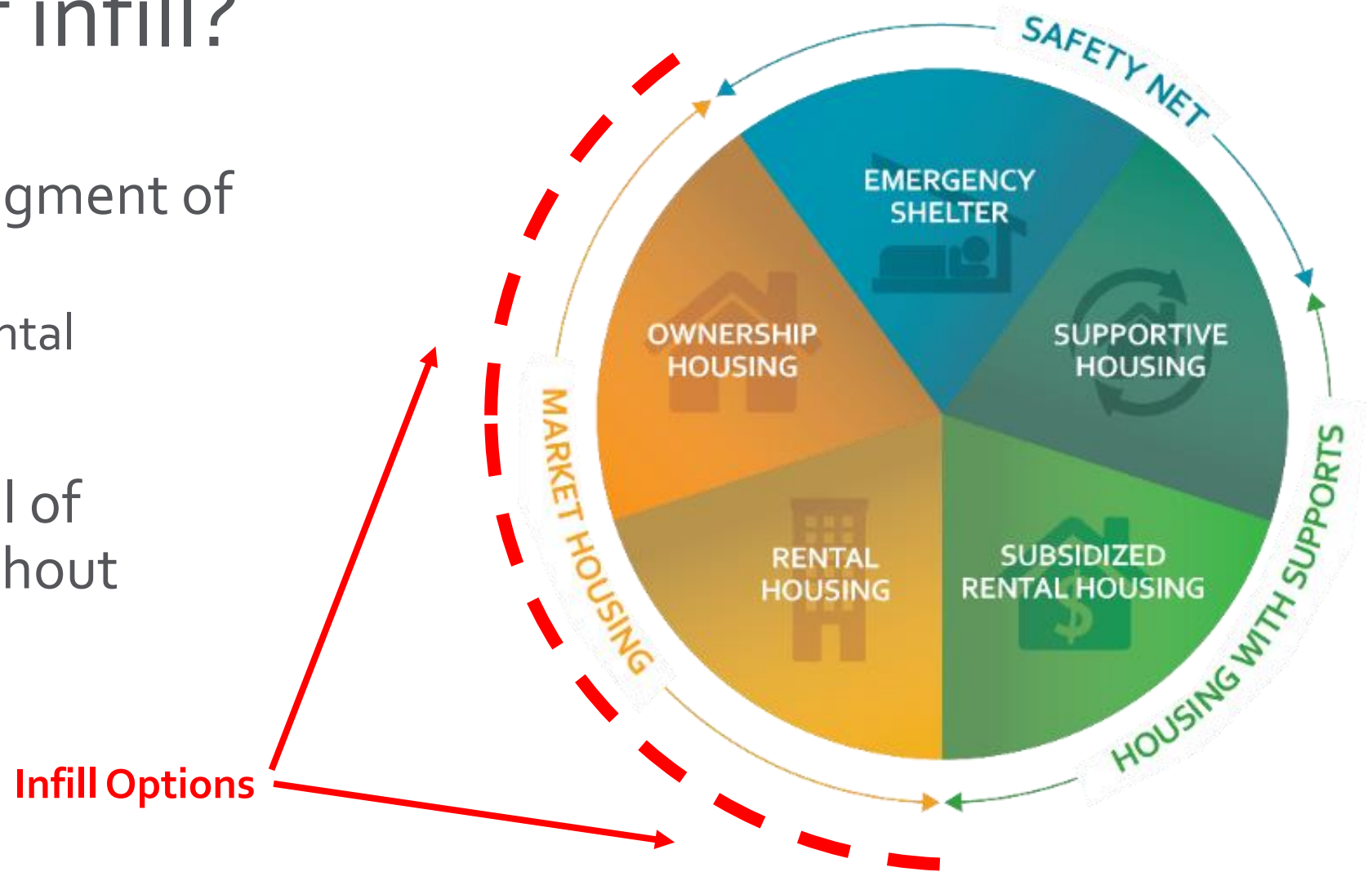


What kind of infill?

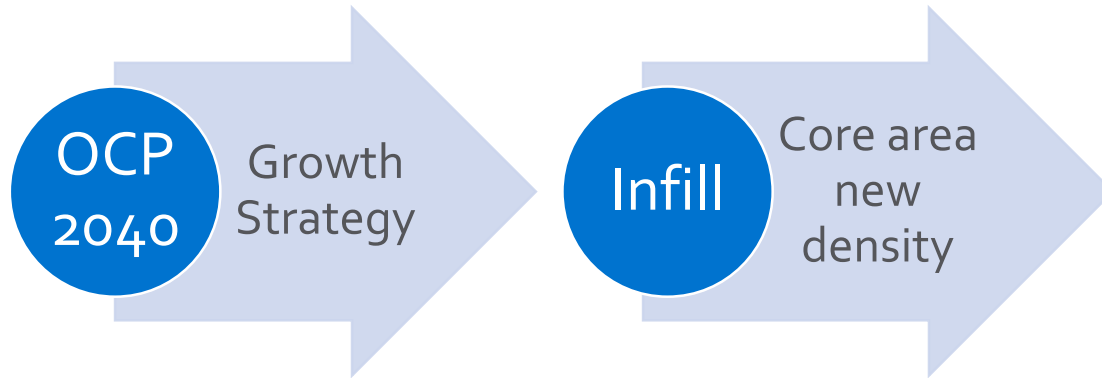


What kind of infill?

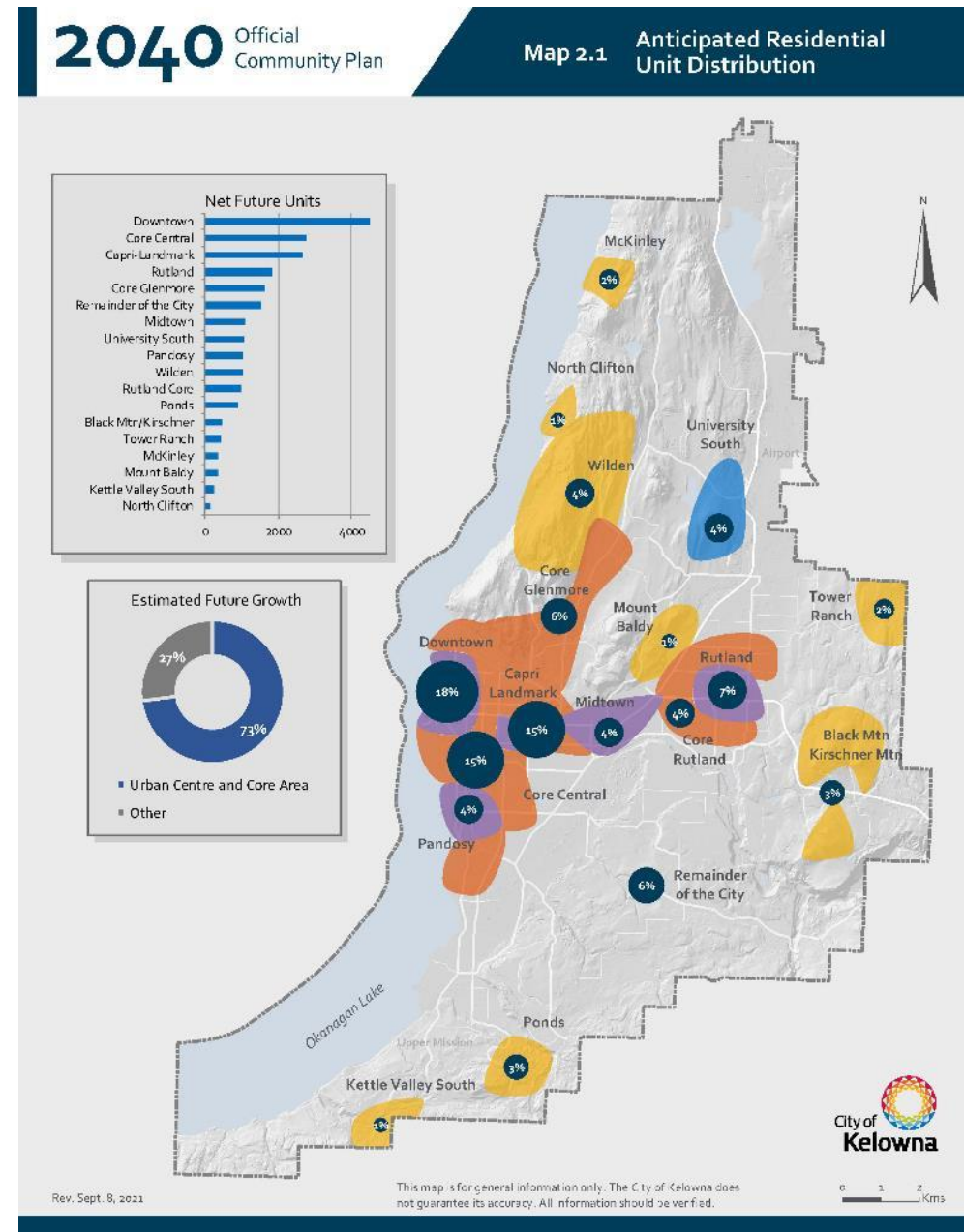
- ▶ Market housing segment of wheelhouse
 - ▶ ownership and rental
- ▶ Increases potential of movement throughout wheelhouse

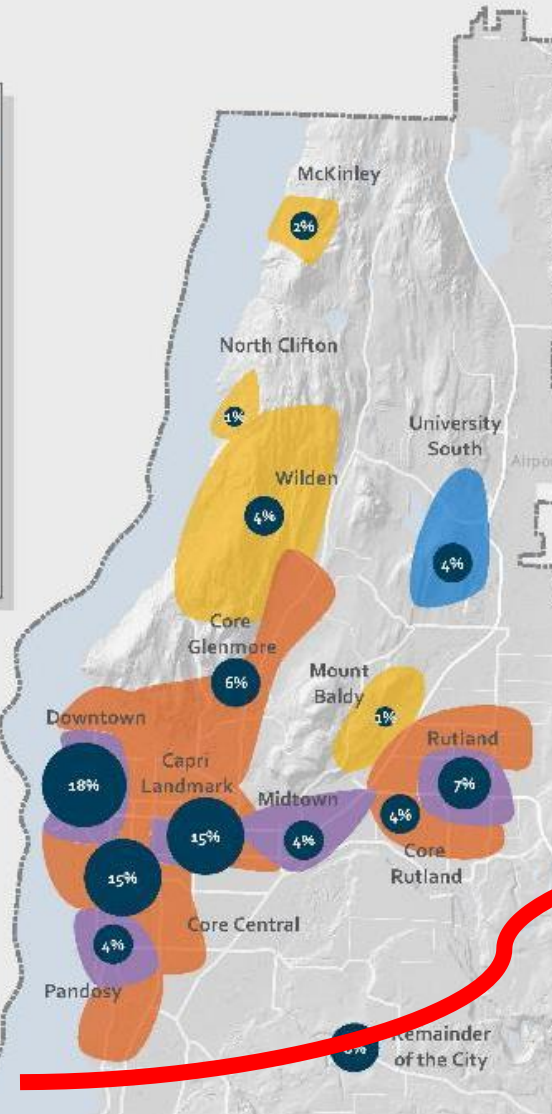
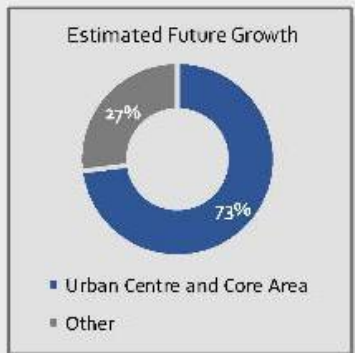
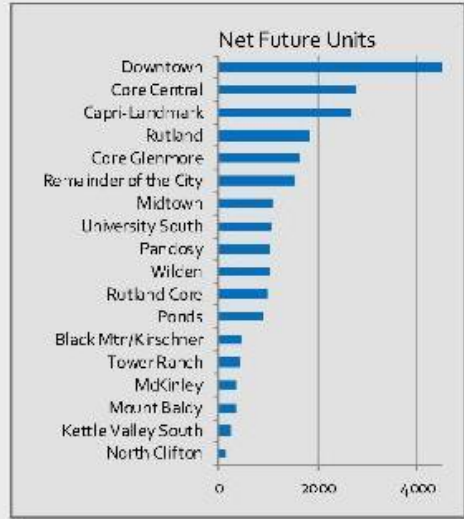


Policy context

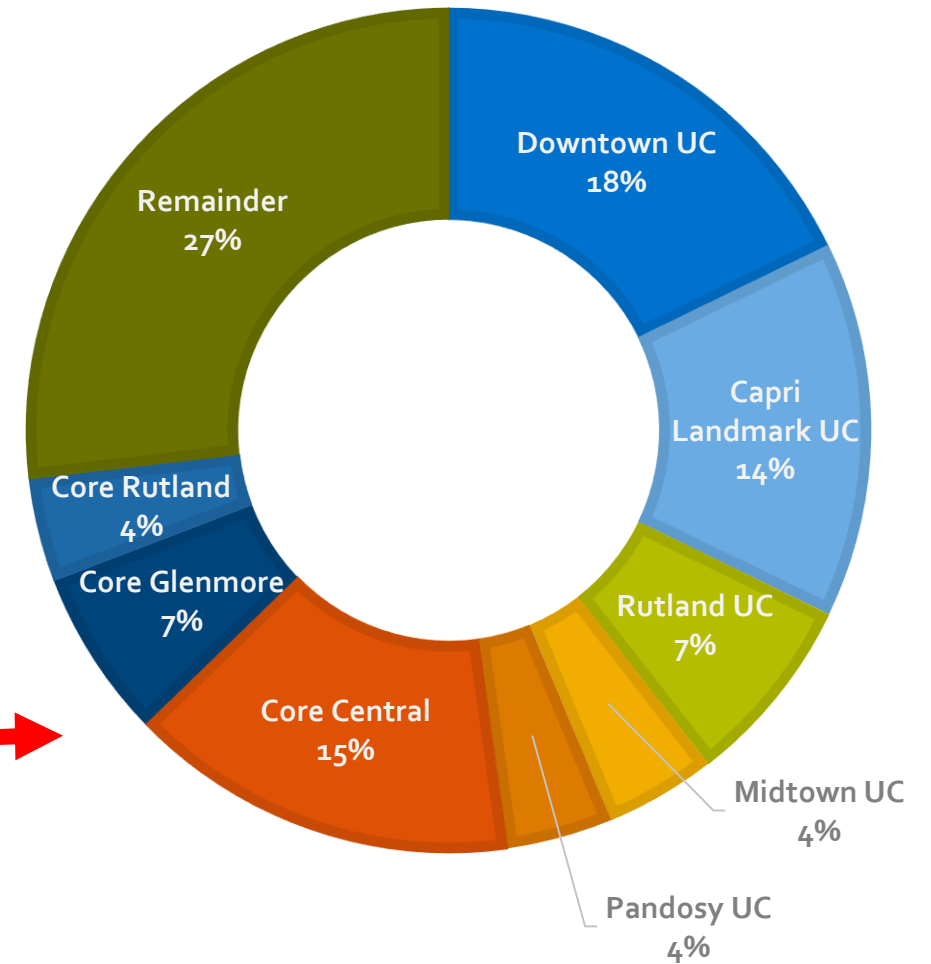


- ▶ Strategic housing growth supports policy priorities of:
 - ▶ Official Community Plan
 - ▶ Transportation Master Plan
 - ▶ Healthy Housing Strategy





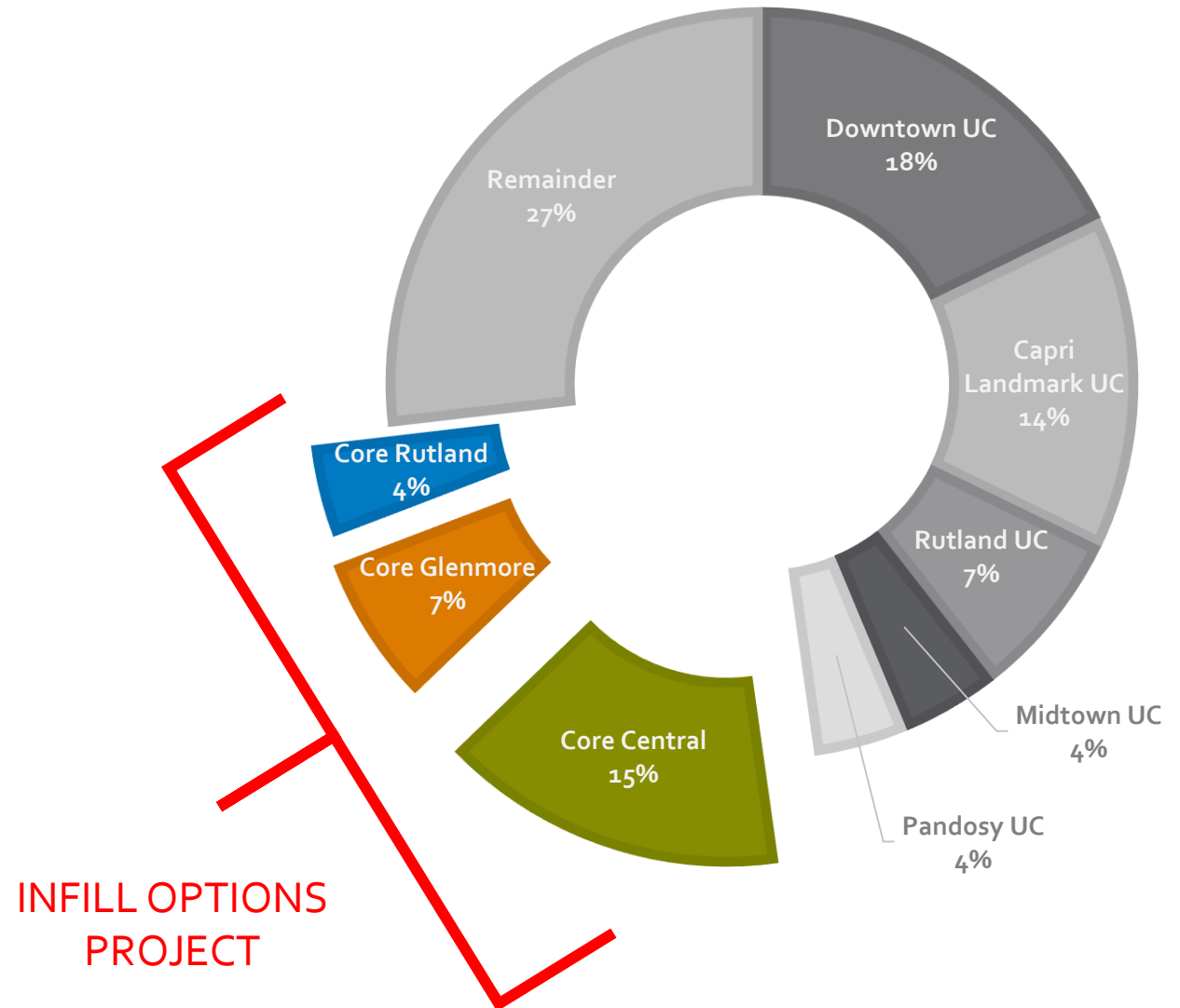
HOUSING GROWTH



Policy context

- ▶ Core area neighbourhoods
 - ▶ Expected to accommodate 25% of the City's growth to 2040
 - ▶ 6400+ units
 - ▶ 11,000 – 13,000 persons

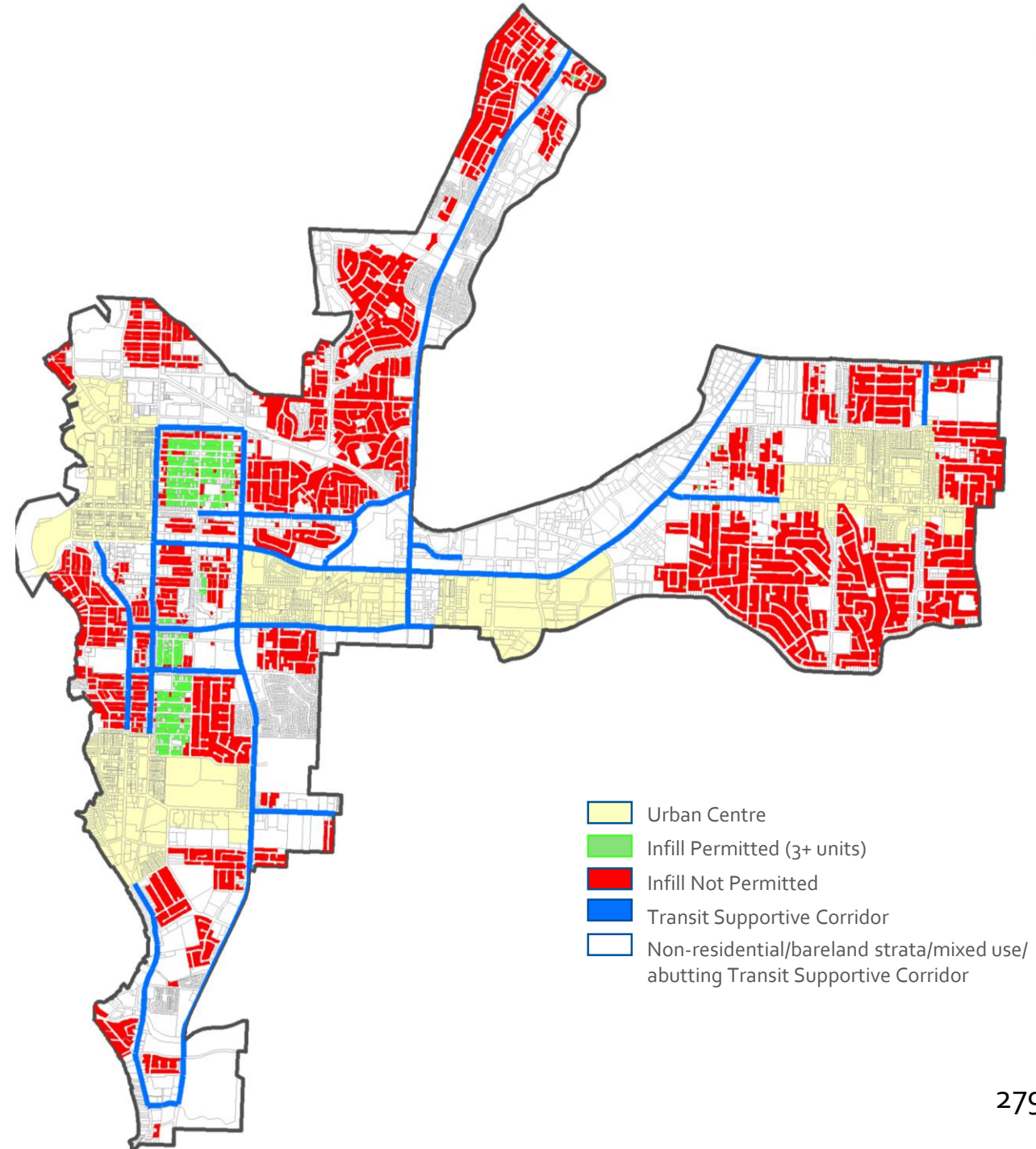
HOUSING GROWTH





Policy context

- 92% of core area neighbourhoods with infill potential are not zoned to permit it
- Results in need for rezoning for each project
 - Known housing barrier
 - Burden on staffing resources
- Infill rezonings outside of RU7 are rare



Infill Options Project: Objectives & Outcomes



Introduction of new zoning regulations in Core Area Neighbourhoods (C-NHD)



Faster and easier approvals processes



Identified costs for infrastructure improvements

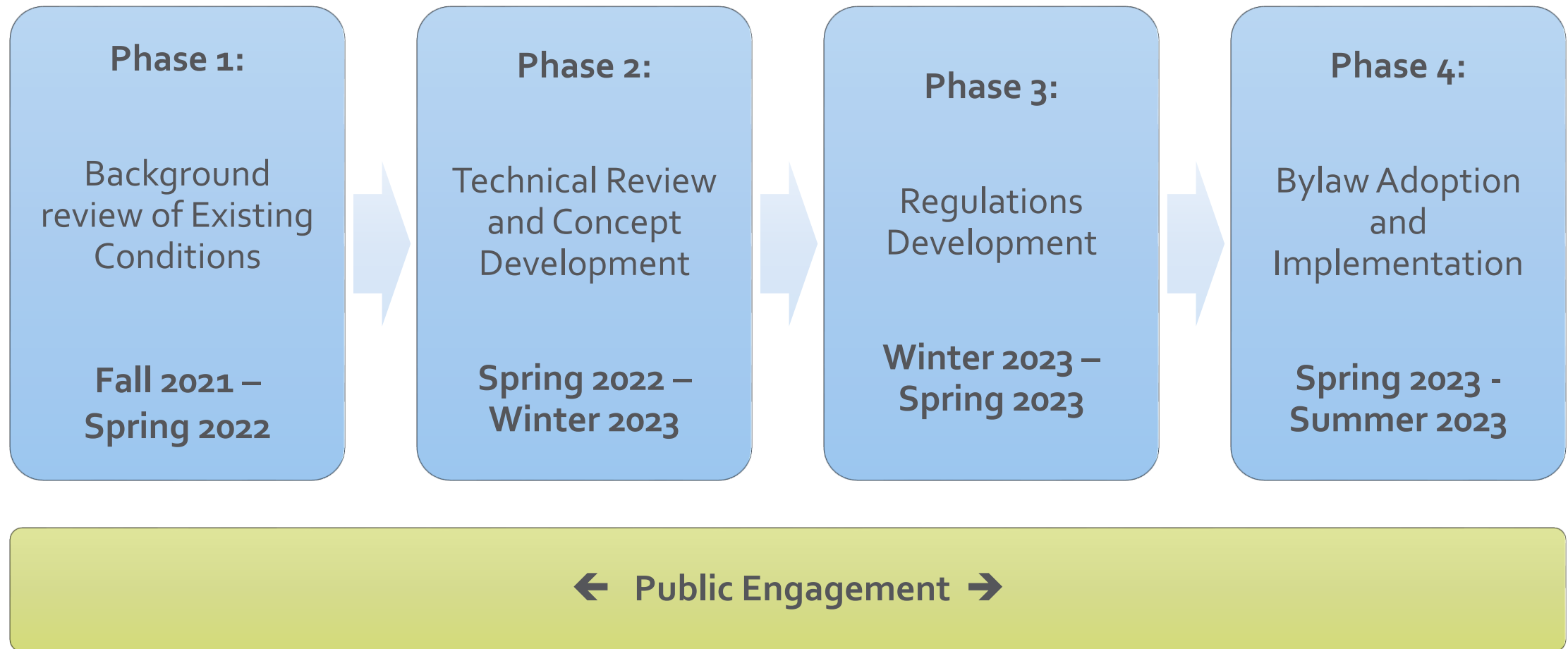


Increased options for attainable housing



Clear communications and guidance materials with the public and development community

Infill Options Project - Workplan



Summary





Questions?

For more information, visit kelowna.ca.



CITY OF KELOWNA

BYLAW NO. 12344

Amendment No.33 to the Bylaw Notice Enforcement Bylaw No. 10475

The Municipal Council of the City of Kelowna, in open meeting assembled, enacts that the City of Kelowna Bylaw Notice Enforcement Bylaw be amended as follows:

1. THAT **Schedule A, Parks and Public Spaces Bylaw No. 10680** be amended by adding the following in the appropriate location:

“

Bylaw No.	Section	Description	A1 Penalty	A2 Early Payment Penalty	A3 Late Payment Penalty	A4 Compliance Agreement Available (*Maximum 50% Reduction in Penalty Amount Where Compliance is Shown as "Yes")
10480	3.4.1	Water Connection made upstream of the Water Meter.	\$500.00	\$450.00	\$500.00	Yes
10480	3.8.1	Owner not providing unobstructed access to water meter	\$50.00	\$45.00	\$55.00	No
10480	4.1.2	Owner not providing unobstructed access to backflow device	\$50.00	\$45.00	\$55.00	No

10480	4.2.2	Non-submission of annual backflow test report	\$200.00	\$175.00	\$225.00	Yes
10480	5.2.1	Tampering with or unauthorized operation of Utility infrastructure	\$300.00 plus cost to repair or reinstate	\$250.00 plus cost to repair or reinstate	\$350.00 plus cost to repair or reinstate	Yes
10480	5.4.1	Unauthorized sale, disposal, or gifting of water off property	\$150.00	\$125.00	\$175.00	Yes
10480	5.5.1	Wasteful discharge of water for no useful purpose	\$100.00	\$75.00	\$125.00	Yes

"

This bylaw may be cited for all purposes as "Bylaw No. 12344, being Amendment No. 33 to the Bylaw Notice Enforcement Bylaw No. 10475."

Read a first, second and third time by the Municipal Council this 13th day of June, 2022.

Adopted by the Municipal Council of the City of Kelowna this

Mayor

City Clerk

CITY OF KELOWNA

BYLAW NO. 12393

A Bylaw to provide for the procedures for the conduct of the 2022 Local Government Elections and other voting

WHEREAS under the *Local Government Act*, the Council of the City of Kelowna may, by bylaw, determine various procedures and requirements to be applied in the administration and conduct of local government elections and other voting;

AND WHEREAS the Council of the City of Kelowna wishes to establish various procedures and requirements in relation to general local elections and any other voting under that authority;

NOW THEREFORE the Council of the City of Kelowna, in open meeting assembled, enacts as follows:

1. CITATION

- 1.1 This bylaw may be cited for all purposes as "2022 General Local Government Election Bylaw No. 12393".

2. MINIMUM NUMBER OF NOMINATORS

- 2.1 The minimum number of qualified nominators required to make a nomination for office as a member of Council shall be 10 as authorized in section 86 of the *Local Government Act*.

3. NOMINATION DEPOSITS

- 3.1 As authorized in section 88 of the *Local Government Act* nominations for Mayor, Councillor or School Trustee must be accompanied by a nomination deposit.
- 3.2 The amount of the nomination deposit required under section 3.1 of this bylaw shall be \$100.00 (One Hundred Dollars).

4. ACCESS TO NOMINATION DOCUMENTS

- 4.1 As authorized under section 89 of the *Local Government Act*, public access to nomination documents will be available at the Office of the City Clerk, 1435 Water Street, Kelowna, BC during normal working hours of 8:00 am to 4:00 pm, Monday to Friday.

5. ADVANCE VOTING OPPORTUNITIES

- 5.1 The following days are hereby established as required advance voting opportunities:
- (a) October 5; and
 - (b) October 12, 2022.
- 5.2 The Chief Election Officer is hereby authorized to establish additional advance voting opportunities in advance of general voting day, and designate the voting places and set the voting hours for these voting opportunities as identified under section 108 of the *Local Government Act*.

6. SPECIAL VOTING OPPORTUNITIES

- 6.1 The Chief Election Officer is hereby authorized to establish for electors, who may otherwise be unable to vote, a special voting opportunity and designate the location, the date, and the voting hours.
- 6.2 Persons who may vote at a special voting opportunity shall be qualified electors who are residents, patients or family members at the facility, or qualified electors who are employed at the facility being used as a special voting opportunity.
- 6.3 The Chief Election Officer is hereby authorized to limit the number of candidate representatives who may be present at a special voting opportunity.

7. MAIL BALLOT VOTING

- 7.1 Mail ballot voting shall be permitted in accordance with Section 110 of the *Local Government Act*, and elector registration shall be permitted to be conducted in conjunction with this voting.
- 7.2 The Chief Election Officer is hereby authorized to establish time limits in relation to voting by mail ballot.
- 7.3 As provided in the *Local Government Act*, a mail ballot must be received by the Chief Election Officer before the close of voting on general voting day in order to be counted for an election.
- 7.4 Mail ballot voting procedures are established in 'Schedule A' attached to and forming part of this bylaw.

8. GENERAL VOTING OPPORTUNITIES

- 8.1 The Chief Election Officer is hereby authorized to establish additional general voting opportunities for general voting day, and designate the voting places, and set the voting hours for these voting opportunities.

9. ORDER OF NAMES ON BALLOT

- 9.1 The order of names of candidates on the ballot will be alphabetical as in accordance with section 116 of the *Local Government Act*.

10. RESOLUTION OF TIE VOTES AFTER JUDICIAL RECOUNT

- 10.1 In the event of a tie vote after a judicial recount, the tie vote will be resolved by conducting a lot in accordance with section 151 of the *Local Government Act*.

Read a first, second, and third time by the Municipal Council this 13th day of June, 2022.

Adopted by the Council of the City of Kelowna this

Mayor

City Clerk

Schedule 'A'

1. Definitions

1.1 In this Schedule:

Applicant means an elector who wants to vote by mail and make a request for a mail ballot;

Authorized person means a person that the **applicant** has authorized, on the **applicant's** behalf, to pick up a mail ballot package or drop off a completed mail ballot package.

Chief Election Officer means the person appointed as such by the Council of the City of Kelowna or their designate.

Register of mail ballots means the records that the **Chief Election Officer** must keep in order to address any challenges to an elector's right to vote.

2. Application Procedure

2.1 An **applicant** will apply by giving their name and address to the **Chief Election Officer** during the period established by the **Chief Election Officer**.

2.2 An **applicant** must indicate if they will be registering as a resident elector or as a non-resident property elector.

2.3 Upon the **applicant** making a request for a mail ballot, the **Chief Election Officer** will:

- (a) make available to the **applicant** a mail ballot package which contains:
 - i. the content set out in section 110(7) of the *Local Government Act*;
 - ii. additional instructions; and
 - iii. a statement advising the elector that the elector must meet the eligibility to vote criteria and the elector must attest to such fact; and
- (b) record in the **register of mail ballots** and, upon request, make available for inspection the name and address of the elector to whom the mail ballot package was issued; and
- (c) record in the **register of mail ballots** any other information that the **Chief Election Officer** deems helpful to maintain the **register of mail ballots**.

2.4 As per the **applicant's** direction, the **Chief Election Officer** may distribute the mail ballot package in any of the following ways:

- (a) sending the mail ballot package by Canada Post;
- (b) sending the mail ballot package by courier at the expense of the **applicant**;
- (c) having the mail ballot package picked up by the **applicant** at a designated time and location; or
- (d) having the mail ballot package picked up by an **authorized person** at a designated time and location.

2.5 The **Chief Election Officer** may request that the **authorized person** show identification and sign a form before providing the **authorized person** with the mail ballot package.

3. Voting Procedure

- 3.1 To vote by a mail ballot, the elector will mark the ballot in accordance with the instructions contained in the mail ballot package provided by the **Chief Election Officer**.
- 3.2 After marking the ballot, the elector will:
- (a) place the ballot in the secrecy envelope provided and seal the secrecy envelope;
 - (b) place the secrecy envelope in the certification envelope, and complete and sign the certification printed on such envelope, and then seal the certification envelope;
 - (c) place the certification envelope, together with a completed elector registration application, in the outer envelope, and then seal the outer envelope; and
 - (d) mail, or otherwise deliver, the outer envelope and its contents to the **Chief Election Officer** at the address specified so that it is received by the **Chief Election Officer** no later than the close of voting on general voting day.

4. Ballot Acceptance or Rejection

- 4.1 The **Chief Election Officer** will, upon receipt of the return envelope and its contents, immediately record the date of receipt in the **register of mail ballots** and open the return envelope.
- 4.2 When the **Chief Election Officer** examines the certification envelope, the **Chief Election Officer** will:
- (a) confirm the identity of the elector as an **applicant** on the **register of mail ballots**;
 - (b) determine the fulfilment of the requirements in section 70 of the *Local Government Act* and the completeness of any application to register; and
 - (c) determine the completeness of the certification envelope.
- 4.3 If the **Chief Election Officer** is satisfied that the elector has met the requirements in section 4.2, the **Chief Election Officer** will mark the certification envelope as "accepted" and place the accepted certification envelope with the other certification envelopes in a secure location.
- 4.4 If the **Chief Election Officer** is not satisfied as to the identify to the elector or the elector has not completed the application to register properly, the **Chief Election Officer** will mark the certification envelope as "rejected", indicate the reason for the rejection and set aside the rejected certification envelope unopened in a secure location.
- 4.5 At the time established by the **Chief Election Officer** prior to general voting day, and in the presence of at least one (1) other election official, the **Chief Election Officer** will:
- (a) open the certification envelopes;
 - (b) remove the secrecy envelopes containing the ballots; and
 - (c) place the sealed secrecy envelope containing the ballot in the designated portable ballot box.
- 4.6 Should the **Chief Election Officer** deem it necessary, at the time established by the **Chief Election Officer** prior to the close of voting on general voting day, and in the presence of at least one (1) other election official and any candidate representatives, the **Chief Election Officer** will supervise:
- (a) the opening of the designated portable ballot box;
 - (b) the opening of the secrecy envelopes; and

- (c) the counting of the ballots following the procedures, so far as applicable, in Section 5 of Automated Voting Machines Authorization Bylaw No. 10970.
- 4.7 At the close of voting on general voting day, and in the presence of at least one (1) other election official and any candidate representatives, the **Chief Election Officer** will supervise:
 - (a) the opening of the designated portable ballot box;
 - (b) the opening of the secrecy envelopes; and
 - (c) the counting of the ballots following the procedures, so far as applicable, in Section 7 of Automated Voting Machines Authorization Bylaw No. 10970.
- 4.8 If the **Chief Election Officer** receives a return envelope with its contents after the close of general voting day, the **Chief Election Officer** will:
 - (a) mark the return envelope as "rejected";
 - (b) indicate the reason why the return envelope was rejected on the return envelope; and
 - (c) place the unopened return envelope with the other rejected return envelopes.
- 5. **Challenge of Elector**
 - 5.1 A person who qualifies under section 126 of the *Local Government Act* may challenge the right of a person to vote by mail ballot on the grounds set out in section 126 of the *Local Government Act* up until 4:00 pm two days before general voting day.
- 6. **Elector's Name Already Used**
 - 6.1 If, upon receiving a request for a mail ballot, the **Chief Election Officer** determines that another person has voted or has already been issued a mail ballot in the elector's name, the **Chief Election Officer** will comply with section 127 of the *Local Government Act*.
- 7. **Replacement of Spoiled Ballot**
 - 7.1 If an elector unintentionally spoils a mail ballot before returning it to the **Chief Election Officer**, the elector may request a replacement ballot by advising the **Chief Election Officer** of the ballot spoilage and mailing or otherwise delivering, by any appropriate means, the spoiled ballot package in its entirety to the **Chief Election Officer**.
 - 7.2 Upon receipt of the spoiled ballot package, the **Chief Election Officer** will record such fact and proceed in accordance with Section 2 of this schedule.