City of Kelowna
Regular Council Meeting
AGENDA

Monday, August 8, 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 4 - 11

PM Meeting - July 25, 2022

3. Development Application Reports & Related Bylaws

3.1. Teasdale Rd 1368, A22-0003 - Northview Orchards Ltd., Inc.No. 221199 12 - 39

To support an application to the Agricultural Land Commission for a Non-Adhering Residential Use Permit to allow for the replacement of a second dwelling that is no longer a suitable residence.

3.2. Supplemental Report - Rimrock Rd 180 - Z22-0021 (BL12417) - Mohammad Yousuf Nasin and Sayeda Hashimi Nasin 40 - 41

To receive a summary of notice of first reading for Rezoning Bylaw No.12417 and to give the bylaw further reading consideration.

3.3. Rimrock Rd 180 - BL12417 (Z22-0021) - Mohammad Yousuf Nasin and Sayeda Hashimi Nasin 42 - 42

To give Bylaw No. 12417 first, second and third reading and adopt in order to rezone the subject property from the RR1 – Rural Residential 1 zone to the RR1c – Rural Residential 1 with Carriage House zone.

3.4. Water St 1659 - DP 22-0137 - The Wedge Enterprises Inc., Inc.No. BC1238448 43 - 71

To issue a Development Permit for the form and character of a two storey commercial development.

4. Bylaws for Adoption (Development Related)

4.1. Lawson Ave 1021 - BL12065 (Z20-0041) - Susan D. Glendinning 72 - 72

To amend and adopt Bylaw No. 12065 in order to rezone the subject property from the RU6 – Two Dwelling Housing zone to the RM5 – Medium Density Multiple Housing zone.

4.2. Sexsmith Rd 2996 - BL12177 (Z19-0072) - 2996 Sexsmith Holdings Ltd., Inc.No. BC1291161 73 - 73

To adopt Bylaw No. 12177 in order to rezone the subject property from the A1 - Agriculture 1 zone to the I6 - Low Impact Industrial zone.

4.3. Sexsmith Rd 3030 - BL12178 (Z18-0116) - Jason G. Witt 74 - 74

To adopt Bylaw No. 12178 in order to rezone the subject property from the A1 - Agriculture 1 zone to the I6 - Low Impact Transitional Industrial zone.

4.4. Sherwood Rd 639 - BL12264 (Z21-0067) - Yunfang Gao 75 - 75

To adopt Bylaw No. 12264 in order to rezone the subject property from the RU1 – Large Lot Housing zone to the RU6 – Two Dwelling Housing zone.

4.5. Fleet Ct 3480, 3508 - BL12388 (OCP20-0003) - Midwest Ventures Ltd., Inc.No. BC0046021 76 - 76

To adopt Bylaw No. 12388 in order to change the Future Land Use designation of the subject properties from the IND – Industrial designation to the RCOM – Regional Commercial Corridor designation.

4.6. Fleet Ct 3480, 3508 - BL12389 (Z20-0006) - Midwest Ventures Ltd., Inc.No. BC0046021 77 - 77

To adopt Bylaw No. 12389 in order to rezone the subject properties from the CD15 – Airport Business Park zone to the C9 – Tourist Commercial zone.

4.7. Greene Rd 658 - BL12395 (Z21-0107) - Ricki Chan 78 - 78

To adopt Bylaw No. 12395 in order to rezone the subject property from the RU1 - Large Lot Housing zone to the RU6 - Two Dwelling Housing zone.

4.8. Feedham Ave 1649 - BL12413 (Z22-0031) - Sander Dokter and Brooke Dokter 79 - 79

To adopt Bylaw No. 12413 in order to rezone the subject property from the A1 – Agriculture 1 zone to the RU1c – Large Lot Housing with Carriage House zone.

5. Non-Development Reports & Related Bylaws

5.1. Climate and Environment Framework and Recommendations Report 80 - 166

To present the Climate Resilience & Environmental Stewardship Review: Framework and Recommendations Report to Council for information and endorsement.

5.2. 2022 Community Wildfire Resiliency Plan Update 167 - 275

For Council to update the previous Community Wildfire Protection Plan with the Community Wildfire Resiliency Plan for the next 5 years.

6. Mayor and Councillor Items

7. Termination

City of Kelowna
Regular Council Meeting
Minutes

Date:	Monday, July 25, 2022
Location:	Council Chamber City Hall, 1435 Water Street
Members Present	Mayor Colin Basran, Councillors Maxine DeHart*, Ryan Donn, Charlie Hodge, Brad Sieben*, Mohini Singh, Luke Stack and Loyal Wooldridge
Members Absent	Councillor Gail Given
Staff Present	City Manager, Doug Gilchrist*; City Clerk, Stephen Fleming; Divisional Director, Planning and Development Services, Ryan Smith*; Development Planning Department Manager, Terry Barton*; Planner I, Jason Issler*; Policy & Planning Department Manager, Danielle Noble-Brandt*; Long Range Planning Manager, Robert Miles*; Real Estate Department Manager, Johannes Saufferer*; Acting Property Management Manager, Ron Forbes*; Property Management Manager, Julia Buck*; Transit and Programs Manager, Jerry Dombowsky*; Transit Service Coordinator, Mike Kittmer*
Staff participating Remotely	Clint McKenzie, Legislative Coordinator (Confidential)

(* Denotes partial attendance)

1. Call to Order

Mayor Basran called the meeting to order at 1:34 p.m.

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

As an open meeting, a live audio-video feed is being broadcast and recorded on kelowna.ca.

2. Confirmation of Minutes

Moved By Councillor Hodge/Seconded By Councillor Wooldridge

R0572/22/07/25 THAT the Minutes of the Regular Meetings of July 11, 2022 be confirmed as circulated.

Carried

3. Development Application Reports & Related Bylaws

3.1 Coronation Ave 555 to 659 - Z22-0032 - Coronation Holdings Ltd., Inc.No. BC1299864

Staff:
- Displayed a PowerPoint Presentation summarizing the application and providing rationale for non-support and responded to questions from Council.

Brian Quiring, Vernon, MQN Architects and David Jacobsen, North Vancouver, the ownership group
- Displayed a PowerPoint Presentation outlining the redevelopment project.
-Introduced ownership representatives and other members of the project team.
-Provided comments on the proposed contiguous assembly.
-Displayed project statistics slide.
-Spoke to the massing strategy and the proposed heights of the three towers.
-Spoke on behalf of the ownership group.
-Provided comment on project benefits and amenities.
-Spoke to the Phase One and Phase Two and the site potential on a large land assembly in the north part of town.
-Encouraged Council to see this as a first idea.
-Looking forward to collaborative work with City staff.
-Responded to questions from Council.

Councillor DeHart declared a conflict due to her employment in the hotel industry and left the meeting at 2:01 p.m.

Moved By Councillor Stack/Seconded By Councillor Wooldridge

R0573/22/07/25 THAT Rezoning Application No. Z22-0032 to amend the City of Kelowna Zoning Bylaw No. 8000 by changing the zoning classification of the properties identified in Schedule A from the RU2 – Medium Lot Housing zone and the RU2c – Medium Lot Housing with Carriage House zone to the C7 – Central Business Commercial zone NOT be considered by Council.

Carried

Councillor DeHart returned to the meeting at 2:30 p.m.

3.2 Rimrock Rd 180 - Z22-0021 (BL12417) - Mohammad Yousuf Nasin and Sayeda Hashimi Nasin

Staff:
- Displayed a PowerPoint Presentation summarizing the application.

Moved By Councillor Hodge/Seconded By Councillor Wooldridge

R0574/22/07/25 THAT Rezoning Application No. Z22-0021 to amend the City of Kelowna Zoning Bylaw No. 8000 by changing the zoning classification of Lot 1 Section 16 Township 28 SDYD Plan 34351, located at 180 Rimrock Rd, Kelowna, BC from the RR1 – Rural Residential 1 zone to the RR1c – Rural Residential 1 with Carriage House zone be considered by Council;

Carried

3.3 Supplemental Report - Feedham Ave 1649 - Z22-0031 (BL12413) - Sander Dokter and Brooke Dokter

Moved By Councillor Donn/Seconded By Councillor Singh

R0575/22/07/25 THAT Council receives, for information, the report from the Office of the City Clerk dated July 25, 2022 with respect to Zoning Bylaw No. 12413;

AND THAT Rezoning Bylaw No.12413 be forwarded for further reading consideration.

Carried

3.4 Feedham Ave 1649 - BL12413 (Z22-0031) - Sander Dokter and Brooke Dokter

Moved By Councillor Wooldridge/Seconded By Councillor Hodge

R0576/22/07/25 THAT Bylaw No. 12413 be read a first, second and third time.

Carried

3.5 Pandosy St 2340 - Z19-0135 (BL12056) - Rescind Rezoning Bylaw

Moved By Councillor Singh/Seconded By Councillor Wooldridge

R0577/22/07/25 THAT Council receives, for information, the Report from the Development Planning Department dated July 25, 2022 with respect to Rezoning Application No. Z19-0135 for the property located at 2340 Pandosy Street.

AND THAT Bylaw No. 12056 be forwarded for rescindment consideration and the file be closed.

Carried

3.6 Pandosy St 2340 - BL12056 (Z19-0135) - 1128710 B.C. Ltd. Inc. No BC1128710

Moved By Councillor Hodge/Seconded By Councillor Wooldridge

R0578/22/07/25 THAT Bylaw No. 12056 be rescinded at first, second and third reading.

Carried

3.7 Snowsell St N 156 - Z21-0012 (BL12141) - Rescind Rezoning Bylaw

Moved By Councillor Hodge/Seconded By Councillor Wooldridge

R0579/22/07/25 THAT Council receives, for information, the Report from the Development Planning Department dated July 25th, 2022, with respect to Rezoning Application No. Z21-0012 for the property located at 156 Snowsell Street North;

AND THAT Bylaw No. 12141 be forwarded for rescindment consideration and the file be closed.

Carried

3.8 Snowsell St N 156 - BL12141 (Z21-0012) - Subhash Chander Bajaj and Kamlesh Rani Bajaj

Moved By Councillor Hodge/Seconded By Councillor Wooldridge

R0580/22/07/25 THAT Bylaw No. 12141 be rescinded at first, second and third reading.

Carried

4. Bylaws for Adoption (Development Related)

4.1 Gerstmar Rd 440 - BL12274 (Z21-0063) - Benjamin Cherney

Moved By Councillor Hodge/Seconded By Councillor Wooldridge

R0581/22/07/25 THAT Bylaw No. 12274 be adopted.

Carried

4.2 Barnaby Rd 763 - BL12301 (Z21-0021) - Christopher John Thomson and Nicole Dawn Wilson

Moved By Councillor Hodge/Seconded By Councillor Wooldridge

R0582/22/07/25 THAT Bylaw No. 12301 be adopted.

Carried

4.3 Gordon Dr 4563, 4573 - BL12381 (Z22-0017) - Forever Destiny Homes Ltd., Inc.No. BC0903896

Moved By Councillor Wooldridge/Seconded By Councillor Hodge

R0583/22/07/25 THAT Bylaw No. 12381 be adopted.

Carried

4.4 Brighton Rd 445 - BL12391 (Z22-0023) - Heather J. Painchaud

Moved By Councillor HodgeSeconded By Councillor Wooldridge

R0584/22/07/25 THAT Bylaw No. 12391 be adopted.

Carried

4.5 Del Monte Ct 661 - BL12392 (Z22-0012) - Linda M.Servedio and Sigismondo Servedio

Moved By Councillor Wooldridge/Seconded By Councillor Hodge

R0585/22/07/25 THAT Bylaw No. 12392 be adopted.

Carried

4.6 Franklyn Rd 920 - BL12394 (Z22-0001) - 0899148 B.C. Ltd., Inc.No.BC0899148

Moved By Councillor Donn/Seconded By Councillor Stack

R0586/22/07/25 THAT Bylaw No. 12394 be adopted.

Carried

4.7 Arab Rd/Appaloosa Rd Area Rezoning Applications

Moved By Councillor Wooldridge/Seconded By Councillor Hodge

4.7.1 Appaloosa Rd 3008 - BL12396 (Z20-0026) - DL Capital Inc., Inc. No. BC0820774

R0587/22/07/25 THAT Bylaw No. 12396 be adopted.

4.7.2 Appaloosa Rd 3029 - BL12397 (Z19-0050) - Viking Refrigeration Ltd. Inc. No. BC0495457

R0588/22/07/25 THAT Bylaw No. 12397 be adopted.

4.7.3 Appaloosa Rd 3036 - BL12398 (Z21-0070) - Bhupinder S. Mroke & Balwant K. Mroke

R0589/22/07/25 THAT Bylaw No. 12398 be adopted.

4.7.4 Appaloosa Rd 3089 - BL12399 (Z19-0052) - 1571937 Alberta Ltd. & Garrett Radchenko

R0590/22/07/25 THAT Bylaw No. 12399 be adopted.

4.7.5 Appaloosa Rd 3139 - BL12400 (Z19-0049) - Irene A. Pitura and Edward J. Pitura and Gregory Pitura

R0591/22/07/25 THAT Bylaw No. 12400 be adopted.

4.7.6 Appaloosa Rd 3039 - BL12401 (Z19-0051) - Suresh K. Khurana and Babita Khurana

R0592/22/07/25 THAT Bylaw No. 12401 be adopted.

4.7.7 Appaloosa Rd 3128 - BL12402 (Z19-0053) - 1056175 BC Ltd., Inc. No. BC1056175

R0593/22/07/25 THAT Bylaw No. 12402 be adopted.

4.7.8 Appaloosa Rd 3156 - BL12403 (Z19-0054) - Sara D. Aitken and Angus B. Aitken

R0594/22/07/25 THAT Bylaw No. 12403 be adopted.

4.7.9 Arab Rd 185 - BL12404 (Z20-0025) - 1046958 BC Ltd., Inc. No. BC1046958

R0595/22/07/25 THAT Bylaw No. 12404 be adopted.

4.7.10 Appaloosa Rd 3196 - BL12405 (Z20-0072) - Watermark Developments Ltd., Inc. No. 1191800

R0596/22/07/25 THAT Bylaw No. 12405 be adopted.

4.7.11 Appaloosa Rd 3169 - BL12406 (Z21-0071) - 1301318 BC Ltd., Inc. No. BC1301318

R0597/22/07/25 THAT Bylaw No. 12406 be adopted.

Carried

4.8 Muir Rd 140 - BL12411 (Z22-0016) - Simarjeet Kaur Sandhu

Moved By Councillor Hodge/Seconded By Councillor Wooldridge

R0598/22/07/25 THAT Bylaw No. 12411 be adopted.

Carried

5. Non-Development Reports & Related Bylaws

5.1 Planning and Development Statistics - Q1 and Q2 2022

Staff:
- Displayed a PowerPoint Presentation summarizing the building statistics for the first and second quarters of 2022 and responded to questions from Council.

Moved By Councillor Hodge/Seconded By Councillor Wooldridge

R0599/22/07/25 THAT Council receives, for information, the report from the Planning and Development Services department dated July 25, 2022, with information relating to Planning and Development Statistics.

Carried

5.2 2040 OCP - Industrial Future Land Use for 480 Penno Road

Councillor Sieben declared a conflict as he provides insurance services for the subject property and left the meeting at 2:53 p.m.
Staff:
- Displayed a PowerPoint Presentation summarizing the rationale for Future Land Use designation for this parcel and responded to questions from Council.

Moved By Councillor Donn/Seconded By Councillor Hodge

R0600/22/07/25 THAT Council receives for information, the report from the Policy & Planning Department dated July 25, 2022 regarding the Future Land Use for 480 Penno Road.

Carried

Councillor Stack:
-Brought forward an alternate perspective and put forward a second resolution.

Moved By Councillor Stack/Seconded By Councillor Hodge

R0601/22/07/25 THAT Council direct staff to bring forward for Council consideration a bylaw to amend the OCP 2040 Future Land Use Map 3.1 designation for 480 Penno Rd from "Industrial" to "Private Recreational".

Carried
Mayor Basran, Councillors Donn & Wooldridge - Opposed

Councillor Sieben returned to the meeting at 3:35 p.m.

5.3 Council Update - Municipal Boating Facilities

Staff:
-Introduced the two employees presenting the report.
-Displayed a PowerPoint presentation summarizing the efforts to a long term strategy and management plan regarding the commercial boat launch licencing program and responded to questions from Council.

Moved By Councillor DeHart/Seconded By Councillor Hodge

R0602/22/07/25 THAT Council received, for information, the report from the Real Estate department dated July 25, 2022, regarding the status of the City's Municipal Boating Facilities Commercial License Program and an update on Staff's public engagement efforts and initial findings regarding a more comprehensive review and assessment of the City's boating facilities;

AND THAT Council supports, in principle, the draft guiding principles and objectives that have been created to inform the development of a boat launch management strategy;

FURTHER THAT Council directs Staff to return to Council for endorsement of finalized guiding principles and objectives, as well as a series of associated recommendations, regarding the optimal management strategy for the long-term operations of the City's boating facilities.

Carried

5.4 Transit Exchange Enhancement Studies

Staff:
- Displayed a PowerPoint Presentation providing an update on the status of transit exchange infrastructure studies and commented on the grant application.

Moved By Councillor Sieben/Seconded By Councillor Donn

R0603/22/07/25 THAT Council receives for information, the report from Integrated Transportation dated July 25, 2022, with regards to the Transit exchange enhancement studies; AND THAT Council provide approval in principle for proposed enhancements to various transit facilities and direct staff to initiate next steps toward advancing select projects to application for Investing in Canada Infrastructure Program funding.

Carried

6. Bylaws for Adoption (Non-Development Related)

6.1 BL12385 – Road Closure Bylaw – Adjacent to 550-552 Valley Rd N

No public came forward.

Moved By Councillor Stack/Seconded By Councillor Donn

R0604/22/07/25 THAT Bylaw No. 12385 be adopted.

Carried

6.2 BL12378 – Idling Control Bylaw

Moved By Councillor Donn/Seconded By Councillor Stack

R0605/22/07/25 THAT Bylaw No. 12378 be adopted.

Carried

6.3 BL12407 – Amendment No. 34 to Bylaw Notice Enforcement Bylaw No. 10475

Moved By Councillor Stack/Seconded By Councillor Donn

R0606/22/07/25 THAT Bylaw No. 12407 be adopted.

Carried

6.4 BL12414 – Amendment No. 3 to Fire and Life Safety Bylaw No. 10760

Moved By Councillor Donn/Seconded By Councillor Stack

R0607/22/07/25 THAT Bylaw No. 12414 be adopted.

Carried

7. Mayor and Councillor Items

Councillor Dehart:
-Spoke to Mental Health Chamber of Commerce event with Corey Herschel.
-Spoke to Chamber event celebrating Italy.
-Spoke to attendance at Colombian Independence Day celebration.

Councillor Donn:
-Thanked Kelowna's event organizers including DKA and Parks Alive! and encouraged everyone to enjoy summer events safely given the hot temperatures.

Councillor Sieben:
-Spoke to incidents of property crime in the City.

Councillor Hodge:
-Encouraged visitors to lock their cars to help prevent autotheft.

Councillor Singh:
-Attended Columbia Independence Day celebrations.

Councillor Wooldridge:
-Attended DKA Meet Me on Bernard Block Party this past weekend.
-Congratulated Kelowna Lady of the Lake and Princess.

Mayor Basran:
-Spoke to successful DKA Block Party.
-Spoke to Okanagan Dream Rally this coming weekend.

8. Termination

This meeting was declared terminated at 4:04 p.m.

Mayor Basran

City Clerk

/cm

DRAFT

REPORT TO COUNCIL

Date:	August 8th, 2022		
To:	Council		
From:	City Manager		
Department:	Development Planning		
Application:	A22-0003	**Owner:**	Northview Orchards Ltd., Inc.No. 221199
Address:	1368 Teasdale Road	**Applicant:**	Brian Witzke
Subject:	Application to the ALC for a Non-Adhering Residential Use Permit to allow the replacement of a second dwelling.		
Existing OCP Designation:	R-AGR – Rural – Agricultural and Resource & NAT – Natural Areas		
Existing Zone:	A1 – Agriculture 1		

1.0 Recommendation

THAT Agriculture Land Reserve Application No. A22-0003 for Lot 3 Section 23 Township 26 ODYD Plan 2329 Except Plans 4697, 34964 and H12752 located at 1368 Teasdale 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.

Purpose

To support an application to the Agricultural Land Commission for a Non-Adhering Residential Use Permit to allow for the replacement of a second dwelling that is no longer a suitable residence.

2.0 Development Planning

Staff support the Non-Adhering Residential Use Permit Application to allow for the replacement of an existing second dwelling. Both dwellings are occupied by the family and the replacement of a second dwelling will allow the family to continue to farm the subject property. The applicants have chosen a site on the property that is closer to the other single-family dwelling and this will create a contiguous Homeplate. The proposed location is also on non-arable land and is a location that will contribute to the least impact to agriculture.

Should the application be supported by Council and the Agricultural Land Commission, a Building Permit and the registration of a farm footprint covenant are required before the construction can commence.

3.0 Proposal

3.1 Project Description

The subject property is 32.47 acres (13.14ha) in size and is located on Teasdale Road within the Belgo-Black Mountain OCP Sector. The applicant is seeking permission to replace a dwelling on the property that is no longer livable. There are currently two dwellings on the property, this application would be the removal of one and allow a new home to be built. The family has owned the property since 1946 and the parcel currently produces several varieties of apples.

The subject property has two single-family dwellings on site, the first is 176.5m² in size and the second is 74m². The application is to remove the second dwelling (74m²) and construct a new dwelling, which is proposed to be 227.89m² in size. The application has indicated that the existing second dwelling was built in 1956, and it is now infested with ants, termites as well as signs of mold, so it is no longer suitable to live in. Both dwellings on-site are occupied by the two owners full-time and are not rented. The location of the proposed dwelling has been chosen to be limit the impact on existing agriculture and the location and driveway sits on the grade D land (non-arable). The subject property also has three temporary farm worker cabins, which have active contracts through the Seasonal Agricultural Workers Program (SAWP). The Agricultural Land Commission now allows second residences, which are permitted to be maximum of 90m², however, due to the size (227.89m²) a Non-Adhering Residential Use Permit Application is required.

3.2 Site Context

The subject property lies within the Belgo-Black Mountain OCP Sector. The surrounding area is primarily agricultural lands within the ALR.

Specifically, adjacent land uses are as follows:

Orientation	Zoning	Land Use
North	RU1 – Large Lot Housing and RM3 – Low Density Multiple Housing	Springfield Road – (Multi-Family / Single-Family Dwellings)
East	A1 – Agriculture 1	Agriculture
South	A1 – Agriculture 1	Agriculture
West	A1 – Agriculture 1	Agriculture

Subject Property Map:

4.0 Application Chronology

Date of Application Received: May 26th, 2022
Date Public Consultation Completed: N/A

Agricultural Advisory Committee July 14th, 2022

THAT the Committee recommends that Council support the application for 1368 Teasdale Road to consider a non-adhering residential use permit.

The above noted application was reviewed by the Agricultural Advisory Committee at the meeting held on July 14th, 2022 and the following recommendations were passed:

Anecdotal comments include that the Committee understands it is making an exception for the large second dwelling, however, considers it appropriate for the site and a multi-generational farming family. The size of proposed dwelling is reasonable and is in a good location as the homesite is not suitable for farming and does not impact arable land. There are currently two houses on the property and will continue to allow two houses.

Report prepared by: Tyler Caswell, Planner

Reviewed by: Dean Strachan, Community Planning & Development Manager

Reviewed by: Terry Barton, Development Planning Department Manager

Approved for Inclusion: Ryan Smith, Divisional Director, Planning & Development Services

Attachments:

Attachment A – ALC Non-Adhering Residential Use Application
Attachment B – Site Plan
Attachment C – Conceptual Drawing Package
Attachment D – Ministry of Agriculture Memo

Provincial Agricultural Land Commission - Applicant Submission

Application ID: 65230
Application Status: Under LG Review
Applicant: Brian Witzke
Local Government: City of Kelowna
Local Government Date of Receipt: 04/05/2022
ALC Date of Receipt: This application has not been submitted to ALC yet.
Proposal Type: Non-Adhering Residential Use - Additional Residence for Farm Use
Proposal: To replace a house that is no longer livable and provide a suitable residence for future family farming needs on this parcel.

Mailing Address:
1368 Teasdale Rd
Kelowna, BC
V1P 1C7
Canada
Primary Phone:
Mobile Phone:
Email:

Parcel Information

Parcel(s) Under Application

1. **Ownership Type:** Fee Simple
   Parcel Identifier: 011-041-781
   Legal Description: LOT 3 SECTION 23 TOWNSHIP 26 OSOYOOS DIVISION YALE DISTRICT PLAN 2329 EXCEPT PLANS 4697, 34964 AND H12752
   Parcel Area: 13.7 ha
   Civic Address: 1368 Teasdale Road
   Date of Purchase: 11/26/1980
   Farm Classification: Yes
   Owners
   1. **Name:** Brian Witzke
      Address:
      1368 Teasdale Rd
      Kelowna, BC
      V1P 1C7
      Canada
      Phone:
      Cell:
      Email:

ATTACHMENT A
This forms part of application
A22-0003
City of Kelowna
DEVELOPMENT PLANNING
Planner Initials TC

Current Use of Parcels Under Application

1. Quantify and describe in detail all agriculture that currently takes place on the parcel(s).
On this parcel High Quality Apple production currently consisting of varieties Royal gala, Pacific gala, Honey crisp, Ambrosia and Spartans. There is 27.73 acres of Grade A land and 4.74 acres of grade D land equaling a total of 32.47 acres. This 3rd generation farm was started in 1946 and as won multiple awards over the years for innovation and quality of apples produced. As well as being a leading example for the apple growing sector in B.C. hosting numerous international and domestic industry farm tours. The farm is currently in a stage of renewal with more apple blocks planned to be replanted as soon as trees become available. The parcel is farmed to its maximum land use potential and all structures are utilized for farming practices. Final note on the parcel current usage, this is not a agritourism business. This is a full scale 100% modern industrial orchard operating on the very edge of a ever growing city.

2. Quantify and describe in detail all agricultural improvements made to the parcel(s).
Over the past 50+ years this orchard has been constantly modernized as new training systems and new varieties became known and available to the local growing industry. Fully automated irrigation systems have been customized for this particular parcel given it's unique soil blends. Deer fencing has been installed in recent years to help mitigate animal and public trespassing. All housing is only used for temporary farm works or the two owners. Other buildings on this parcel are used for storage of farm equipment and seasonal supplies as well as maintenance and repair facilities.

3. Quantify and describe all non-agricultural uses that currently take place on the parcel(s).
"No non-agricultural activity".

Adjacent Land Uses

North

Land Use Type: Residential
Specify Activity: Subdivision of Rutland

East

Land Use Type: Industrial
Specify Activity: 2 cherry orchards and a Grow op

South

Land Use Type: Agricultural/Farm
Specify Activity: U-pick cherry operation / apple orchard

West

Land Use Type: Agricultural/Farm
Specify Activity: Vineyard

ATTACHMENT A
This forms part of application
A22-0003
Planner Initials TC
City of Kelowna
DEVELOPMENT PLANNING

Proposal

1. What is the purpose of the proposal?
To replace a house that is no longer livable and provide a suitable residence for future family farming needs on this parcel.

2. Describe the necessity for an additional residence for farm use and how it will support agriculture in the short or long term.
The house being replaced was built in 1956 using building techniques of the time. Consisting of sawdust

for insulation in the walls, wood shavings in the attic and home poured concrete basement. The house is now infested with ants, termites as well as showing signs of mold and the foundation is crumbling. As this house was built before the ALR and is used as the second primary residence. The need to replace this structure is necessary to maintain appropriate housing for the parcel owners and their families. This not adding a residence but maintaining current numbers of residences on this parcel.

3. Describe the size, type and number, as well as occupancy of all residential structures currently located on the property.
There are two houses which are ocupided year round by the owners. The first house is 176.52sq meters plus full basement. The second is 74 sq meters with a full basement. There are also three temporary farm worker houses. These only have workers present as seasonal work requirements demand. Cabin 1 is 41.62 sq meters, cabin 2 is 33.8 sq meters, cabin 3 is 33.8 sq meters and these cabins only have crawl spaces.

4. What is the total floor area of the proposed additional residence in square metres?
227.89 m^2

5. Describe the rationale for the proposed location of the additional residence.
The location was chosen due to minimize it's impact on current farmed areas on the parcel. The residence and its driveway will sit on a portion of the parcels grade D land. As well as give opportunity to better utilize the limited flat areas on the farm. Easier access for land working equipment and farm supplies that do not require covered storage. The new location comes with the benefit of close proximity to utilities. The small field the house will back onto is planned to be planted into soft fruits for the families personal needs. So there will be no negative impact on the overall farm operation.

6. What is the total area of infrastructure necessary to support the additional residence?
The total area utilized for this house, driveway, zero scape landscaping, parking and septic will be a proximatly a 1/4 acre or .101 hectare

7. Do you need to import any fill to construct the additional residence or infrastructure?
No

Applicant Attachments

- Proposal Sketch-65230
- Site Photo-Build site
- Site Photo-Overall farm view
- Certificate of Title-011-041-781

ALC Attachments

None.

Decisions

None.

ATTACHMENT A
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ATTACHMENT B
This forms part of application
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ATTACHMENT C

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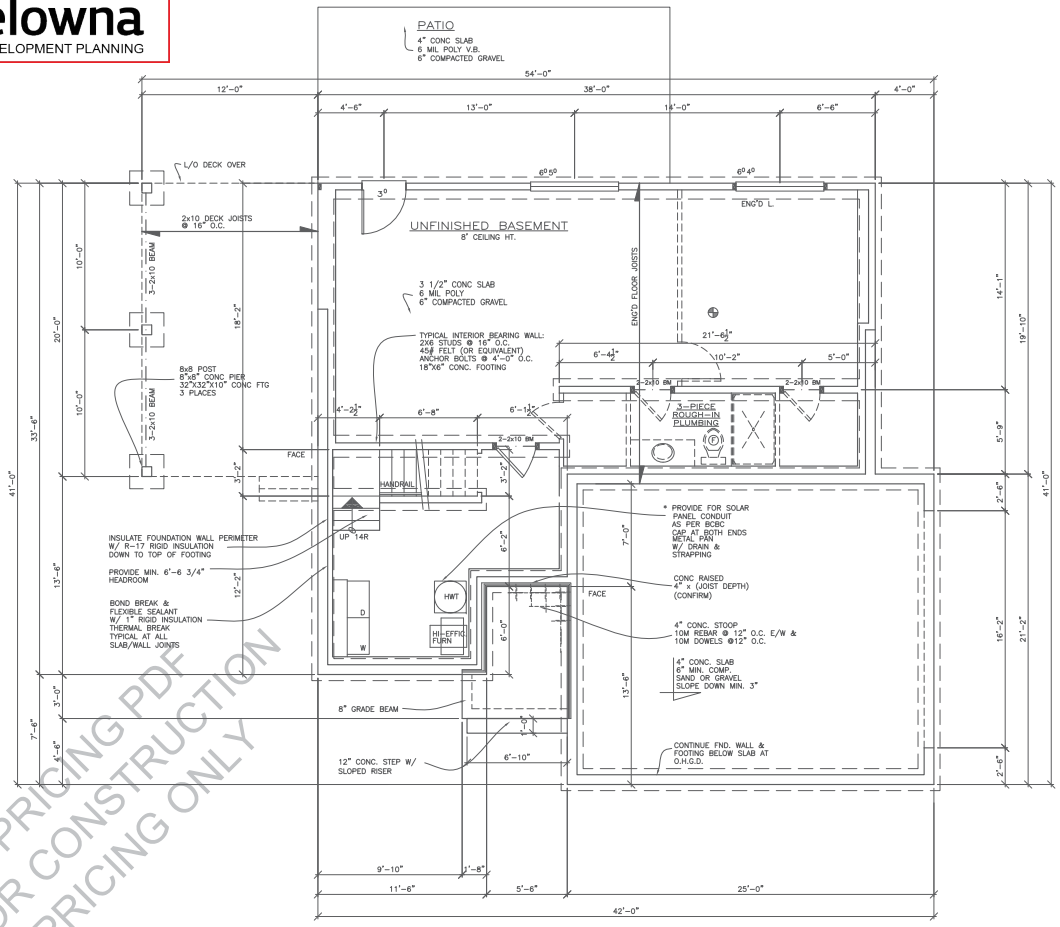

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BASEMENT/FOUNDATION PLAN

FINISHED AREA = 232 SQ. FT.
UNFINISHED AREA = 739 SQ. FT.
SCALE: 1/4" = 1'-0"

PROVIDE ROUGHIN SUBFLOOR DEPRESSURIZATION SYSTEM, 4" GRANULAR FILL BELOW SLAB AND PROVIDE 4" PIPE WITH CONNECTION FOR FUTURE DEPRESSURIZATION EQUIPMENT AND AIRTIGHT CAP TO BE PASSIVELY VENTED TO EXTERIOR, TO BE TERMINATED OUTSIDE

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PLAN NUMBER: 5-2-685

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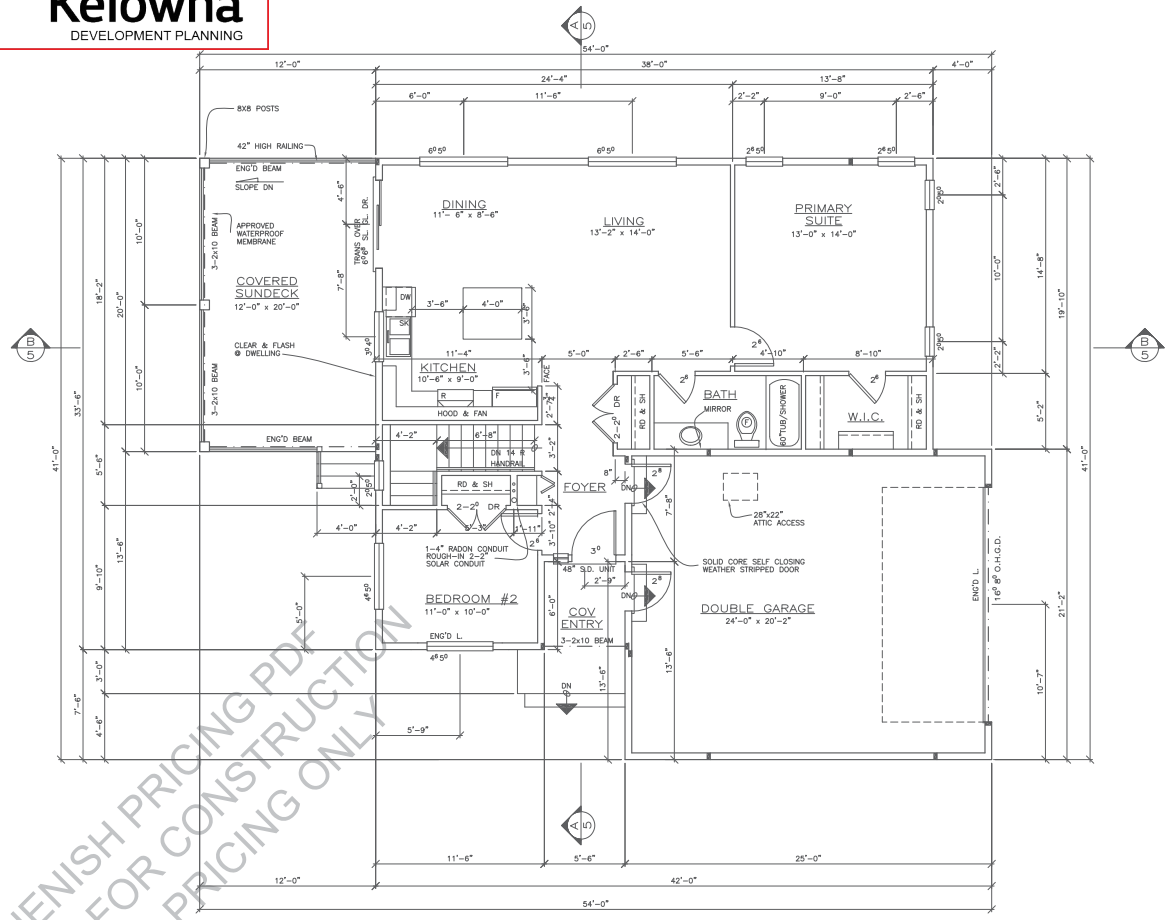

MAIN FLOOR PLAN
FINISHED AREA = 966 SQ. FT.
GARAGE AREA = 516 SQ. FT.
9'-0 3/4" CEILING HEIGHT

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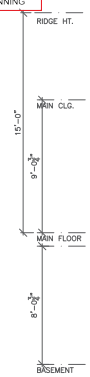
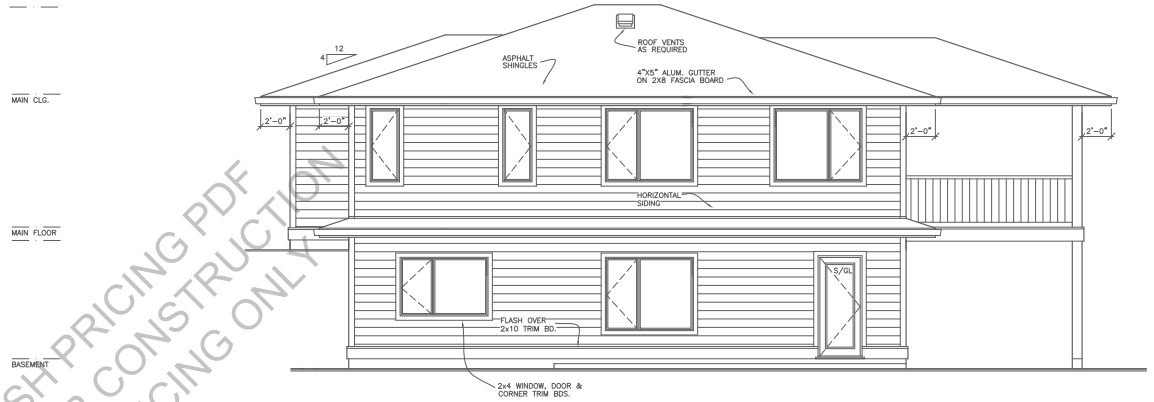


FRONT ELEVATION



REAR ELEVATION

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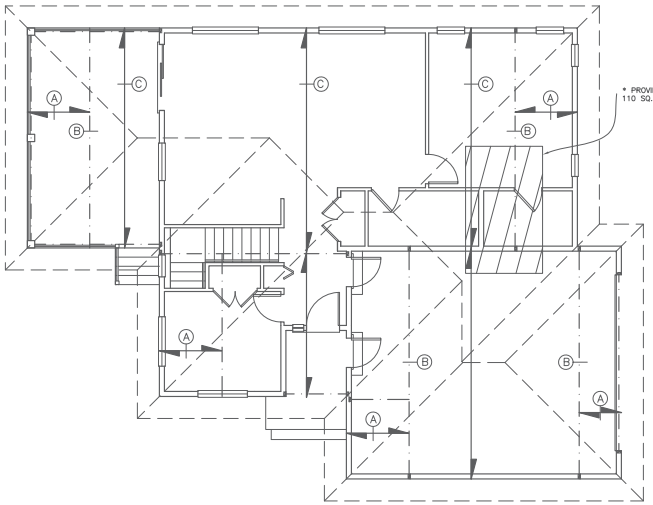


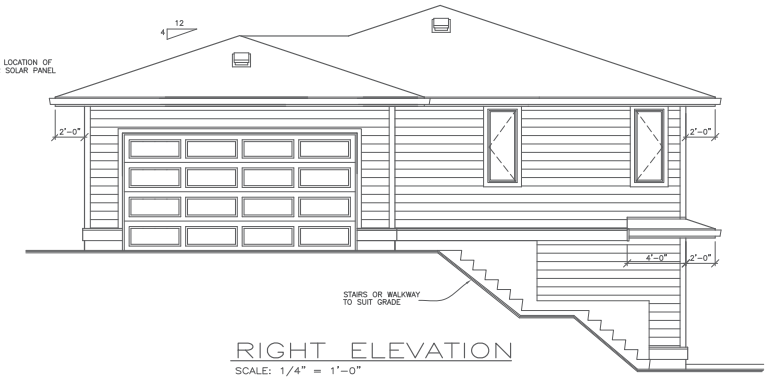
ROOF FRAME PLAN

SCALE: 3/16" = 1'-0"

* TRUSS LAYOUT TO BE CHECKED, VERIFIED & ENGINEERED BY TRUSS MANUFACTURER

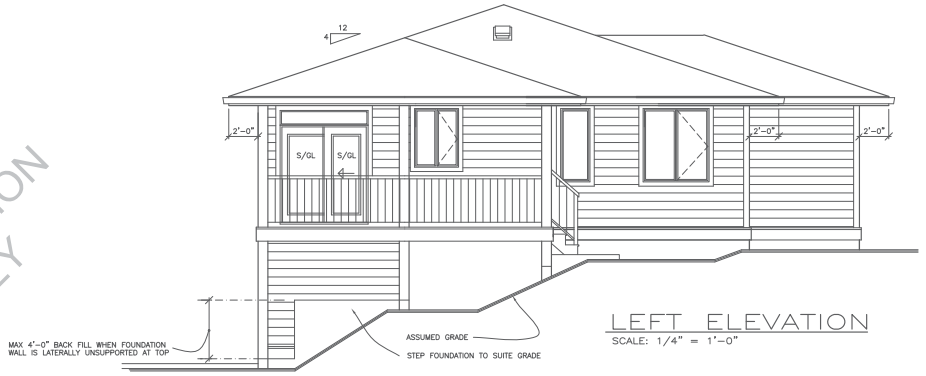
* PROVIDE FOR FUTURE LOCATION OF 110 SQ. FT. HOT WATER SOLAR PANEL

- (A)— JACKS @ 24" O.C.
- (B)— LAST TRUSS
- (C)— TRUSSES @ 24" O.C.
- (D)— BOBTAIL LAST TRUSS
- (E)— SPECIAL LAST TRUSS (3 POINT BRG)
- (F)— SPECIAL TRUSSES @ 24" O.C. (3 POINT BRG.)
- (G)— BOBTAILED TRUSSES @ 24" O.C.
- (H)— SPECIAL TRUSSES @ 24" O.C.



RIGHT ELEVATION

SCALE: 1/4" = 1'-0"



LEFT ELEVATION

SCALE: 1/4" = 1'-0"

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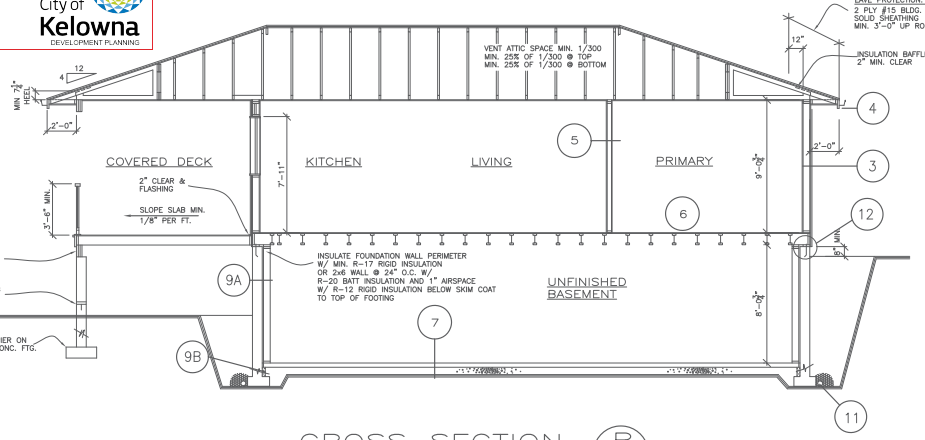
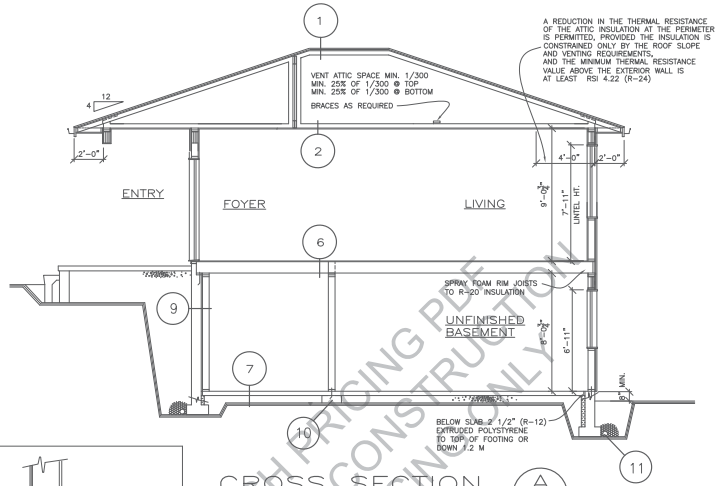


CROSS SECTION B 2



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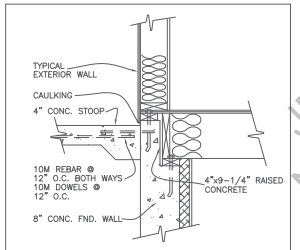

STOOP DETAIL
1" = 1'-0"

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SPECIFICATIONS

1 ROOF:
ASPHALT SHINGLES
BUILDING PAPER
3/8" PLY SHEATHING W/ 'H' CLIPS
ENG'D ROOF TRUSSES @ 24" o/c

2 CEILING:
R-50 BATT INSULATION
6 MIL. POLY V.B.
5/8" GYPSUM BOARD

3 EXTERIOR WALL:
HORIZONTAL SIDING
BUILDING PAPER
3/8" PLY SHEATHING
R-24 BATT INSULATION
2 x 6 STUDS @ 24" o/c
6 MIL POLY V.B.
1/2" GYPSUM BOARD

4 FASCIA/SOFFIT:
4" x 5" ALUM. GUTTER ON
2 x 8 FASCIA BOARD
PERFORATED ALUM. SOFFIT

5 INTERIOR PARTITION:
1/2" GYPSUM BOARD EACH SIDE
2 x 4 STUDS @ 16" o/c

6 MAIN FLOOR:
FINISH FLOORING
3/4" PLYWOOD SUBFLOOR
SUBFLOOR GLUED & SCREWED
ENG'D FLOOR JOISTS
BRACE AS REQ'D

7 BASEMENT FLOOR:
3 1/2" CONC SLAB
6 MIL POLY
6" COMPACTED GRAVEL

8 GARAGE FLOOR:
4" CONC. SLAB
6" COMPACTED GRAVEL

9A EXTERIOR FOUNDATION (ABOVE SLAB):
2 COATS ASPHALT EMULSION
8" CONC. FOUNDATION WALL
R-20 RIGID INSULATION OR
1" AIRSPACE, 2x6 WALL @ 24" O.C.
W/ R-20 BATT INSULATION

9B EXTERIOR FOUNDATION (BELOW SLAB):
2 COATS ASPHALT EMULSION
8" CONC. FOUNDATION WALL
2 1/2" (R-12) EXTRUDED POLYSTYRENE
DOWN 1.2 M OR TO TOP OF FOOTING
18" x 6" CONCRETE FOOTING

10 INTERIOR FOUNDATION:
2 x 6 STUDS @ 16" o/c
ON 45 # FELT OR EQUIVALENT
1/2" DIA. ANCHOR BOLTS @ 4'-0" o/c
18" x 6" CONC. FOOTING

11 DRAINAGE:
6" MIN. DRAIN ROCK COVER
4" DIA. DRAIN TILE

12 PLATE TO FOUNDATION CONNECTION
1/2" DIAM. ANCHOR BOLTS @ 5'-6" O.C.
2x6 PLATE ON 45# FELT OR
APPROVED DAMPPROOFING

13 STAIRS:
14 EQUAL RISERS
RUNS 9-1/2" w/ 1" NOSING
34" HIGH HANDRAIL
6'-6 3/4" MIN. HEADROOM
2-2x10 STRINGERS

NOTE:
ENGINEER'S ADDENDUMS, STRUCTURAL DETAILS, AND NOTES SUPERCEDE THOSE NOTED ON THIS GENERAL NOTE SHEET DEPENDING ON LOCAL CONDITIONS.

GENERAL NOTES

STANDARD NOTES
- THE FOLLOWING NOTES ARE TO BE INCLUDED WITH AND BECOME PART OF THE ATTACHED PLANS.
- BY COMMENCING CONSTRUCTION OF A BUILDING FROM THESE PLANS, THE OWNER AND/OR BUILDER ACCEPTS THESE PLANS AS DRAWN AND HAS READ AND UNDERSTANDS THE GENERAL NOTES AS FOLLOWS.
- THIS DRAWING WAS PREPARED IN ACCORDANCE WITH THE CURRENT EDITION OF THE BC BUILDING CODE. IT IS THE RESPONSIBILITY OF THE OWNER/BUILDER TO INSURE THAT SUBSEQUENT CHANGES TO THE CODE ARE COMPLIED WITH AND INCORPORATED IN THE CONSTRUCTION OF THIS PLAN. ALL WORK SHALL CONFORM TO THE CURRENT BC BUILDING CODE AND/OR LOCAL BUILDING CODES AND BYLAWS THAT MAY TAKE PRECEDENCE.
- ALL WORK SHALL BE EQUAL IN ALL RESPECTS TO GOOD BUILDING PRACTICE.
- WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DRAWINGS.
- JENISH HOUSE DESIGN LIMITED SHALL NOT BE RESPONSIBLE FOR ANY VARIANCES FROM THE STRUCTURAL DRAWINGS AND SPECIFICATIONS, OR ADJUSTMENTS REQUIRED RESULTING FROM CONDITIONS ENCOUNTERED AT THE JOB SITE AND IS THE SOLE RESPONSIBILITY OF THE OWNER OR CONTRACTOR.
- CONSTRUCTION LOADS ON THE STRUCTURE CAUSED BY INTERIM STORAGE OF MATERIALS OR USE OF EQUIPMENT SHALL NOT BE ALLOWED TO EXCEED THE DESIGN LOAD.
- THE BUILDER SHALL BE RESPONSIBLE FOR MAINTAINING A NEAT AND ORDERLY CONSTRUCTION SITE AT ALL TIMES.
- AT END OF CONSTRUCTION THE BUILDER SHALL BE RESPONSIBLE FOR CLEANING THE JOB SITE AND BUILDING(S) OF ANY REFUSE AND MAKING GOOD ANY DAMAGE TO BUILDING(S) INCURRED DURING CONSTRUCTION.
- PRIOR TO COMMENCING EXCAVATION WORK THE BUILDER SHALL BE RESPONSIBLE FOR ESTABLISHING THE LOCATION OF AND CLEARLY MARKING EXISTING SERVICES AND IMMEDIATELY NOTIFYING APPLICABLE AUTHORITIES OF ANY DISCREPANCIES
- TOPSOIL AND EXCAVATED MATERIAL TO BE STOCKPILED SEPARATELY ON SITE.

ERRORS AND OMISSIONS
- JENISH HOUSE DESIGN LIMITED MAKES EVERY EFFORT TO PROVIDE COMPLETE AND ACCURATE HOME PLANS. HOWEVER, WE ASSUME NO LIABILITY FOR ANY ERRORS OR OMISSIONS THAT MAY AFFECT CONSTRUCTION. IT IS THE RESPONSIBILITY OF THE BUILDER TO CHECK AND VERIFY ALL DIMENSIONS AND DETAILS BEFORE PROCEEDING WITH CONSTRUCTION.
- SHOULD ANY DISCREPANCIES BE FOUND ON THESE PLANS PLEASE ADVISE OUR OFFICE AT YOUR EARLIEST CONVENIENCE, BY DOING SO WE WILL BE ABLE TO MAKE CORRECTIONS TO THE DRAWINGS AND REPLACE ANY PLANS PURCHASED IF NECESSARY. IN THIS WAY WE CAN BETTER SERVE YOU AND PREVENT ERRORS FROM RECURRING.

STRUCTURAL DESIGN AND ENGINEERING
- TO PROVIDE OUR CLIENTS WITH DISTINCTIVE AND ATTRACTIVE DESIGNS IT HAS BEEN NECESSARY IN SOME INSTANCES TO USE BEAM SIZES AND FRAMING DETAILS NOT SPECIFIED IN PART NINE OF THE B.C. BUILDING CODE. THE CITY OR MUNICIPAL BUILDING DEPARTMENT MAY REQUIRE CONFIRMATION BY A CERTIFIED STRUCTURAL ENGINEER WHICH IS THE RESPONSIBILITY OF OWNER OR BUILDER TO PROVIDE.

STRUCTURAL DESIGN CRITERIA
- ASSUMED ROOF DESIGN LOAD (LIVE AND DEAD) – 50 POUNDS PER SQUARE FOOT (2.5 KN/M.SQ.).
  ASSUMED SOIL BEARING CAPACITY – 2,500 P.S.F. (119.7 KN/M.SQ.)
- CONCRETE FOUNDATIONS AND SLABS ON GRADE TO HAVE A MINIMUM COMPRESSIVE STRENGTH OF 20 MPA AT 28 DAYS.
- FRAMING LUMBER TO BE #2 S.P.F. AND BETTER UNLESS OTHERWISE NOTED.
  BEAMS TO BE #2 S.P.F. AND BETTER.

  NOTE:
  IF SOIL CONDITIONS ARE LESS, OR FLOOR AND ROOF LOADS ARE GREATER THAN THIS PLAN IS DESIGNED FOR, YOUR BUILDING DEPARTMENT MAY REQUIRE ADJUSTMENTS TO THE PLANS OR ASK THAT THE PLANS BE ENGINEERED BY A CERTIFIED STRUCTURAL ENGINEER. IT IS BEST THAT AN ENGINEER FAMILIAR WITH LOCAL CONDITIONS BE CONSULTED.

SITE PLAN NOTES
- IF A SITE PLAN IS NOT PROVIDED BY JENISH HOUSE DESIGN LIMITED, THE OWNER OR BUILDER SHALL BE RESPONSIBLE FOR THE CORRECT SITING OF THIS HOME ON THE PROPERTY. JENISH HOUSE DESIGN LIMITED ASSUMES NO LIABILITY FOR PLANS COMPLYING WITH ZONING REGULATIONS OR LOT CONDITIONS.
- OWNER SHALL SUPPLY ANY MISSING INFORMATION ON SITE PLAN, I.E. DIMENSIONS, ELEVATIONS OF LOT, LEGAL DESCRIPTION, SITE ADDRESS, NORTH DIRECTION, AND LOCATION OF SERVICES, EASEMENTS AND RIGHT OF WAYS. ALL MEASUREMENTS ON SITE PLAN TO BE GOVERNED AND APPROVED BY AUTHORITIES HAVING JURISDICTION BEFORE STARTING CONSTRUCTION.
- WELLS AND SEPTIC DISPOSAL SYSTEMS TO BE LOCATED AND CONSTRUCTED IN ACCORDANCE WITH HEALTH AUTHORITIES HAVING JURISDICTION.

ELECTRICAL
- INSTALLATION OF ELECTRICAL ITEMS MUST COMPLY WITH THE BC ELECTRICAL CODE AND REGULATIONS AND WITH THE LOCAL ELECTRIC POWER SUPPLIER'S REGULATIONS IN ALL RESPECTS.
- ELECTRICAL OUTLET LOCATIONS SHOWN ON PLANS COMPLY WITH OR EXCEED CURRENT BUILDING CODE MINIMUM REQUIREMENTS AND ARE TO BE USED AS A GUIDE ONLY. ADJUST ACCORDING TO OWNER'S REQUIREMENTS.

FOUNDATIONS
- FOUNDATIONS SHALL BE CONCRETE ON SOLID UNDISTURBED BEARING AND BELOW FROST LINE.
- FOUNDATION WALLS SHALL NOT BE BACK FILLED UNTIL CONCRETE HAS REACHED ITS SPECIFIED 28-DAY STRENGTH AND THE FLOOR SYSTEM INCLUDING SHEATHING HAS BEEN INSTALLED OR UNTIL ADEQUATELY BRACED SUBJECT TO APPROVAL BY AUTHORITY HAVING JURISDICTION.
- GRADES SHOWN ON PLANS ARE ESTIMATED. FOUNDATION WALL HEIGHTS MAY REQUIRE ADJUSTMENT TO SUIT SITE CONDITIONS.
- ALL CONCRETE AND MASONRY FOUNDATION WALLS EXCEEDING HEIGHT LIMITS SPECIFIED BY CURRENT BUILDING CODES REQUIRE ENGINEERING.
- PERIMETER DRAINAGE SHALL BE INSTALLED WHERE REQUIRED TO THE APPROVAL OF LOCAL AUTHORITIES.
- IT IS RECOMMENDED THAT ALL FOUNDATION WALLS 24" (600 MM) AND HIGHER SHALL HAVE ONE 12 MM (1/2" DIAMETER) REINFORCING BAR CENTERED 3" FROM TOP. CORNER REINFORCING TO BE LAPPED MINIMUM 24" .

WOOD FRAMING
- DIMENSIONS ARE FROM OUTSIDE FACE OF EXTERIOR STUDS TO CENTER OF PARTITION WALLS UNLESS OTHERWISE NOTED. FACE OF EXTERIOR STUD WALL AND FOUNDATION WALL TO BE FLUSH.
- JOISTS SHALL BE DOUBLED UNDER PARALLEL PARTITIONS OVER 6'-0" LONG. JOISTS TO BE PLACED TO ACCOMMODATE HEATING, PLUMBING, ETC.
  ALL LINTELS SHALL BE 2 – 2 X 10'S UNLESS OTHERWISE NOTED.
- WOOD IN CONTACT WITH CONCRETE TO BE DAMP-PROOFED WITH 45 LBS. FELT, 6 MIL POLY OR OTHER APPROVED METHOD. PLATES TO BE ANCHORED TO CONCRETE WITH 1/2" DIAMETER ANCHOR BOLTS AT MAXIMUM 6'– 0" O/C OR OTHER APPROVED METHOD. EXTERIOR CONCRETE SILL PLATES TO BE LEVEL AND UNDERSIDE SEALED.
- FLOOR JOISTS AND ROOF JOISTS WITH SPANS MORE THAN 7'–0" SHALL BE CROSSBRIGED AT MID SPAN OR AT 7'– 0" O/C MAXIMUM UNLESS SHEATHED OR STRAPPED BOTH SIDES WITH WOOD. BRIDGING SHALL BE 2 X 2 DIAGONAL TYPE WHEREVER POSSIBLE.
- ROOF TRUSSES REQUIRE ENGINEER'S CERTIFICATE, FOR PREFABRICATED TRUSSES OBTAIN CERTIFICATE FROM MANUFACTURER.

INSULATION AND VENTILATION
- MINIMUM INSULATION REQUIREMENTS:

ROOF (ATTIC)	R-50	(R.S.I. – 8.45)
ROOF/CEILING (SLOPING)	R-28	(R.S.I. – 4.93)
WALLS	R-24	(R.S.I. – 3.87)
INSULATION REQUIREMENTS 4500 DEGREE DAYS OR GREATER	R-60	(R.S.I. – 10.56)
	R-24	(R.S.I. – 4.23)

- 6 MIL ULTRAVIOLET RESISTANT POLY AIR BARRIER SHALL BE INSTALLED ON THE WARM SIDE OF INSULATION.
- ALL ROOF SPACES SHALL BE VENTILATED WITH SOFFIT, ROOF, OR GABLE VENTS, OR A COMBINATION OF THESE, EQUALLY DISTRIBUTED BETWEEN TOP OF ATTIC SPACE AND OVERHANG SOFFIT.
- PROVIDE BAFFLE FOR AIR SPACE (EQUAL TO SOFFIT VENTING) BETWEEN INSULATION AND ROOF SHEATHING AT EXTERIOR WALL LINE.
- ATTICS OR ROOF SPACES TO BE VENTED MINIMUM 1/300 OF AREA. UNHEATED CRAWLSPACES TO BE VENTED MINIMUM 1/500 OF AREA WITH CLOSEABLE VENTS.

FINISHING
- OWNER SHALL SPECIFY ALL INTERIOR AND EXTERIOR FINISHING. OWNER SHALL CONFIRM ANY FINISHING SHOWN ON PLANS.
- EXTERIOR DOORS SHALL BE SOLID CORE/INSULATED AND WEATHER-STRIPPED. GARAGE DOORS TO DWELLING TO BE AS ABOVE AND SELF–CLOSING.
  FLASH AT ALL HORIZONTAL CHANGES IN EXTERIOR FINISHING AND CAULK AROUND ALL EXTERIOR OPENINGS. FLASH OVER ALL UNPROTECTED OPENINGS.
- WINDOW SIZES ARE SHOWN IN FEET AND INCHES. I.E. $4'^{5}\!/_{8}" = 4'–0"$ WIDE BY 3'–6" HIGH.
  DOOR SIZES ARE WIDTH SHOWN BY 6'– 8" HIGH. I.E. $2'^{6}\!/_{8}" = 2'–6"$ WIDE BY 6'– 8" HIGH.
- OPENINGS IN PARTITIONS SHOWN WITHOUT DOORS ARE FULL HEIGHT UNLESS SHOWN AS AN ARCH. ARCHES ARE FRAMED 7'–0" HIGH UNLESS OTHERWISE NOTED.
- COAT AND CLOTHES CLOSETS SHALL HAVE ONE ROD AND SHELF. LINEN CLOSETS SHALL HAVE 5 ADJUSTABLE SHELVES WHERE POSSIBLE. BROOM CLOSETS SHALL HAVE ONE SHELF.
- ALL BATHROOMS SHALL HAVE A WALL MEDICINE CABINET OR ONE LOCKABLE DRAWER.

HEATING
- INSTALLATION OF ENTIRE HEATING SYSTEM MUST COMPLY WITH MANUFACTURER'S DIRECTIONS (WHERE APPLICABLE) AND CONFORM WITH LOCAL CODES AND REGULATIONS IN ALL RESPECTS.
- GAS CONNECTION WILL REQUIRE SEPARATE PERMIT AND INSPECTION.
- FUEL BURNING APPLIANCES, INCLUDING FURNACES, FIREPLACES AND STOVES, TO BE PROVIDED WITH COMBUSTION AIR SUPPLY FROM EXTERIOR.

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ELECTRICAL SYMBOLS

SYMBOL	DESCRIPTION
CEILING WALL	
(PS) (PS)	SURFACE MOUNTED LIGHT FIXTURE (P.S.INDICATES PULL SWITCH)
D	DROPPED LIGHT FIXTURE
	CEILING FAN
	RECESSED LIGHT FIXTURE
	RECESSED WALL WASHER
W W	VAPOUR PROOF LIGHT FIXTURE
C C	FLOOD LIGHT
C	CLOCK OUTLET
F F	VENT FAN
H	RECESSED HEAT LAMP
	TRACK LIGHT
	SINGLE FLUORESCENT FIXTURE
	FLUORESCENT LIGHT FIXTURE SURFACE MOUNTED
	FLUORESCENT LIGHT FIXTURE RECESSED

SYMBOL	DESCRIPTION
	DUPLEX RECEPTACLE (NUMBER INDICATES HEIGHT ABOVE FLOOR IF OTHER THAN 12")
	SINGLE RECEPTACLE
	QUAD RECEPTACLE
	DUPLEX RECEPTACLE SWITCHED ONE SIDE
	DUPLEX RECEPTACLE – SPLIT CIRCUIT
	DUPLEX FLOOR RECEPTACLE
	SPECIAL PURPOSE FIXED WIRED OUTLET – I.E. DISHWASHER, SAUNA
30,40	208/230 VOLT FOR RANGE, OVEN, AND DRYER ETC. – 30 OR 40 AMP
	DUPLEX APPLIANCE OUTLET
	DUPLEX RECEPTACLE WEATHER PROOFED. ALL W.P. OUTLETS ALSO TO HAVE G.F.I. PROTECTION.
GFI	DUPLEX RECEPTACLE WITH GROUND FAULT INTERRUPTER CIRCUIT BREAKER
	SINGLE POLE SWITCH
3,4	3 WAY OR 4 WAY SWITCH
DIM	DIMMER CONTROL SWITCH
	DOOR SWITCH
T	TIMER

SYMBOL	DESCRIPTION
G	GARAGE DOOR OPENER
C	DOOR CHIMES
C	PUSH BUTTON
CC	INTERCOM CENTER
IC	REMOTE INTERCOM
	TELEVISION CABLE OUTLET
	TELEPHONE OUTLET
	SMOKE DETECTOR AND ALARM

STANDARD SYMBOLS

A	CLASS A METAL CHIMNEY
B	CLASS B METAL CHIMNEY
HB	HOSE BIB
	FLOOR DRAIN
	LAMINATED POST IN WALL SUPPORTING BEAM OR GIRDER TRUSS. (WIDTH OF POST SAME AS STRUCTURAL MEMBER SUPPORTED)
FLOOR CEILING WALL	
	WARM AIR REGISTERS
	RETURN AIR REGISTER

HEAD OFFICE:
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KELOWNA, B.C. V1Y 9K9
(250) 420–5346
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ATTACHMENT D
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A22-0003
Planner Initials TC
City of Kelowna
DEVELOPMENT PLANNING

June 13, 2022

Local Government File: A22-0003

Tyler Caswell
City of Kelowna
1435 Water Street
Kelowna, B.C. V1Y 4J4
planninginfo@kelowna.ca

RE: Non-Adhering Residential Use, 1368 Teasdale Rd, PID 011-041-781

Dear Tyler Caswell,

Thank you for providing Ministry of Agriculture and Food (Ministry) staff the opportunity to comment on the referenced application. We have reviewed the documents provided and offer the following comments:

- Ministry staff understand that there are currently two dwellings (176.52 m^2 and 74 m^2, respectively) on the property; both are owner occupied. This application proposes that one of the houses remain and a new, larger dwelling is built. The application notes that the smaller dwelling that is proposed for replacement is unliveable, citing a cracked foundation. Ministry staff assume that this house will be demolished following construction of the new house, although this was not explicitly stated in the application materials.
- The agricultural capability of the property is mapped as a mix of improved classes 2 and 3. The dominant limitations are soil moisture deficiency and topography.
- Ministry staff note a reasonably large-scale apple orchard and Temporary Farm Worker accommodation, consisting of small cabins, on the parcel.
- The new dwelling will not be located on the same footprint as the one it is replacing, but will be located closer to the existing dwelling that will remain. This will result in the two dwellings being sited on a contiguous residential footprint, consistent with the ministry's Guide for Bylaw Development in Farming Areas.
- Assuming that the older dwelling will be demolished following construction, ministry staff have no objection to the application proceeding to the Agricultural Land Commission (ALC) for decision.

ATTACHMENT D
This forms part of application
A22-0003
Planner Initials TC
City of Kelowna
DEVELOPMENT PLANNING

If you have any questions, please contact us directly.

Sincerely,

Alison Fox
Land Use Agrologist
Ministry of Agriculture and Food
Office: (778) 666-0566
Alison.Fox@gov.bc.ca

Chris Zabek
Regional Agrologist
Ministry of Agriculture and Food
Office: (236) 766-7056
Chris.Zabek@gov.bc.ca

City of Kelowna

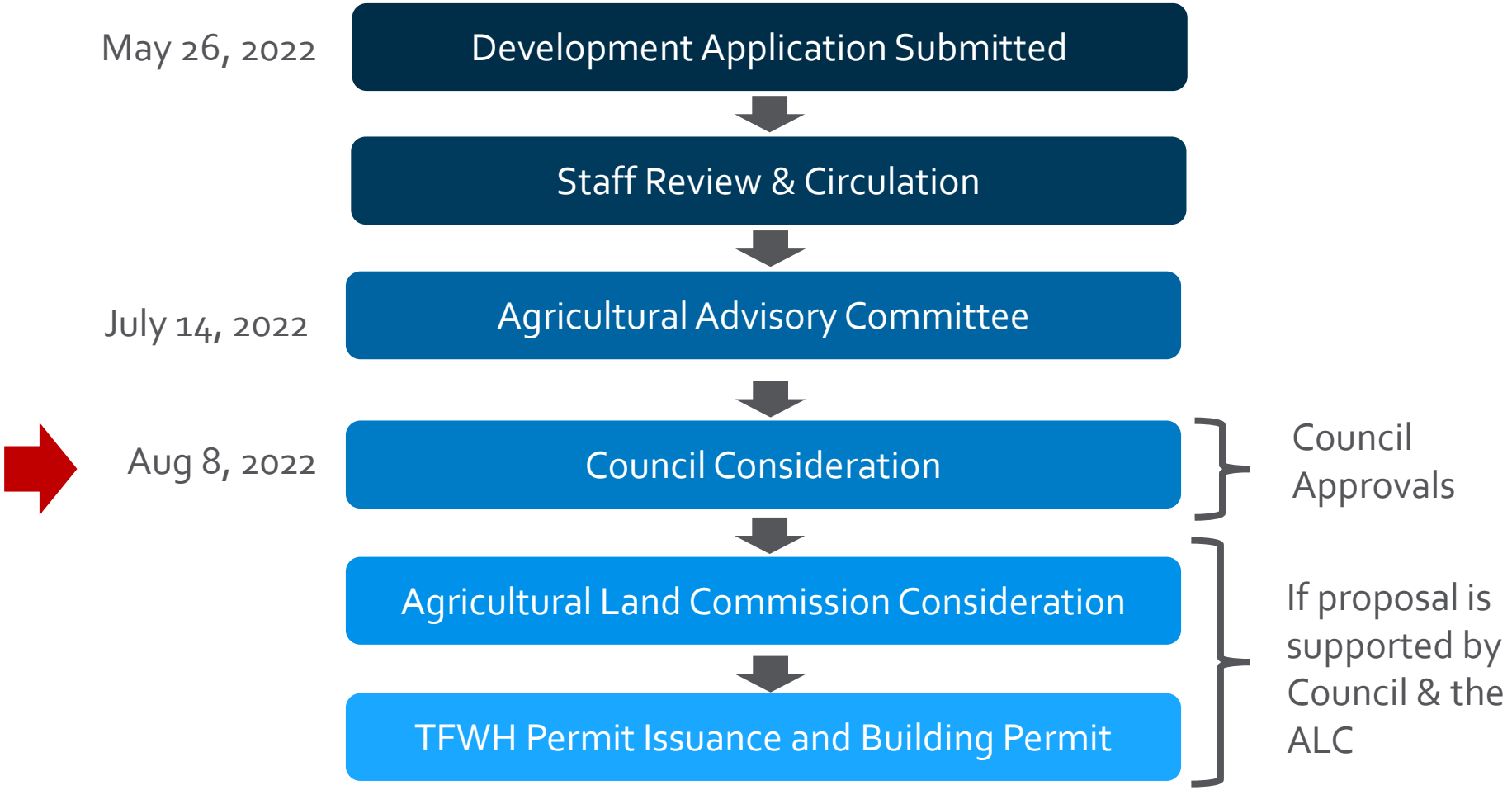
A22-0003
1368 Teasdale Road

ALR Application for Non-Adhering Residential Use Permit

Proposal

- To consider a non-adhering residential use permit to allow the replacement of a second dwelling that is no longer a suitable residence.

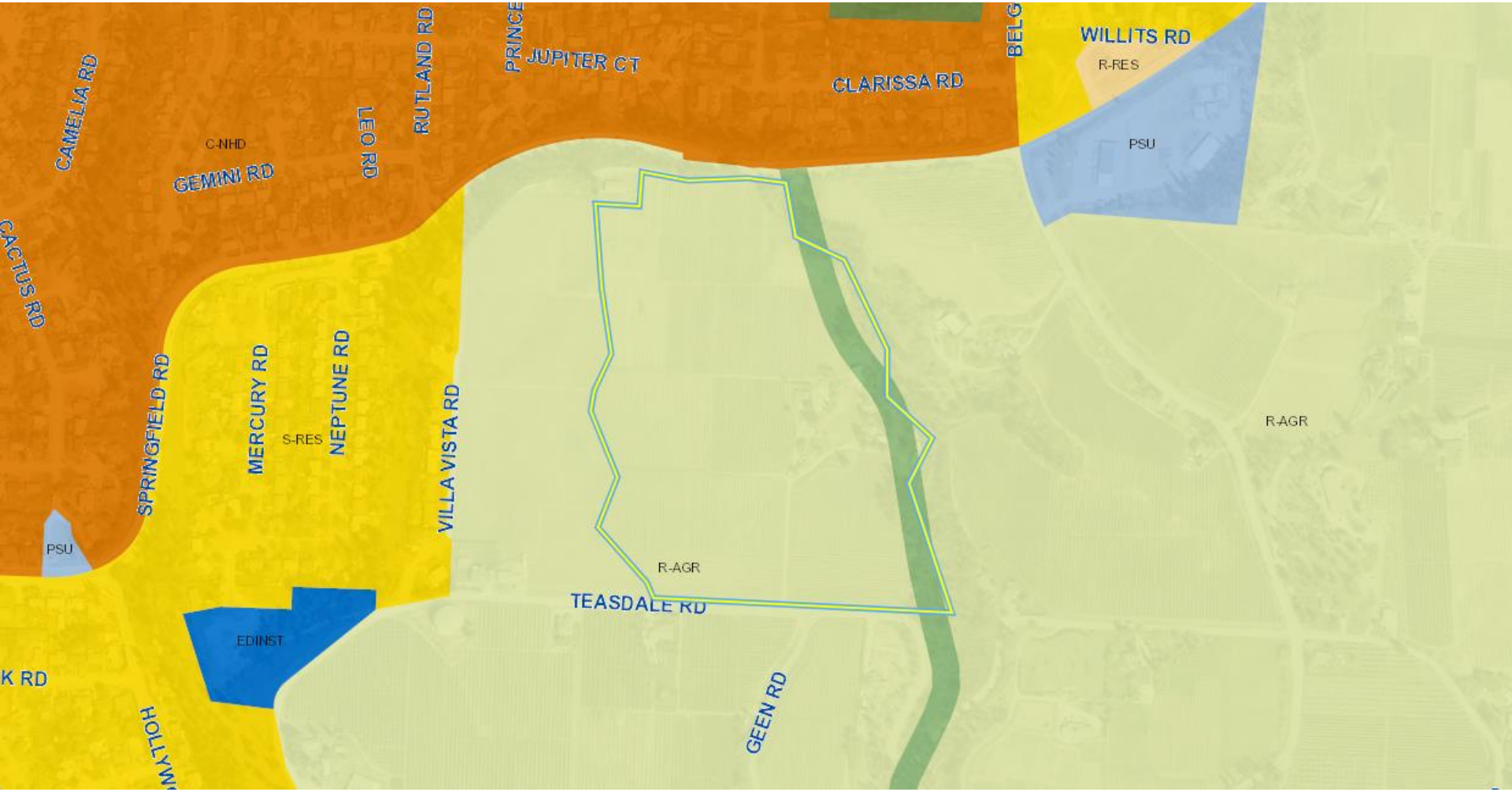
Development Process



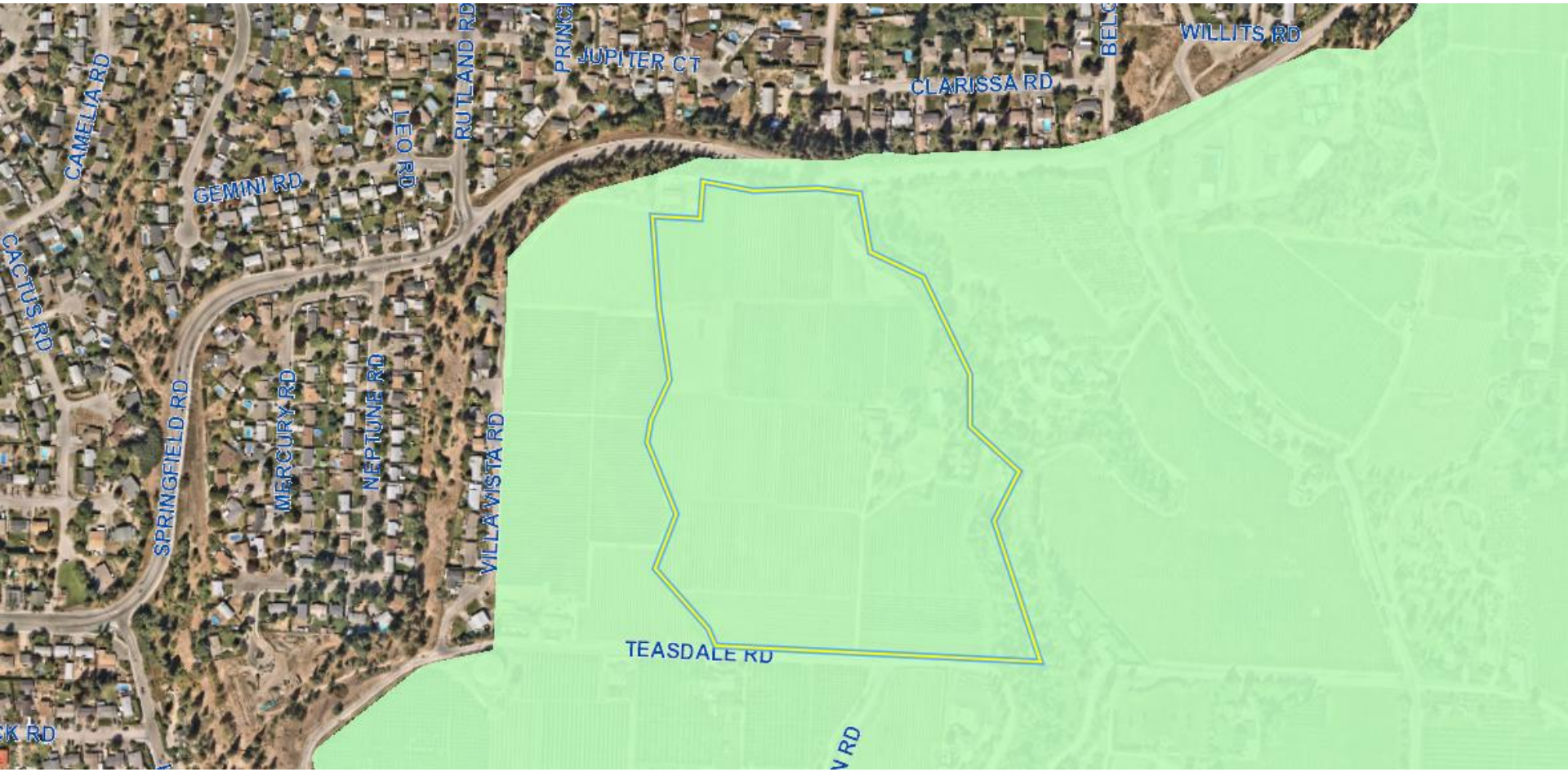
Context Map

CAMELIA RD
GEMINI RD
LEO RD
RUTLAND RD
JUPITER CT
CLARISSA RD
WILLITS RD
SPRINGFIELD RD
MERCURY RD
NEPTUNE RD
VILLA VISTA RD
TEASDALE RD
GEEN RD

OCP Future Land Use / Zoning



Agricultural Land Reserve



Aerial View

Project Details

- The applicant is seeking approvals to allow for the replacement of a second single-family dwelling.
  - The proposed dwelling would be 227.89m2 in size.
  - Property currently has two dwellings on it.
- The application has indicated that the home was built in 1956 and is now infested with ants, termites and mold.
- The location would be in Grade D soil and closer to the existing residence.
- Property also has cabins that are used for TFWH.

Site Plan

Farm Shed - Equipment Storage
Farm Maintenance Shop
Main Home - Occupied by Brian Witzke
Property Owner #1
Second Home - Occupied by Shayne Witzke
Property Owner #2
Farm Storage Outbuilding
Pickers Cabins - Occupied by Farm Workers
Proposed Dwelling Location
Farm Spray Shed
Abandoned Root Cellar
Farm Storage Outbuilding

Elevation Drawings

FRONT ELEVATION

RIGHT ELEVATION

REAR ELEVATION

LEFT ELEVATION

AAC Recommendation

- Application went to the Agricultural Advisory Committee on July 14, 2022.
  - AAC Recommended that Council support the application.

Staff Recommendation

- Staff recommend **support** of the proposed Non-Adhering Residential Use Permit Application.
  - Replacement of existing single-family dwelling.
  - Both dwellings are occupied by the owners of the farm.
  - The location chosen creates a defined Homeplate and is on non-arable land.
- Recommend the application be forwarded to ALC for consideration.

City of Kelowna

Conclusion of Staff Remarks

Report to Council

Date:	August 8, 2022		
To:	Council		
From:	City Manager		
Department:	Office of the City Clerk		
Application:	Z22-0021	**Owner:**	Mohammad Yousuf Nasin & Sayeda Hashimi Nasin
Address:	180 Rimrock Road	**Applicant:**	Urban Options Planning Corp.
Subject:	Rezoning Bylaw No. 12417 for Z22-0021 Supplemental Report to Council		
Existing OCP Designation:	R-AGR (Rural – Agricultural and Resource)		
Existing Zone:	RR1 – Rural Residential 1		
Proposed Zone:	RR1c – Rural Residential 1 with Carriage House		

Recommendation:

THAT Council receives, for information, the report from the Office of the City Clerk dated August 8, 2022 with respect to Zoning Bylaw No. 12417;

AND THAT Rezoning Bylaw No. 12417 be forwarded for further reading consideration.

Purpose:

To receive a summary of notice of first reading for Rezoning Bylaw No. 12417 and to give the bylaw further reading consideration.

Background:

Zoning bylaws that are consistent with the OCP do not require a public hearing. Public notice is given before first reading with signage on the subject property, newspaper advertisements, and mailouts in accordance with the Local Government Act and Development Application & Heritage Procedures Bylaw No. 12310.

Discussion:

Rezoning Application Z22-0021 for 180 Rimrock Road was brought forward to Council for initial consideration on July 25, 2022. Notice of first reading was completed as outlined above.

Rezoning Application Z22-0021 received three pieces of written correspondence in opposition.

This application was brought forward with a recommendation of support from the Development Planning Department. Staff are recommending Council proceed with further readings of the Bylaw.

Conclusion:

Following notice of first reading, staff are recommending that Council give Rezoning Bylaw No. 12417, located at 180 Rimrock Road, further reading consideration.

Internal Circulation:

Considerations applicable to this report:

Legal/Statutory Authority:

Local Government Act s. 464(2)

Legal/Statutory Procedural Requirements:
Following the notification period under s. 467 of the Local Government Act, Council may choose to:

- give a bylaw reading consideration,
- give a bylaw first reading and advance the bylaw to a Public Hearing, or
- defeat the bylaw.

Considerations not applicable to this report:

Existing Policy:
Financial/Budgetary Considerations:
External Agency/Public Comments:
Communications Comments:

Submitted by: N Beauchamp, Legislative Technician

Approved for inclusion: S Fleming, City Clerk

cc: Development Planning

CITY OF KELOWNA

BYLAW NO. 12417
Z22-0021
180 Rimrock Road

A bylaw to amend the "City of Kelowna Zoning Bylaw No. 8000".

The Municipal Council of the City of Kelowna, in open meeting assembled, enacts as follows:

1. THAT City of Kelowna Zoning Bylaw No. 8000 be amended by changing the zoning classification of Lot 1 Section 16 Township 28 SDYD Plan 34351 located at Rimrock Road, Kelowna, BC from RR1 – Rural Residential 1 zone to the RR1c – Rural Residential 1 with Carriage House zone.

2. This bylaw shall come into full force and effect and is binding on all persons as and from the date of adoption.

Read a first, second and third time by the Municipal Council this

Adopted by the Municipal Council of the City of Kelowna this

Mayor

City Clerk

REPORT TO COUNCIL

Date:	Aug 8th, 2022		
To:	Council		
From:	City Manager		
Department:	Development Planning		
Application:	DP22-0137	**Owner:**	The Wedge Enterprises Inc., Inc.No. BC1238448
Address:	1659 Water St	**Applicant:**	Matthew Isabelle
Subject:	Development Permit & Development Variance Permit		
Existing OCP Designation:	UC – Urban Centre		
Existing Zone:	C7 – Central Business Commercial		

1.0 Recommendation

That Council authorizes the issuance of Development Permit No. DP22-0137 for Lot 12 Block 6 District Lot 139 ODYD Plan 462 Except Plan KAP82841, located at 1659 Water Street, 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 the building to be constructed on the land be in accordance with Schedule "B";

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

Purpose

To issue a Development Permit for the form and character of a two storey commercial development.

2.0 Development Planning

Staff are recommending support for the proposed Development Permit for the commercial development. The proposal generally complies with the Official Community Plan (OCP) Policies with respect to the Downtown Urban Centre by the intensification of an under-utilized small parcel within the Downtown Urban

Centre. The proposal is consistent with Downtown Street Character OCP mapping and is within the maximum Downtown Urban Centre building heights OCP mapping.

The proposal requires two parking stalls based on the amount of commercial gross floor area. The applicant is proposing to provide cash-in-lieu of parking. Staff are recommending support for this project not providing any parking onsite as the commercial format lends itself to a restaurant as the likely tenant. A restaurant would serve the downtown patrons and future residents from adjacent developments well. Further, the scale of cash-in-lieu of parking is small.

The proposal generally conforms to the OCP Form and Character Development Permit Area Design Guidelines for commercial buildings. Key guidelines it meets include:

- Orienting building facades to both fronting streets on corner sites to create active frontages;
- Creating continuous active and transparent retail frontages at grade;

3.0 Proposal

3.1 Background

The owner previously submitted a development application for a six storey office building with commercial at-grade. That proposal had a number of variances:

- Three variances to building setbacks above the 16 metre mark;
- A variance to the minimum percentage of ground floor commercial frontage;
- A variance to reduce the amount of short-term bicycle parking spaces; and
- A variance to reduce the number of parking stalls from 10 stalls to 3 stalls.

The proposal went through a few iterations and ultimately the applicant was proposing to provide three cash-in-lieu parking stalls to the City and arrange for office parking in the downtown parkades. That Development Permit and Development Variance Permit was approved by Council on June 2nd, 2020. Those permits expired on June 2nd, 2022.

3.2 Project Description

Since the original permits have expired, the applicant has re-designed the project and is re-applying for a different development proposal. This proposal is for a 2 storey commercial building totaling 227.6 m^2 of gross floor area with a rooftop patio. There are no variances proposed with this development proposal. However, there is no on-site parking proposed. The Zoning Bylaw requires two off-street parking stalls. The applicant is committed to providing cash-in-lieu for the two parking stalls in accordance with the Payment in Lieu of Parking Bylaw No. 8125. According to the Payment in Lieu of Parking Bylaw No. 8125 the approximate value of a downtown parking stall is $33,000 per stall. Thus, the applicant would be providing approximately $66,000 to the City.

The building's façade consists of horizontal siding with periodic vertical brick features. The ground floor contains overhead doors facing Water Street with the main entrance at the corner of Water Street and Leon Avenue. The ground floor materials are primarily annodized aluminum windows with a metal canopy providing pedestrian weather protection. The roof is designed as a patio with glass railings along the perimeter.

3.3 Site Context

Subject Property Map: 1659 Water St.

3.4 Zoning Analysis Table

Zoning Analysis Table		
CRITERIA	**ZONE REQUIREMENTS**	**PROPOSAL**
Existing Lot/Subdivision Regulations		
Min. Lot Area	n/a	226.4 m²
Development Regulations		
Max. Floor Area Ratio	9.0	1.0
Max. Site Coverage (buildings)	100%	80%
Max. Height	76.5 m	11.5 m / 2 storeys
Min. Front Yard	0.0 m	0.15 m
Min. Side Yard (west)	0.0 m	0.15 m
Min. Side Yard (east)	0.0 m	0.0 m
Min. Rear Yard	0.0 m	5.79 m
Other Regulations		
Min. Parking Requirements	2 stalls	0 stalls ❶
Min. Bicycle Parking	2 short term bicycle stalls	3 short term bicycle stalls
❶ Indicates the applicant will provide a payment-in-lieu of providing two parking stalls.		

4.0 Current Development Policies

Objective 6.2 Boutique Retail	
Overview	Boutique retail developments are often designed for convenient access by motorists with large areas of surface parking separating building entries from public sidewalks. They present many opportunities for improving design and functionality to become more pedestrian oriented.
Policy 6.2.1 Relationship to the Street	a. Buildings on a corner parcel should orient frontages towards both streets if possible and include distinct architectural features, such as: » Special or decorative canopies; » Bay windows, balconies, turrets, or articulated roof line features; or » A corner entrance. b. Avoid blank walls adjacent to the highway, streets, lanes, walkways, parks, or other amenity spaces.
Policy 6.2.4 Building Articulation, Features, and Material	Create transparent retail frontages with visual access to the interior of retail stores, and avoid the use of: » Materials such as black out advertising panels; » Dark and/or reflective glass

5.0 Application Chronology

Date of Application Received: June 27th, 2022

Report prepared by: Adam Cseke, Planner Specialist
Reviewed by: Lydia Korolchuk, Urban Planning Manager
Reviewed by: Terry Barton, Development Planning Department Manager
Approved for Inclusion: Ryan Smith, Divisional Director, Planning & Development Services

Attachments:

Attachment A: Draft Development Permit DP22-0137

Schedule A: Site Plan and Floor Plans

Schedule B: Elevations

Attachment B: Form and Character Development Permit Guidelines Checklist

Development Permit
DP22-0137

This permit relates to land in the City of Kelowna municipally known as

1659 Water Street

and legally known as

Lot 12, Block 6, District Lot 139, ODYD, Plan 462 Except Plan KAP82841

and permits the land to be used for the following development:

Residential and Commercial Mixed Use

The present owner and any subsequent owner of the above described land must comply with any attached terms and conditions.

Date of Council Decision	Aug 8, 2022
Decision By:	COUNCIL
Development Permit Area:	Form & Character Development
Existing Zone:	C7 – Central Business Commercial
Future Land Use Designation:	UC - Urban Centre

This is NOT a Building Permit.

In addition to your Development Permit, a Building Permit may be required prior to any work commencing. For further information, contact the City of Kelowna, Development Services Branch.

NOTICE

This permit does not relieve the owner or the owner's authorized agent from full compliance with the requirements of any federal, provincial or other municipal legislation, or the terms and conditions of any easement, covenant, building scheme or agreement affecting the building or land.

Owner: The Wedge Enterprises Inc. No. BC1238448

Applicant: Matthew Isabelle

_____

Terry Barton
Development Planning Department Manager
Planning & Development Services

_____

Issued Date

ATTACHMENT A
This forms part of application
DP22-0137
Planner Initials AC
City of Kelowna
DEVELOPMENT PLANNING

DRAFT

1. SCOPE OF APPROVAL

This Development Permit applies to and only to those lands within the Municipality as described above, and any and all buildings, structures and other development thereon.

This Development Permit is issued subject to compliance with all of the Bylaws of the Municipality applicable thereto, except as specifically varied or supplemented by this permit, noted in the Terms and Conditions below.

The issuance of a permit limits the permit holder to be in strict compliance with regulations of the Zoning Bylaw and all other Bylaws unless specific variances have been authorized by the Development Permit. No implied variances from bylaw provisions shall be granted by virtue of drawing notations that are inconsistent with bylaw provisions and that may not have been identified as required Variances by the applicant or Municipal staff.

2. CONDITIONS OF APPROVAL

a) The dimensions and siting of the building to be constructed on the land be in accordance with Schedule "A";

b) The exterior design and finish of the building to be constructed on the land be in accordance with Schedule "B";

This Development Permit is valid for two (2) years from the date of approval, with no opportunity to extend.

3. PERFORMANCE SECURITY

n/a

5. INDEMNIFICATION

Upon commencement of the works authorized by this Permit the Developer covenants and agrees to save harmless and effectually indemnify the Municipality against:

a) All actions and proceedings, costs, damages, expenses, claims, and demands whatsoever and by whomsoever brought, by reason of the Municipality said Permit.

All costs, expenses, claims that may be incurred by the Municipality where the construction, engineering or other types of works as called for by the Permit results in damages to any property owned in whole or in part by the Municipality or which the Municipality by duty or custom is obliged, directly or indirectly in any way or to any degree, to construct, repair, or maintain.

The PERMIT HOLDER is the CURRENT LAND OWNER.
Security shall ONLY be returned to the signatory of the Landscape Agreement or their designates.

DRAFT

ATTACHMENT A
This forms part of application
DP22-0137
Planner Initials AC
City of Kelowna
DEVELOPMENT PLANNING

SCHEDULE B

This forms part of application
DP22-0137

Planner Initials AC

City of Kelowna
DEVELOPMENT PLANNING

SCHEDULE B

This forms part of application
DP22-0137

Planner Initials AC

City of Kelowna
DEVELOPMENT PLANNING

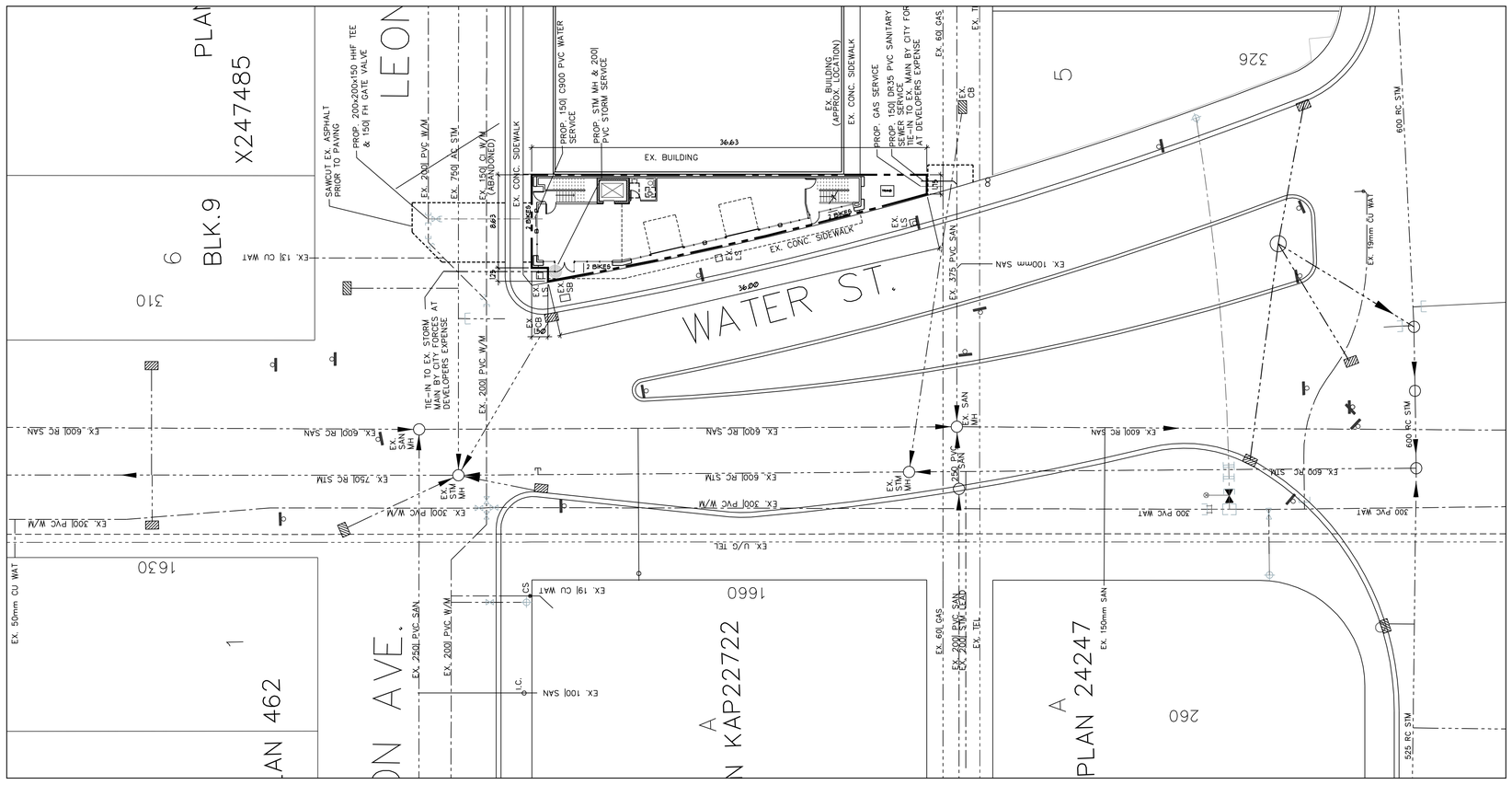
SCHEDULE A

This forms part of application
DP22-0137

Planner Initials AC

City of Kelowna
DEVELOPMENT PLANNING

NORTH



SITE PLAN
SCALE: 1" = 20'-0"

3-Loop Wave Style Bike Rack -

PROJECT DATA

MAY 5, 2022

CIVIC ADDRESS:	1659 WATER ST., KELOWNA, BC
LEGAL DESCRIPTION:	LOT 12, PLAN KAP462, DL 139, EXCEPT PLAN KAP82841, O.D.Y.D.
CURRENT ZONING:	C7 - CENTRAL BUSINESS COMMERCIAL

ZONING BYLAW REQUIREMENTS

SITE AREA = 2,437 SQ.FT. (226.40 SQ.M.)

BUILDING AREA (GROSS):

MAIN FLOOR: = 1937 SQ.FT. (180.0SQ.M.)
SECOND FLOOR: = 511 SQ.FT. (47.5 SQ.M.)
2,448 SQ.FT. (227.5 SQ.M.)

	ZONE REQUIREMENT	PROPOSED
LOT WIDTH	6.0m	8.6m
LOT DEPTH	30.0m	36.02m
LOT AREA	200 sq.m.	226.4 sq.m.
FLOOR AREA RATIO (FAR)	9.0 (2,037.6 sq.m.)	1.0 (227.5 sq.m.)
HEIGHT (m)	76.5m	11.5m / 2 STOREY
SETBACKS (m)		
FRONT (LEON AVENUE)	0.0 m	0.15 m
FRONT ABOVE 16m (LEON AVENUE)	3.0 m	0 m
SIDE (EAST)	0.0 m	0.152 m
SIDE ABOVE 16m (EAST)	4.0 m	0 m
SIDE (WATER STREET)	0.0 m	0.15 m
SIDE ABOVE 16m (WATER STREET)	3.0 m	0 m
REAR (LANE)	0.0 m	5.79 m
REAR ABOVE 16m (LANE)	3.0 m	0 m
FLOOR PLATE ABOVE 16m (14.7.5)		
(h) AREA	1,221 sq. m.	0 sq. m.
FUNCTIONAL COMMERCIAL SPACE FRONTAGE (14.7.7 (e))		
LEON AVENUE	8.6m x 90%=7.75m	8.23m/96%
WATER STREET	36.02m x 90%=32.42m	31.09m/84%
PARKING		
COMMERCIAL @ 1.3/100 sq.m. GFA x 227.5 sq.m. =	2 STALLS	0 STALLS *
LOADING @ 1/1900 sq.m. GFA =	0 STALL	0 STALLS
BICYCLE PARKING		
CLASS I @ 0.2/100 sq.m. GLA =	0 SPACES	0 SPACES
CLASS II @ 0.6/100 sq.m. GLA =	1 SPACES	6 SPACES
LANDSCAPE BUFFERS (m)		
FRONT (LEON AVENUE)	0.0m	0.0m
SIDE (EAST)	0.0m	0.0m
SIDE (WATER STREET)	0.0m	0.0m
REAR (LANE)	0.0m	0.0m

LANDSCAPE TREATMENT LEVELS

FRONT (LEON AVENUE)	NOT REQ'D
SIDE (EAST)	NOT REQ'D
SIDE (WATER STREET)	NOT REQ'D
REAR (SOUTH)	NOT REQ'D

* VARIANCE REQUIRED

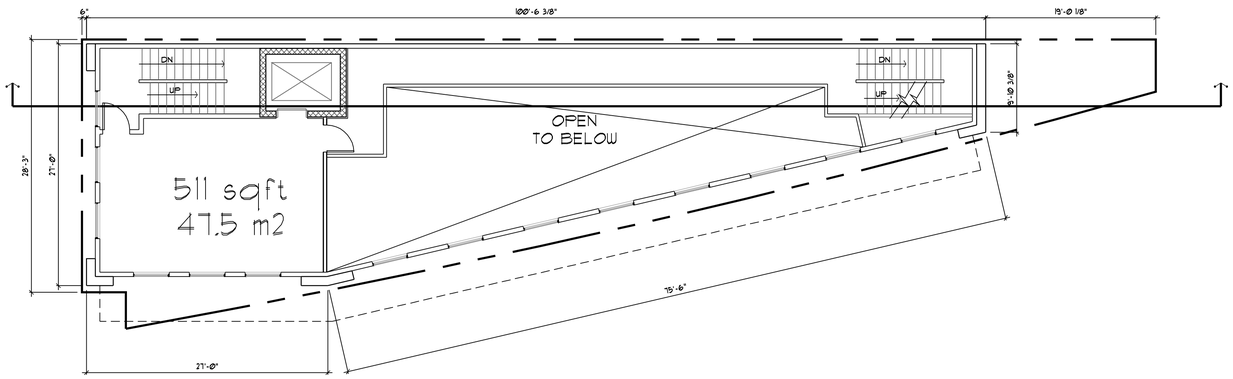
No.	DATE	DESCRIPTION
1	JUNE 7-22	ISSUED FOR DP
2	JUNE 28-22	REVISED FOR PARKING
3	JULY 14-22	REVISED FOR BICYCLE CALCS
4	JULY 14-22	REVISED FOR BICYCLE RACKS

1659 WATER ST, KELOWNA
BRITISH COLUMBIA

SCALE: 1" = 20'-0"
DATE: APRIL 2022

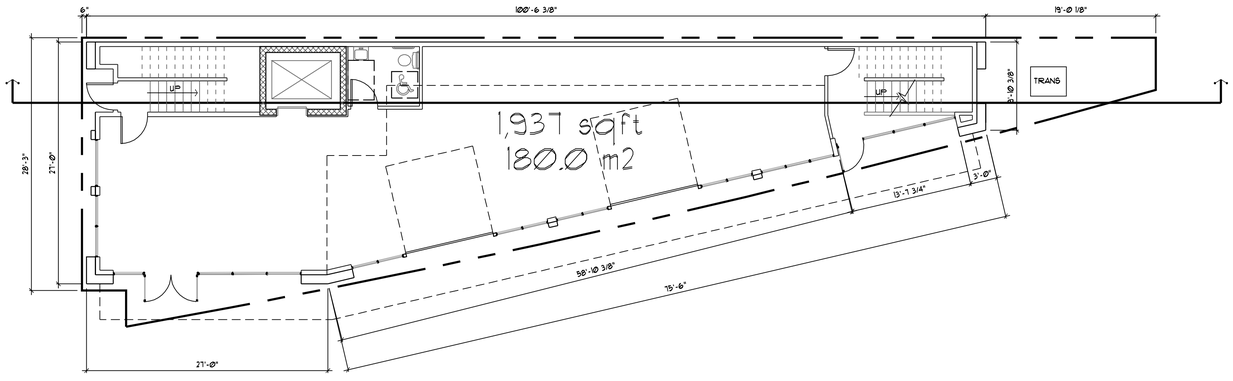
SITE PLAN

DRAWING No. A0



SECOND FLOOR PLAN

SCALE: 1/8" = 1'-0"



MAIN FLOOR PLAN

SCALE: 1/8" = 1'-0"

NORTH

SCHEDULE A

This forms part of application

DP22-0137

Planner Initials AC

City of Kelowna
DEVELOPMENT PLANNING

No.	DATE	DESCRIPTION
1	MAY 24-22	ISSUED FOR REVIEW

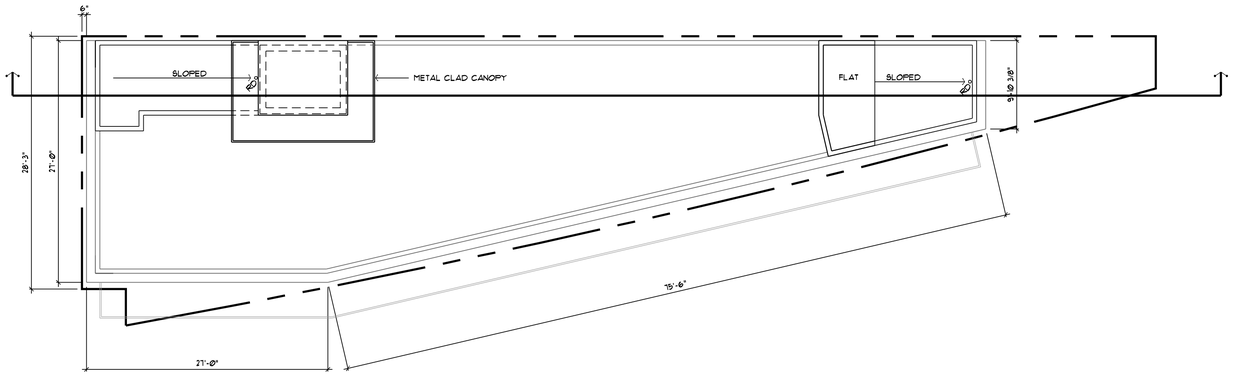
1659 WATER ST, KELOWNA
BRITISH COLUMBIA

SCALE: 1" = 20'-0"

DATE: APRIL 2022

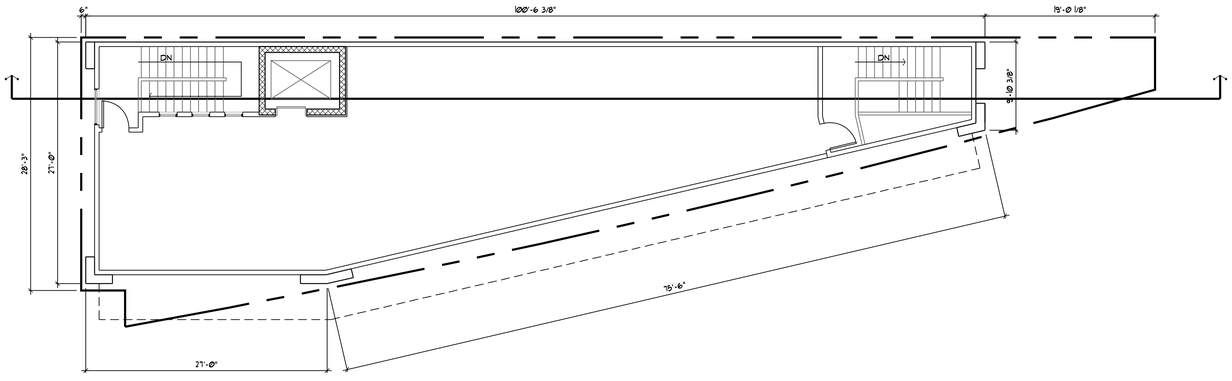
SITE PLAN

DRAWING No. A1



UPPER ROOF PLAN

SCALE: 1/8" = 1'-0"



ROOF PATIO

SCALE: 1/8" = 1'-0"

NORTH

SCHEDULE A

This forms part of application

DP22-0137

City of Kelowna
DEVELOPMENT PLANNING

Planner Initials AC

No.	DATE	DESCRIPTION
1	MAY 24-22	ISSUED FOR REVIEW

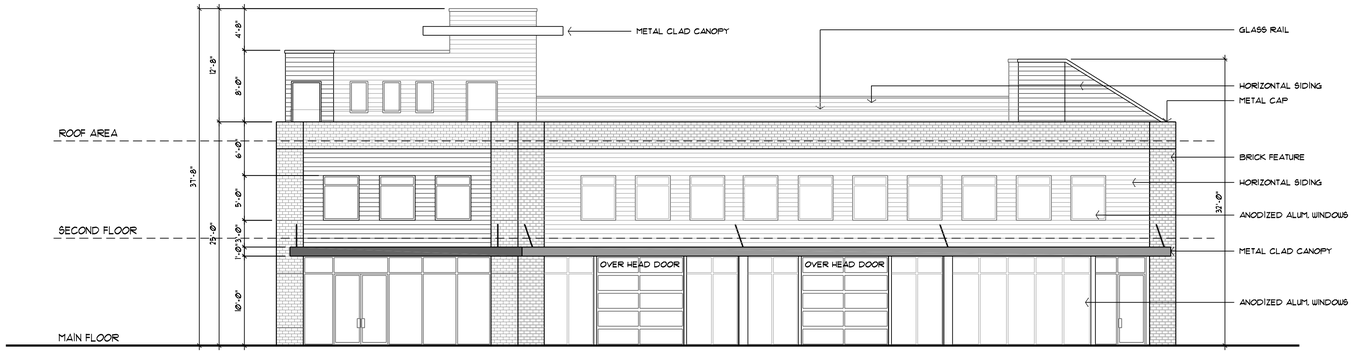
1659 WATER ST, KELOWNA
BRITISH COLUMBIA

SCALE: 1" = 20'-0"

DATE: APRIL 2022

SITE PLAN

DRAWING No. A2



WATER STREET - WEST ELEVATION

SCALE: 1/8" = 1'-0"

SCHEDULE B

This forms part of application

DP22-0137

City of Kelowna DEVELOPMENT PLANNING

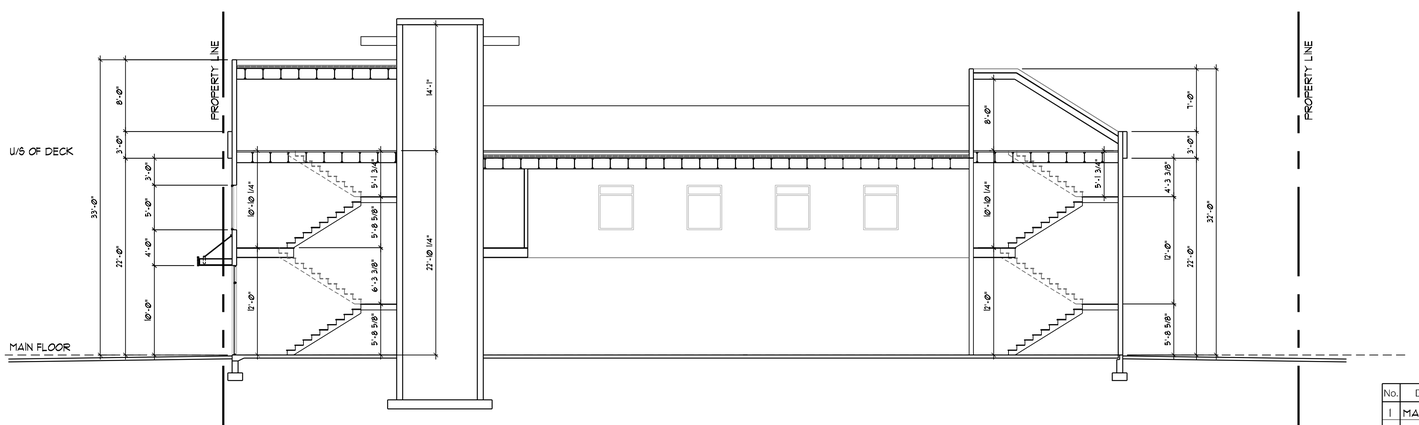
Planner Initials AC

LEON AVE - NORTH ELEVATION

SCALE: 1/8" = 1'-0"

SOUTH ELEVATION

SCALE: 1/8" = 1'-0"



WATER STREET - LONG SECTION

SCALE: 1/8" = 1'-0"

No.	DATE	DESCRIPTION
1	MAY 24-22	ISSUED FOR REVIEW

1659 WATER ST. KELOWNA
BRITISH COLUMBIA

SCALE: 1" = 20'-0"

DATE: APRIL 2022

PLANS

DRAWING No. A3

ATTACHMENT B
This forms part of application
DP22-0137
Planner Initials AC
City of Kelowna
DEVELOPMENT PLANNING

FORM & CHARACTER – DEVELOPMENT PERMIT GUIDELINES

Consideration has been given to the following guidelines as identified in Chapter 18 of the City of Kelowna 2040 Official Community Plan:

SECTION 6.0: RETAIL, COMMERCIAL AND INDUSTRIAL						
RATE PROPOSALS COMPLIANCE TO PERTINENT GUIDELINE *(1 is least complying & 5 is highly complying)*	**N/A**	**1**	**2**	**3**	**4**	**5**
6.1 General Guidelines						
6.1.1 Relationship to the Street	**N/A**	**1**	**2**	**3**	**4**	**5**
a. Orient the long side of each building to be parallel to the public street.						x
b. Locate entries to be visible and directly accessible from the public street.						x
c. For buildings fronting highways, entries can be located away from the street, as long as there is a direct pedestrian connection to the site.	x					
d. Avoid blank walls adjacent to the highway, streets, walkways, parks, or other amenity spaces.						x
6.1.2 Site Planning and Landscaping	**N/A**	**1**	**2**	**3**	**4**	**5**
a. Locate buildings to ensure good sight lines for vehicular and pedestrian traffic.						x
b. Provide direct, safe, continuous, and clearly defined pedestrian access from public sidewalks, parking areas, and transit stops to building entrances.						x
c. Use large canopy trees to define the public realm (e.g. at the sidewalk and property edge facing the street)	x					
d. Distribute trees and landscaping throughout the site in order to: • Soften property edges facing the street; • Define internal roads, pedestrian routes, and open spaces; • Create pleasant pedestrian conditions; • Screen parking, loading, service, and utility areas; • Manage stormwater on-site; and • Break up large rows of parking by substituting a parking stall with a canopy tree in planter every 8-10 parking stalls;	x					
e. Provide on-site bio-retention facilities (e.g. bioswales, rain gardens) to collect, store and filter stormwater from parking areas.	x					
f. Use permeable materials such as paving blocks or permeable concrete in parking areas to maximize rainwater infiltration.	x					
g. Pedestrian pathways should provide clear sight lines and connect the following: • Parking areas to building entrances; • Main building entrances to public sidewalks (where applicable); • Main building entrances to transit stopes (where applicable); • Between buildings on adjacent lots.	x					

h.	Provide separation between vehicular routes (especially truck access/loading) and pedestrian routes on-site to avoid conflict and distinguish pedestrian routes from driving surfaces by using varied paving treatments and/or raising walkways to curb level.	x					
i.	Base new development on an internal circulation pattern that allows logical movement throughout the site and that will accommodate, and not preclude, intensification over time.	x					
6.1.3 Site Servicing, Access, and Parking		**N/A**	**1**	**2**	**3**	**4**	**5**
a.	Design site accesses to provide the potential for future shared access with neighbours and to minimize curb cuts.	x					
b.	Where practical, link access drives and parking lots of adjacent properties in order to allow for circulation of vehicles between sites.	x					
c.	The preferred location for main parking areas is at the rear and/or side of the building. Avoid locating large parking areas between the building and the street.	x					
d.	Where parking areas are visible from the street, screen them using strategies such as tree planting, berming, low walls, decorative fencing and/or hedging.	x					
e.	Break parking areas into smaller blocks defined by landscaping in order to minimize the amount of paved areas.	x					
f.	Locate loading, utilities, mechanical equipment and garbage collection areas away from public view by: • Integrating these facilities into the footprint of the building; or • Screening using fencing, walls, and/or landscaping						x
g.	Provide areas for temporary snow storage that do not conflict with site circulation, landscaping, and access to utility boxes. For example, by providing access via a lane away from public view.	x					
6.1.4 Building Articulation, Features, and Materials		**N/A**	**1**	**2**	**3**	**4**	**5**
a.	Avoid facing unarticulated facades to the street and use projections, recesses, arcades, awnings, color, and texture to improve the pedestrian experience						x
b.	Design primary entrances to face the street, exhibit design emphasis, and provide weather protection by means of canopy or recessed entry.						x
c.	Design buildings such that their form and architectural character reflect the building's internal function and use (e.g. an industrial building, a large format retail mall).						x
d.	Design signage as an integral element of the building's façade and to be compatible in scale and design with the design, color and material of the building.					x	
e.	Allow for brand identification where there are multiple buildings and uses on a site, but avoid individual corporate image, color, and signage back-lit signs from dominating the site.	x					
f.	Locate, size and design ground-mounted signs to be oriented to pedestrians as opposed to vehicles.					x	

g. Provide shielded, down lighting to provide security and ambient lighting while minimizing light pollution and spill over lighting into adjacent properties.					x	
h. Provide weather protection at building entrances close to transit stops, and in areas with pedestrian amenities.						x
i. Incorporate substantial, natural building materials such as masonry, stone, and wood into building facades.					x	
j. Use an integrated, consistent range of materials and colors and provide variety by, for example, using accent colors.					x	
6.2 Boutique Retail						
6.2.1 Relationship to the Street	**N/A**	**1**	**2**	**3**	**4**	**5**
a. Buildings on a corner parcel should orient frontages towards both streets is possible and included distinct architectural features, such as: • Special or decorative canopies; or • Bay windows, balconies, turrets, or articulated roof line features; or • A corner entrance.						x
b. Avoid blank walls adjacent to the highway, streets, lanes, walkways, parks, or other amenity spaces.						x
6.2.2 Site Planning and Landscaping	**N/A**	**1**	**2**	**3**	**4**	**5**
a. Provide site furnishings, such as seating, bike racks, and shelters at building entrances and amenity areas.						x
6.2.2 Site Planning and Landscaping	**N/A**	**1**	**2**	**3**	**4**	**5**
a. Provide sheltered bicycle parking in visible and well-lit locations near building entrance and pedestrian walkways.						x
6.2.4 Building Articulation, Features, and Materials	**N/A**	**1**	**2**	**3**	**4**	**5**
a. Design the façade of buildings with multiple storefronts so that each is defined through individual signage, entrances, canopies and/or materiality.						x
b. Create transparent retail frontages with visual access to the interior of retail stores, and avoid the use of: • Materials such as black out advertising panels; • Dark and/or reflective glass						x

ATTACHMENT B
This forms part of application
DP22-0137
City of Kelowna
DEVELOPMENT PLANNING
Planner Initials AC

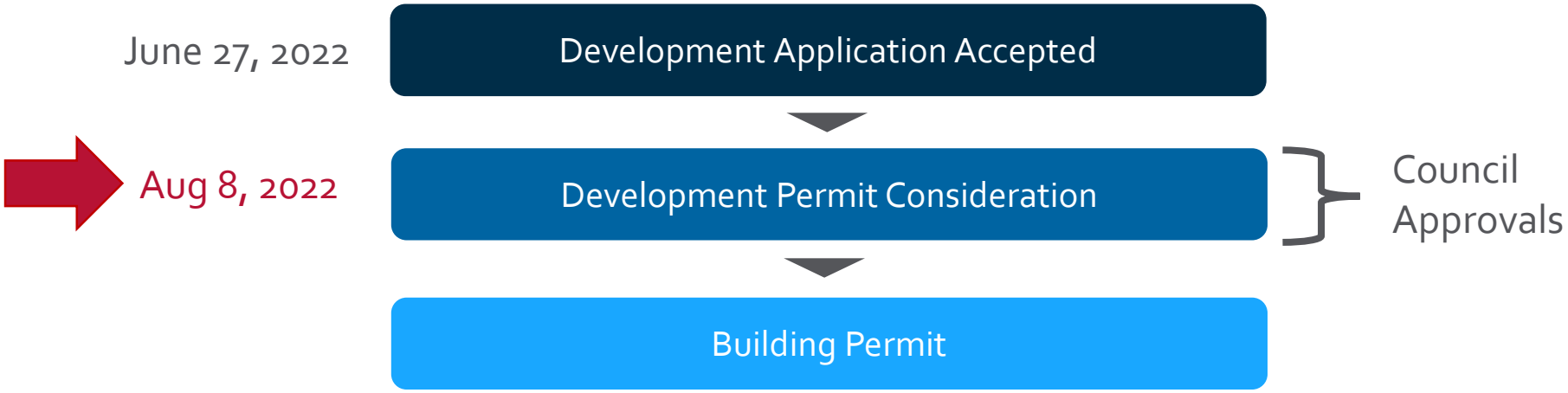
DP22-0137
1659 Water St

Development Permit Application

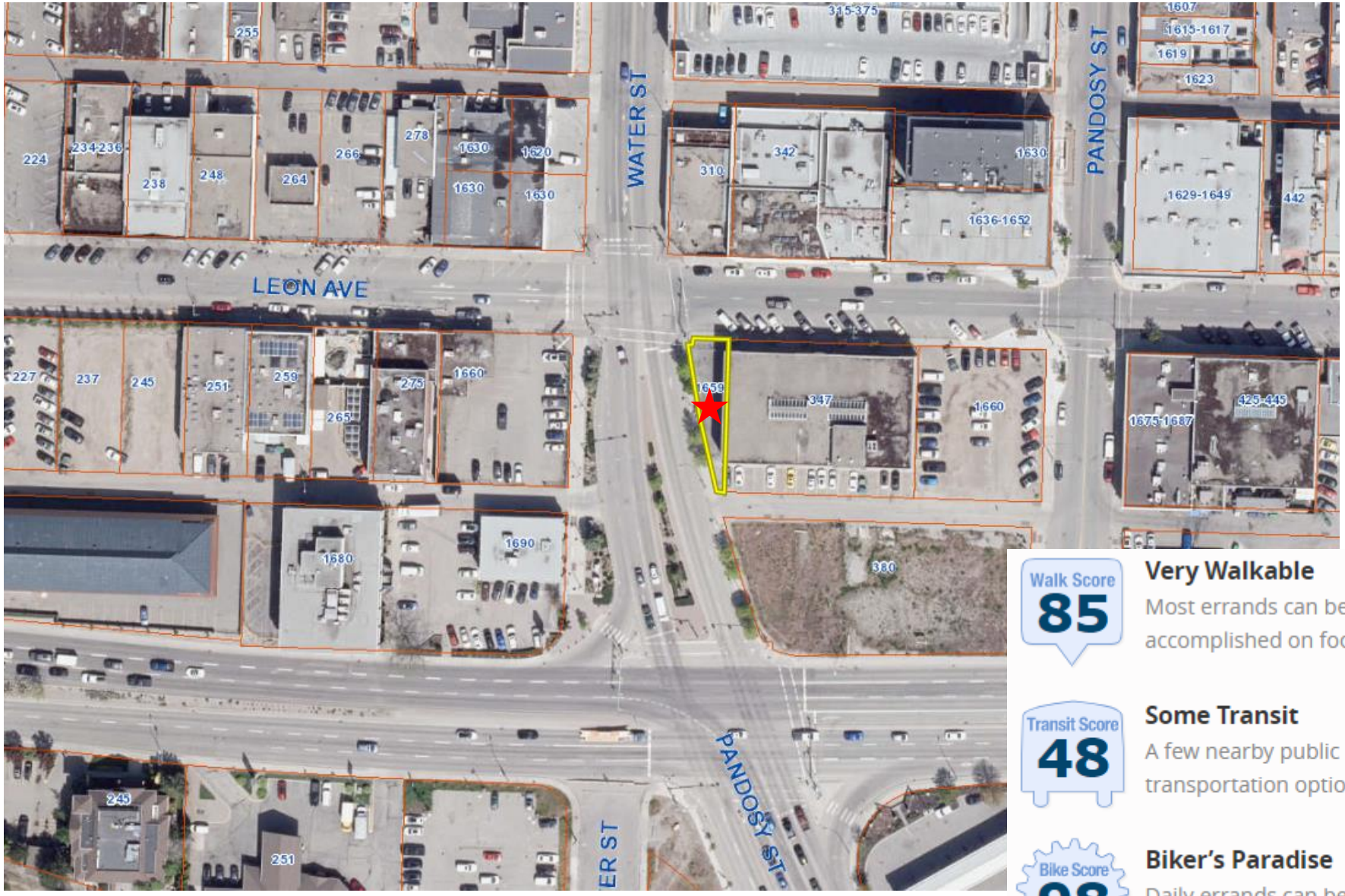
Proposal

- To issue a Development Permit for the form and character of a two-storey commercial development.

Development Process



Context Map



Walk Score 85
Very Walkable
Most errands can be accomplished on foot.

Transit Score 48
Some Transit
A few nearby public transportation options.

Bike Score 98
Biker's Paradise
Daily errands can be accomplished on a bike.

Future Land Use

Project/technical details

- 2-storey commercial building
- 227.6 m2 of interior commercial space with rooftop patio
- 1 commercial unit
- No Parking provided onsite
  - 2 parking spaces required
  - Applicant will pay cash-in-lieu of providing parking
- All commercial space interfacing with at-grade public realm

Background

- Previous 6-storey office building
- Approved in 2020
- Multiple variances
- Parking varies from 10 stalls to 3 stalls (then cash-in-lieu those 3 stalls)
- DP & DVP is now expired

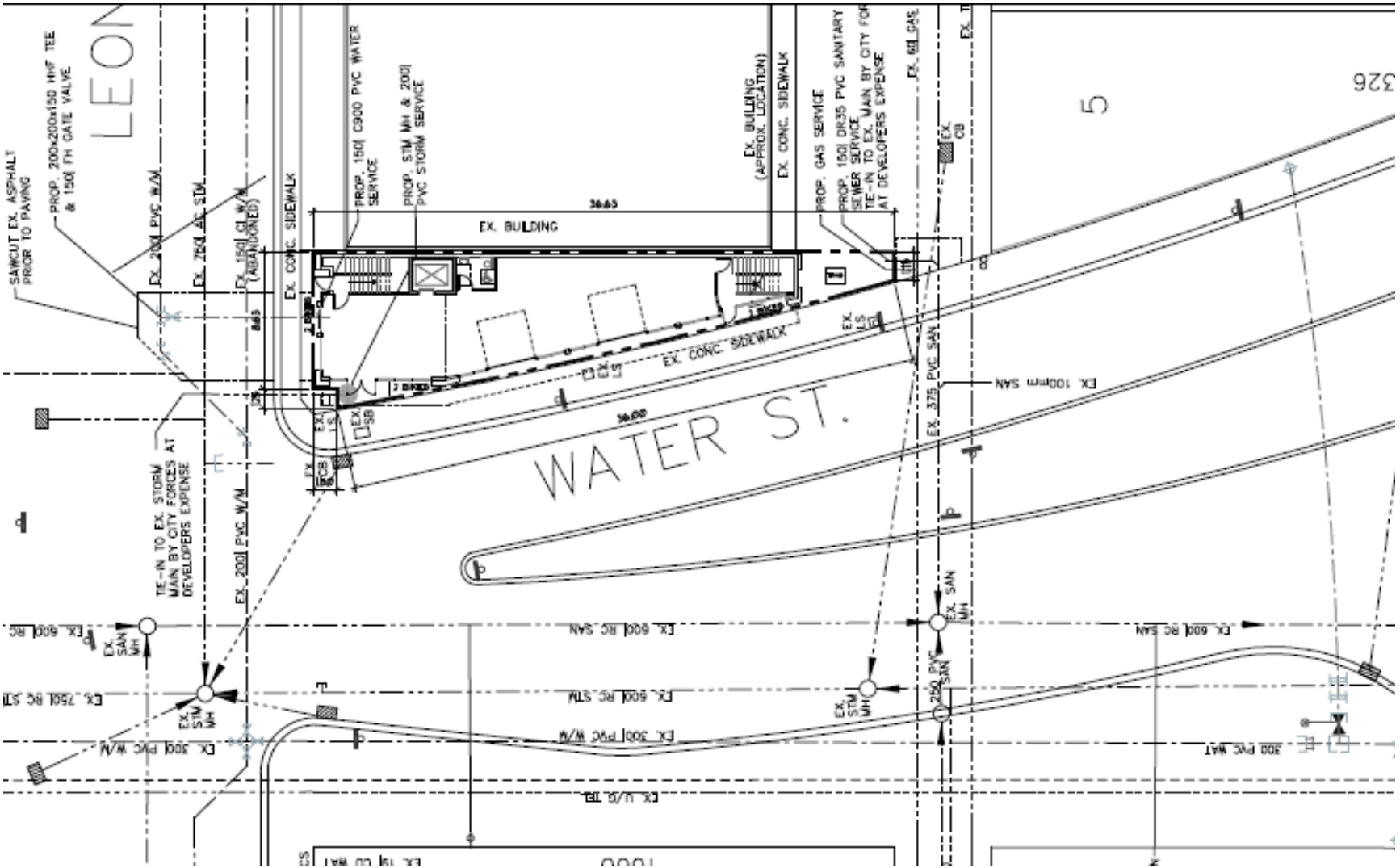
LEON AVE ELEVATION

WATER STREET ELEVATION

Renderings

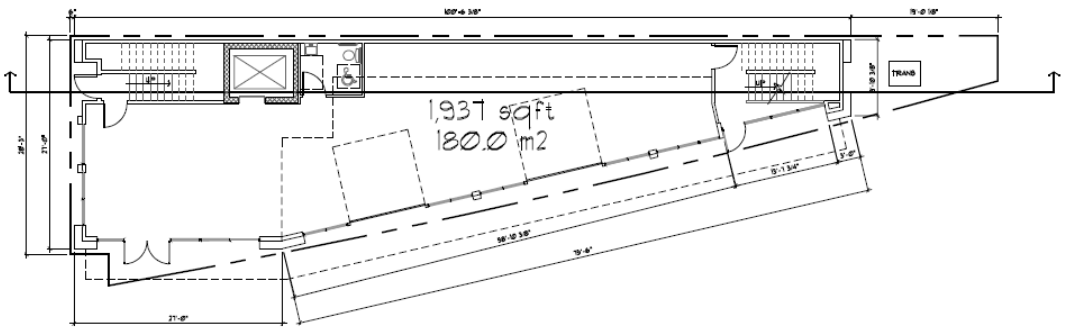
Renderings

Site Plan

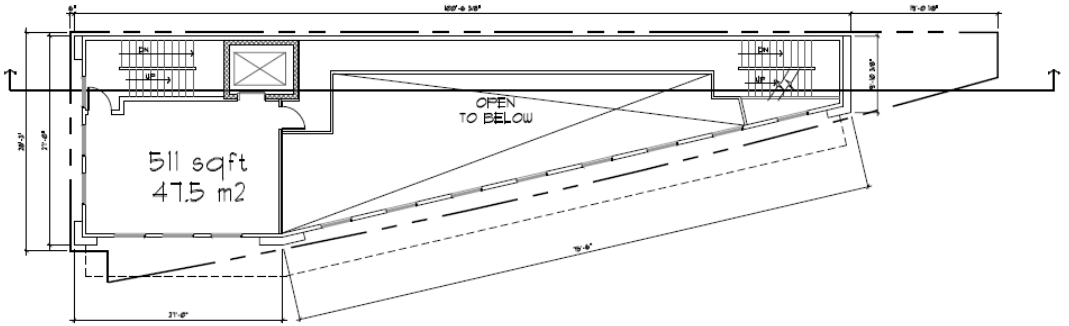


WATER ST.
EX. BUILDING
EX. CONC. SIDEWALK
EX. BUILDING (APPROX. LOCATION)
EX. CONC. SIDEWALK
PROP. GAS SERVICE
PROP. 150| DR35 PVC SANITARY SEWER SERVICE
TIE-IN TO EX. MAIN BY CITY FOR AT DEVELOPERS EXPENSE
PROP. 150| C900 PVC WATER SERVICE
PROP. STM MH & 200| PVC STORM SERVICE
SAWCUT EX. ASPHALT PRIOR TO PAVING
PROP. 200x200x150 HHF TEE & 150| FH GATE VALVE
EX. 200| PVC W/M
EX. 750| AC STM
EX. 150| CI W/M (ABANDONED)
EX. CONC. SIDEWALK
TIE-IN TO EX. STORM MAIN BY CITY FORCES AT DEVELOPERS EXPENSE
EX. 200| PVC W/M
EX. 600| RC SAN
EX. 600| RC STM
EX. 300| PVC W/M
EX. 600| RC SAN
EX. 600| RC SAN
EX. 375 PVC SAN
EX. 100mm SAN
EX. 300| PVC W/M
EX. 300 PVC WAT
EX. U/G TEL
EX. SAN MH
EX. STM MH
EX. SAN MH
EX. STM MH
EX. SAN MH
EX. CB
EX. LS
EX. SB
EX. CB
5
326

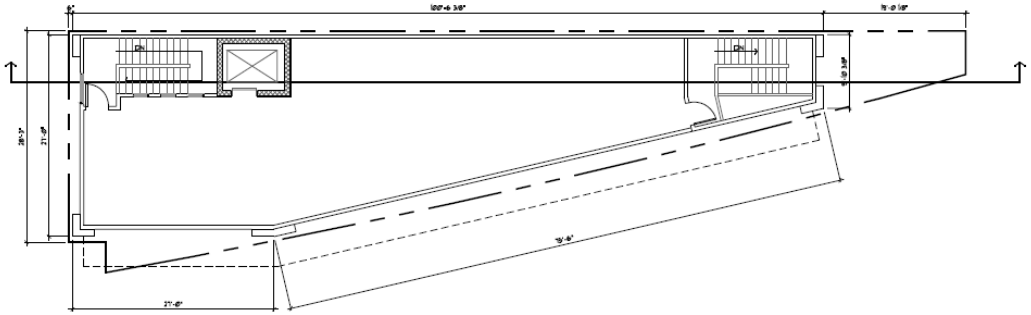
Floor Plans



Main Floor

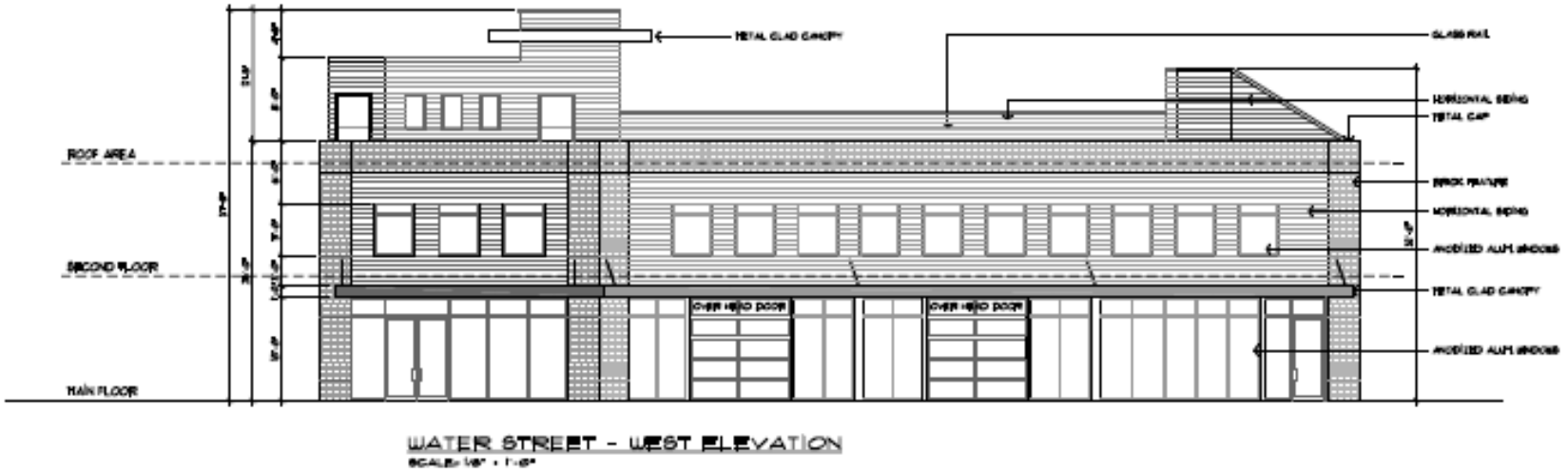


Second Floor

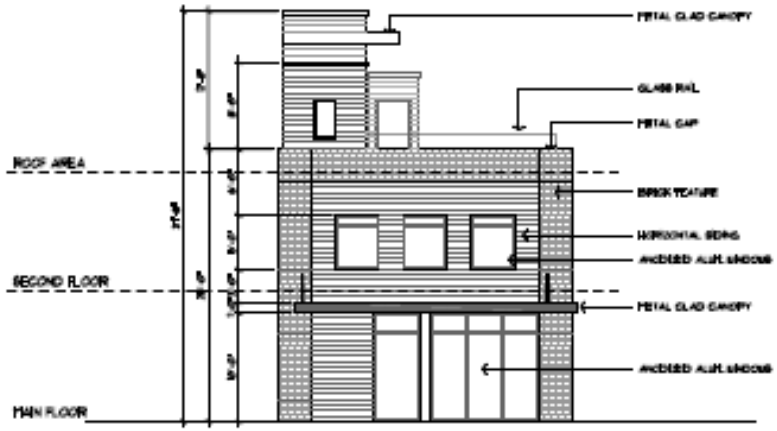


Roof Patio

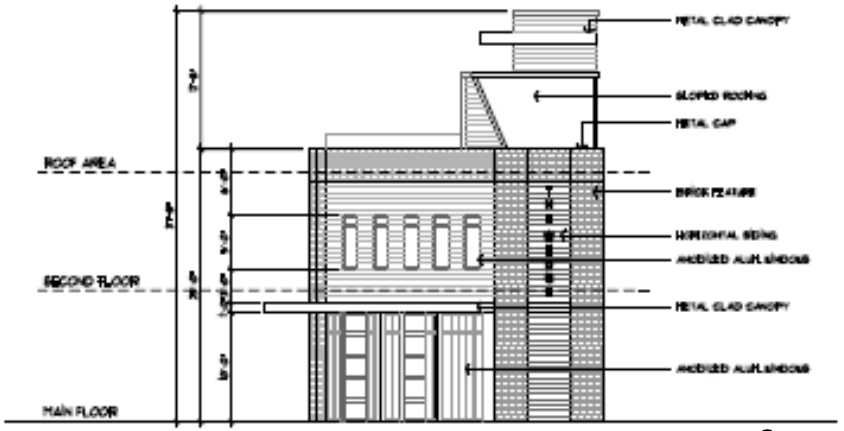
Elevations



WATER STREET - WEST ELEVATION



LEON AVE - NORTH ELEVATION



SOUTH ELEVATION

Staff Recommendation

- Staff recommend **support** for the proposed Development Permit
  - Conforms to the Form & Character Design Guidelines for Commercial Boutique Retail Buildings
  - No Variances

City of Kelowna

Conclusion of Staff Remarks

CITY OF KELOWNA

BYLAW NO. 12065
Z20-0041 – 1021 Lawson Avenue

A bylaw to amend the "City of Kelowna Zoning Bylaw No. 8000".

The Municipal Council of the City of Kelowna, in open meeting assembled, enacts as follows:

1. THAT City of Kelowna Zoning Bylaw No. 8000 be amended by changing the zoning classification of Lot A District Lot 138 ODYD Plan EPP121306 located at Lawson Avenue, Kelowna, BC from the RU6 – Two Dwelling Housing zone to the RM5 – Medium Density Multiple Housing zone.

2. This bylaw shall come into full force and effect and is binding on all persons as and from the date of adoption.

Read a first time by the Municipal Council this 10th day of August, 2020.

Considered at a Public Hearing on the 25th day of August, 2020.

Read a second and third time by the Municipal Council this 25th day of August, 2020.

Approved under the Transportation Act this 26th day of August, 2020.

Audrie Henry

(Approving Officer – Ministry of Transportation)

Amended at third reading and adopted by the Municipal Council of the City of Kelowna this

Mayor

City Clerk

CITY OF KELOWNA

BYLAW NO. 12177
Z19-0072
2996 Sexsmith Road

A bylaw to amend the "City of Kelowna Zoning Bylaw No. 8000".

The Municipal Council of the City of Kelowna, in open meeting assembled, enacts as follows:

1. THAT City of Kelowna Zoning Bylaw No. 8000 be amended by changing the zoning classification of Lot 32, Section 3, Township 23, ODYD Plan 18861 located at Sexsmith Road, Kelowna, BC from the A1 – Agriculture 1 zone to the I6 – Low-Impact Transitional Industrial zone.

2. This bylaw shall come into full force and effect and is binding on all persons as and from the date of adoption.

Read a first time by the Municipal Council this 22nd day of February, 2021.

Considered at a Public Hearing on the 16th day of March, 2021.

Read a second and third time by the Municipal Council this 16th day of March, 2021.

Adopted by the Municipal Council of the City of Kelowna this

_____
Mayor

_____
City Clerk

CITY OF KELOWNA

BYLAW NO. 12178
Z18-0116
3030 Sexsmith Road

A bylaw to amend the "City of Kelowna Zoning Bylaw No. 8000".

The Municipal Council of the City of Kelowna, in open meeting assembled, enacts as follows:

1. THAT City of Kelowna Zoning Bylaw No. 8000 be amended by changing the zoning classification of Lot 31, Section 3, Township 23, ODYD Plan 18861 located at Sexsmith Road, Kelowna, BC from the A1 – Agriculture 1 zone to the I6 – Low-Impact Transitional Industrial zone

2. This bylaw shall come into full force and effect and is binding on all persons as and from the date of adoption.

Read a first time by the Municipal Council this 22nd day of February, 2021.

Considered at a Public Hearing on the 16th day of March, 2021.

Read a second and third time by the Municipal Council this 16th day of March, 2021.

Approved under the Transportation Act this

Not Required

(Approving Officer – Ministry of Transportation)

Adopted by the Municipal Council of the City of Kelowna this

Mayor

City Clerk

CITY OF KELOWNA

BYLAW NO. 12264
Z21-0067
639 Sherwood Road

A bylaw to amend the "City of Kelowna Zoning Bylaw No. 8000".

The Municipal Council of the City of Kelowna, in open meeting assembled, enacts as follows:

1. THAT City of Kelowna Zoning Bylaw No. 8000 be amended by changing the zoning classification of Lot 2 District Lot 358 ODYD Plan 16547 located on Sherwood Road, Kelowna, BC from the RU1 – Large Lot Housing zone to the RU6 – Two Dwelling Housing zone.

2. This bylaw shall come into full force and effect and is binding on all persons as and from the date of adoption.

Read a first time by the Municipal Council this 13th day of September, 2021.

Public Hearing waived by the Municipal Council this 13th day of September, 2021.

Considered at a Public Hearing on the 16th day of November, 2021.

Read a second and third time by the Municipal Council this 16th day of November, 2021.

Adopted by the Municipal Council of the City of Kelowna this

Mayor

City Clerk

CITY OF KELOWNA

BYLAW NO. 12388

Official Community Plan Amendment No. OCP20-0003
3480 and 3508 Fleet Court

A bylaw to amend the "*Kelowna 2040* – Official Community Plan Bylaw No. 12300".

The Municipal Council of the City of Kelowna, in open meeting assembled, enacts as follows:

1. THAT Map 3.1 – **Future Land Use** of "*Kelowna 2040* – Official Community Plan Bylaw No. 12300" be amended by changing the Future Land Use designation of Lot 2 Section 14 Township 23 ODYD Plan EPP64815 and Lot 15 Section 14 Township 23 ODYD Plan KAP82802 Except Plan EPP23036 located on Fleet Court, Kelowna, B.C., from the IND – Industrial designation to the RCOM – Regional Commercial Corridor designation;

2. This bylaw shall come into full force and effect and is binding on all persons as and from the date of adoption.

Read a first time by the Municipal Council this 30th day of May, 2022.

Considered at a Public Hearing on the 12th day of July, 2022.

Read a second and third time by the Municipal Council this 12th day of July, 2022.

Adopted by the Municipal Council of the City of Kelowna this

Mayor

City Clerk

CITY OF KELOWNA

BYLAW NO. 12389
Z20-0006
3480 and 3508 Fleet Court

A bylaw to amend the "City of Kelowna Zoning Bylaw No. 8000".

The Municipal Council of the City of Kelowna, in open meeting assembled, enacts as follows:

1. THAT City of Kelowna Zoning Bylaw No. 8000 be amended by changing the zoning classification of Lot 2 Section 14 Township 23 ODYD Plan EPP64815 and Lot 15 Section 14 Township 23 ODYD Plan KAP82802 Except Plan EPP23036 located on Fleet Court, Kelowna, BC from the CD15 – Airport Business Park zone to the C9 – Tourist Commercial zone.

2. This bylaw shall come into full force and effect and is binding on all persons as and from the date of adoption.

Read a first time by the Municipal Council this 30th day of May, 2022.

Considered at a Public Hearing on the 12th day of July, 2022.

Read a second and third time by the Municipal Council this 12th day of July, 2022.

Approved under the Transportation Act this 2nd day of August, 2022.
Audrie Henry

(Approving Officer – Ministry of Transportation)

Adopted by the Municipal Council of the City of Kelowna this

Mayor

City Clerk

CITY OF KELOWNA

BYLAW NO. 12395
Z21-0107
658 Greene Road

A bylaw to amend the "City of Kelowna Zoning Bylaw No. 8000".

The Municipal Council of the City of Kelowna, in open meeting assembled, enacts as follows:

1. THAT City of Kelowna Zoning Bylaw No. 8000 be amended by changing the zoning classification of Lot B District Lot 358 ODYD Plan 32043 located on Greene Road, Kelowna, BC from the RU1 – Large Lot Housing zone to the RU6 – Two Dwelling Housing zone.

2. This bylaw shall come into full force and effect and is binding on all persons as and from the date of adoption.

Read a first, second and third time by the Municipal Council this 11th day of July, 2022.

Adopted by the Municipal Council of the City of Kelowna this

Mayor

City Clerk

CITY OF KELOWNA

BYLAW NO. 12413
Z22-0031
1649 Feedham Road

A bylaw to amend the "City of Kelowna Zoning Bylaw No. 8000".

The Municipal Council of the City of Kelowna, in open meeting assembled, enacts as follows:

1. THAT City of Kelowna Zoning Bylaw No. 8000 be amended by changing the zoning classification of Lot 149 Section 13 Township 26 ODYD Plan 24361, located on Feedham Ave, Kelowna, BC from the A1 - Agriculture 1 zone to the RU1c - Large Lot Housing with Carriage House zone.

2. This bylaw shall come into full force and effect and is binding on all persons as and from the date of adoption.

Read a first, second and third time by the Municipal Council this 25th day of July, 2022.

Approved under the Transportation Act this 2nd day of August, 2022.

Audrie Henry

(Approving Officer – Ministry of Transportation)

Adopted by the Municipal Council of the City of Kelowna this

Mayor

City Clerk

Report to Council

Date:	August 8, 2022
To:	Council
From:	City Manager
Subject:	Climate & Environment Review: Framework and Recommendations Report
Department:	Planning & Development Services

Recommendation:

THAT Council receive, for information, the staff report on the Climate and Environment Review, dated August 8, 2022;

AND THAT Council endorse the Framework and recommended initiatives outlined in the *Climate Resilience & Environmental Stewardship Review: Framework and Recommendations Report*;

AND FURTHER THAT Council direct the City Manager to work with staff in bringing Recommendations and priority Quick Starts into the 2023 budget process.

Purpose:

To present the Climate Resilience & Environmental Stewardship Review: Framework and Recommendations Report to Council for information and endorsement.

Background:

The City of Kelowna (the City) recognizes its role in addressing the climate crisis and protecting our natural areas. Currently there are many City-led initiatives dedicated towards climate action and environmental stewardship (C&E), and in many cases, the City has demonstrated leadership. Despite this, there are gaps from where the City wants to go and where it is at. For example, despite steady progress on implementing the 2018 Community Climate Action Plan (CCAP), the most recent data for community GHG emissions from 2018 showed a 3.8 per cent increase compared to the 2007 baseline year. While this can partially be credited to rapid community growth, GHG emissions are not decreasing at the level needed to reach climate mitigation targets. Moreover, as local governments take a more active role in climate adaptation efforts, the City needs to establish foundational strategies that will define its approach moving forward.

As part of the City's desire for continual improvement, at the 2021 Budget Deliberations, Council supported the hiring of the two-year term Champion of the Environment position starting in 2021 to lead a comprehensive review of the City's C&E related policies, programs, actions, resource, and

systems, and provide a series of recommendations for improvements. Over the past year, the Champion of the Environment completed this review with the following key objectives:

1. Establish a Framework for the City that will define and guide C&E focal points over the coming years, including priorities/themes and goals.
2. Identify current gaps and future opportunities to advance corporate C&E performance.
3. Develop a series of practical recommendations/solutions that, if implemented, will result in tangible progress related to the City's C&E objectives.

This report summarizes (1) a recommended Climate Resilience Framework (the Framework) to define priorities and guide action at the City; and (2) a series of recommendations to advance C&E in the coming years. The full *Climate Resilience & Environmental Stewardship Review: Framework and Recommendations Report* is provided in Attachment 1.

Discussion:

Climate Resilience Framework

Staff developed the Framework to define and guide C&E efforts at the City. The Framework was presented to Council in draft form at the December 6, 2021 PM Council Session (for information only), and since then minor changes were made based on staff and stakeholder feedback.

The Framework is intended to be the City's roadmap to achieving the C&E elements of the Imagine Kelowna community vision. It provides a clear structure on the pathways forward ensuring City staff, Council, partners, stakeholders, and residents all have a common starting place for collaboration. It is organized around **five priority pathways**, each with five desired results (i.e., the 'end-states' that must be met to advance each priority), that collectively help mobilize the Imagine Kelowna vision:

- **Demonstrate corporate climate leadership:** This pathway is focused on setting an example regarding C&E through the City's own operations. This involves embedding climate resilience into decision making across the organization, practicing environmentally sustainable procurement, reducing GHG emissions in the corporate fleet and City facilities, and being an active and trusted resource for climate action for others in the community.
- **Reduce community GHG emissions:** This pathway is centered on reducing community sources of GHG emissions to curb climate change. Successful low emission development in Kelowna means promoting sustainable transportation through effective land use and alternative transportation modes, supporting the shift to ZEVs, decarbonizing buildings, and shifting to renewable energy sources.
- **Adapt to a changing climate:** Even with aggressive emissions reduction at a local and global level, the climate has changed and will continue to over the coming decades. Therefore, the community must be prepared for and be resilient to local climate impacts that are increasing in frequency and magnitude, such as droughts, flooding, wildfires, extreme heat, and invasive species.
- **Protect natural areas:** Kelowna's foundational quality is the beauty of its natural areas. People live and visit the area because of Okanagan Lake and other water resources, the forests, the mountains, and the local biodiversity. These natural assets are invaluable from an

environmental, social, and economic perspective, and therefore need to be protected, enhanced, and restored in the face of climate change and development pressures.

- **Shift to a circular economy:** If the City is going to deliver on its C&E objectives in a period of growth, transitioning from a "take-make-waste" linear system to a circular economy will be vital. This can be accomplished by shifting to a sustainable local food system, reducing the embodied carbon of the built environment, reducing waste and diverting it from the landfill, recovering resources from waste, and moving to a sharing economy.

The Framework also outlines **five principles**, informed by existing corporate values, best practice research and staff engagement, that form the key values behind the vision:

- Recognize the value of local syilx Indigenous Knowledge
- Consider Social Equity in decision-making and implementation
- Prioritize initiatives with "triple-bottom-line" benefits
- Prioritize initiatives with co-benefits between Pathways
- Balance short-term savings with costs of inaction

The full Framework is presented in Part 2 of the *Climate Resilience & Environmental Stewardship Review: Framework and Recommendations Report* (Attachment 1).

Recommendations

The key objective of the review was to establish a set of recommendations that outline priority opportunities and "Quick Starts" to advance the Framework in the short-term. The recommendations are structured around the five pathways of the Framework.

The recommendations and associated Quick Starts are summarized in the table below. The full recommendations are presented in Part 3 of the *Climate Resilience & Environmental Stewardship Review: Framework and Recommendations Report*.

Table 1: Summary of Recommendations and Quick Starts

Recommendations	Quick Starts
Demonstrate Corporate Climate Leadership	
Apply a Climate Lens for Decision Making across the organization	Develop a climate lens decision making tool
	Develop an internal carbon price and to guide climate friendly purchasing
Reduce fleet emissions through rapid electrification of the light duty fleet	Apply an electric first purchasing policy for new light duty vehicles
Develop 'green' standards for City facilities	Develop a sustainable building policy for new City facilities

Expand educational resources to help residents participate in the City's climate action and environmental stewardship efforts	Develop a Resident's Guide to Climate Action
Reduce GHG Emissions	
Prioritize efforts to decarbonize Kelowna's biggest source of emissions: Transportation	Continue to invest in transit service and active transportation infrastructure per the Transportation Master Plan
	Fund and implement Transportation Demand Management Initiatives
	Support the shift to EVs through a vast charging network
Adopt a low-carbon approach to Energy Step Code	Establish an Energy Step Code Adoption Schedule with low-carbon priority
Bring together energy and resilience into one Home Retrofit Program	Continue to design a home retrofit program through the FCM Community Efficiency Financing Program
	Pilot a home energy coordinator support service
	Direct incentives to proven low-carbon technologies (e.g., electric heat pumps)
Adapt to a Changing Climate	
Combine Climate Mitigation and Adaptation into one Climate Resilient Kelowna Strategy	Complete a Community Climate Vulnerability and Risk Assessment
Develop a strategy to expand blue and green infrastructure	Explore options to incorporate climate resilience in roof space for new construction
Implement the proposed actions of the Community Wildfire Resilience Plan	Expand FireSmart Programs
Protect and Restore Natural Areas	
Identify and manage natural assets, species-at-risk, and critical habitat	Develop a strategy to monitor changes to sensitive ecosystems
	Invest in relevant datasets to give a better picture of key environmental indicators
	Develop a Natural Asset Management Strategy

Develop a Natural Environment Strategy with City responses to regional strategies	Inventory and develop City responses to regional and provincial natural environment strategies, such as the Okanagan Region Biodiversity Strategy, Okanagan Lake Responsibility Plan, and Central Okanagan Non-Structural Flood Mitigation Resource Guide
Shift to a Circular Economy	
Focus waste diversion efforts on construction and demolition debris	Complete a Construction & Demolition Debris Reuse & Recycling Feasibility Study
	Explore policy for low-carbon concrete
In collaboration with regional partners, develop a Circular Economy Strategy	Participate in the Canadian Circular Cities and Regions Initiative Peer-to-Peer Network

While progressive initiatives are important to advance climate and environmental priorities, to succeed in its tasks, the City needs the structures, systems, and resources in place to make decisions, oversee the delivery of services, and report on performance. Therefore, the City needs a strong governance system that provides the appropriate level of staffing resources, the appropriate staffing structure, and the appropriate budget. The City also needs to determine how best to engage with external stakeholders on C&E initiatives. Recommendations for effective governance are not provided in this report; however, in Phase 5 of the Review (Implement), the Champion of the Environment will work with the City Manager and the Senior Leadership Team to identify governance components in advancing and operationalizing the Framework and recommendations.

Conclusion:

Climate change is an unprecedented problem due to its widespread impact and inherent complexity. Adequately addressing it, therefore, does not require incremental change, but transformational change. This means taking a broader more systemic look at the City's approach to climate action and environmental stewardship and considering the implementation of fundamentally different approaches. The proposed Framework and recommendations serve as a starting point to the transformational change that is needed.

If Council endorses the recommendations, next steps are to incorporate priority Quick Start initiatives through the 2023 Budget Process and begin implementation of key initiatives with associated resourcing requests.

Internal Circulation:

Planning & Development Services
Infrastructure
Financial Services
Corporate Strategic Services
Partnerships & investments

Existing Policy:

- Council Priorities 2019-2022:
    - Environmental Protection
        - Community and corporate GHG emissions are decreasing;
        - Neighbourhoods and city infrastructure are resilient and adaptable to climate change;
        - Predictive modelling and forecasting is improving; and
        - The City's response to extreme weather events minimizes disruption to delivering regular operations
- Imagine Kelowna goals:
    - Protect land, water & air
    - Protect agricultural land
    - Preserve Okanagan Lake as a shared resource
    - Take action in the face of climate change
- 2040 OCP Pillars:
    - Take action on climate
    - Protect and restore our environment

Financial/Budgetary Considerations:

This Council Report does not have any direct implications on the financial plan. However, each recommended Quick Start has an estimated cost. If Council is to endorse the Recommendations and associated Quick Starts, it is recommended that Council direct the City Manager to work with staff in bringing priority Quick Starts into the 2023 budget process with associated resource requests. The Quick Starts and estimated costs are in Appendix B of the *Climate Resilience & Environmental Stewardship Review: Framework and Recommendations Report* (Attachment 1).

Submitted by:

C. Ray, Champion of the Environment

Approved for inclusion: Ryan Smith, Director of Planning & Development Services

City of Kelowna

Climate Resilience & Environmental Stewardship Review

FRAMEWORK & RECOMMENDATIONS REPORT

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PART 01

CONTEXT

Introduction

Importance

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Introduction

Never has climate action been more top-of-mind at a global and local level. Whether it is the global race to reduce greenhouse gas (GHG) emissions, major climate change impacts the community is experiencing with increased frequency and magnitude (e.g., wildfires, flooding, extreme heat), or the general impact of growth on our natural areas, climate and environmental issues cannot and should not be ignored.

While municipalities are only part of the solution, many are demonstrating climate leadership. Compared to senior levels of government, municipalities are the best positioned to adapt their land use planning, asset management and service models to become resilient to changing climate conditions. Local governments also have direct or indirect influence over more than half of BC's provincial inventory of GHG emissions.[1] Climate actions such as supporting sustainable transportation, creating complete/compact neighbourhoods, energy efficiency in buildings, transitioning to zero waste, and renewable power generation have a large cumulative effect in the fight against climate change.

The City of Kelowna (the City) recognizes its role in addressing the climate crisis and protecting our natural areas. Currently there are many plans, policies, and programs dedicated towards environmental stewardship, and in many cases, the City has demonstrated leadership. Despite this, there are gaps from where the City wants to go and where it is at. For example, despite steady progress on implementing the 2018 Community Climate Action Plan (CCAP)[2] and nearly a 17 per cent reduction in per capita GHG emissions between 2007 and 2018, the most recent data for community GHG emissions from 2018 show a 3.8 per cent increase compared to the 2007 baseline year. While this can largely be credited to rapid growth, the City is not reducing emissions at the level needed to reach climate mitigation targets. Moreover, as local governments take a more active role in climate adaptation efforts, the City needs to establish foundational policy that will define its approach moving forward.

Climate change is an unprecedented challenge due to its widespread impact and inherent complexity. Adequately addressing it, therefore, does not require incremental change, but transformational change. This means taking a broader more systemic look at the City's approach and considering the implementation of fundamentally different approaches. This report serves as a starting point to the transformational change that is needed.

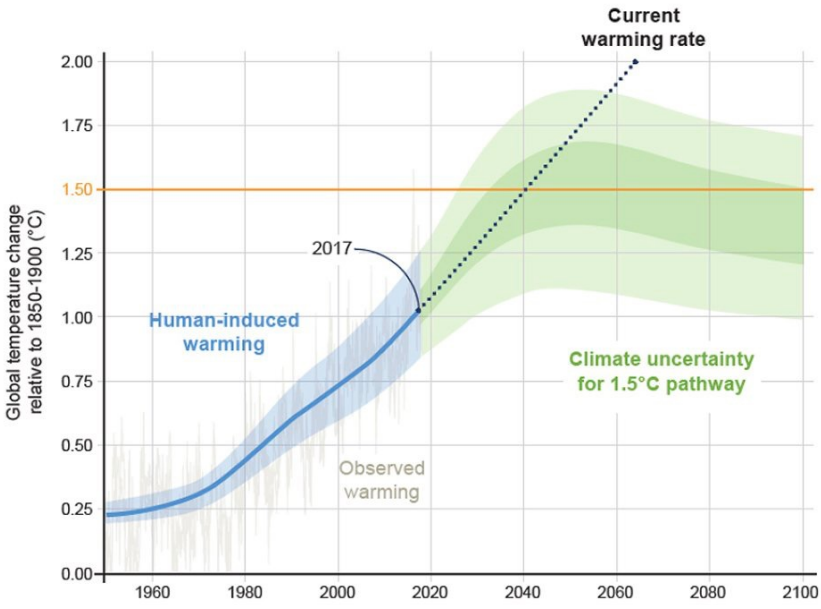
This report is divided into three sections. Part 1 provides context into the motivation, process, and scope of the review. Part 2 summarizes a recommended Climate Resilience & Environmental Stewardship Framework to define priorities and guide action at the City. Part 3 identifies a set of foundational opportunities to advance climate action and environmental stewardship (C&E) in the coming years.

Importance

The need for action on climate change has been stressed for decades at the global level, but recently the scientific community has indicated more aggressive action is needed.

In 2018 the Intergovernmental Panel on Climate Change (IPCC) released a report stressing immediate GHG emissions reductions to limit global warming below 1.5 degrees Celsius (Figure 1). Failure to do so is likely to result in catastrophic climate impacts from the international to local stage.

FIGURE 1. Pathways and uncertainty towards 1.5-degree global warming target[3]



Recognizing their role in this collective action problem, the Government of Canada and the Province of BC have responded, adopting more aggressive emissions reduction targets, with corresponding action plans to put them on the path to net-zero GHG emissions by 2050. The City of Kelowna recently followed suit with City Council directing staff to update the Official Community Plan targets to reduce emissions by 40 per cent below 2007 levels by 2030 and to reach net-zero emissions by 2050.

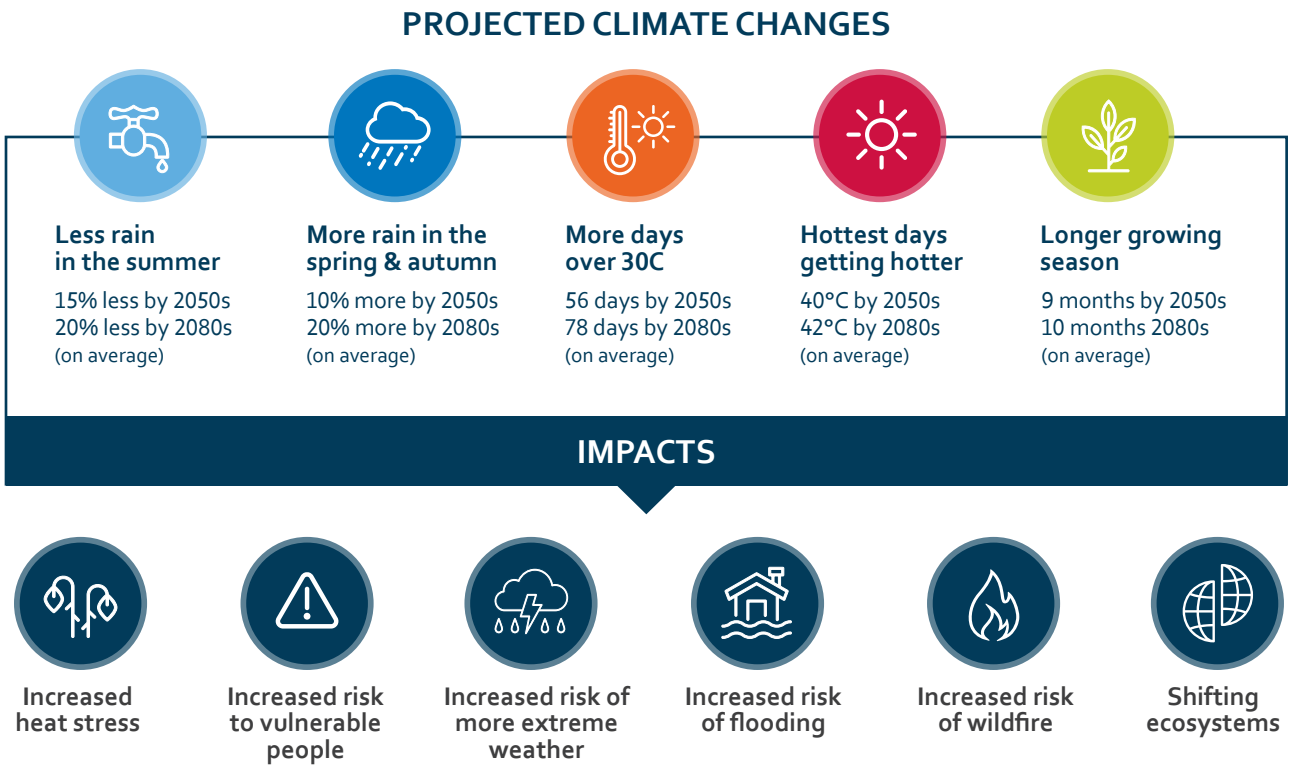
While emissions reduction efforts over the next three decades are important, the climate has already changed from over a century of rapid industrialization, growth, and fossil fuel extraction. Locally, climate changes are expected to increase in both frequency and magnitude even with aggressive action in the short-term to reduce emissions.

The Climate Projections for the Okanagan Region (2020) report models changes in the regional climate to both 2050 and 2080. The overall findings indicate that the Okanagan can expect significant changes to climate in the coming decades including:

- Warmer temperatures year-round;
- Summers that are considerable hotter and drier;
- Warmer winter temperatures;
- Increased precipitation across all seasons except summer; and
- Shifting seasons.

The main climate changes and resulting impacts expected in the Okanagan are summarized in Figure 2.

FIGURE 2. Summary of projected climate changes in the Okanagan and resulting impacts[4]



Recent years provide insight into the catastrophic impacts climate change could have on the region and on the province. Extensive flooding in 2017, followed by back-to-back years of intense wildfires, and most recently an early summer heat dome in 2021. These events are unfortunately not anomalies, but signs of what lies ahead for the community.

While most of the focus been based on climate change, there are other environmentally related considerations that matter locally. For example, as Kelowna continues to grow, protecting and restoring natural areas (e.g., water resources, sensitive ecosystems) from development impacts, and extending the life of the Glenmore Landfill through waste reduction and diversion are also important. The environmental impacts that stem from growth may be compounded by climate change, but they are also important in the absence of a changing climate.

Motivation

Planning for and managing environmental issues is not a new endeavor for local governments in BC, including the City of Kelowna. Over the last few decades, the City has been involved in natural resource management, sustainability planning, and environmental compliance efforts in various ways.

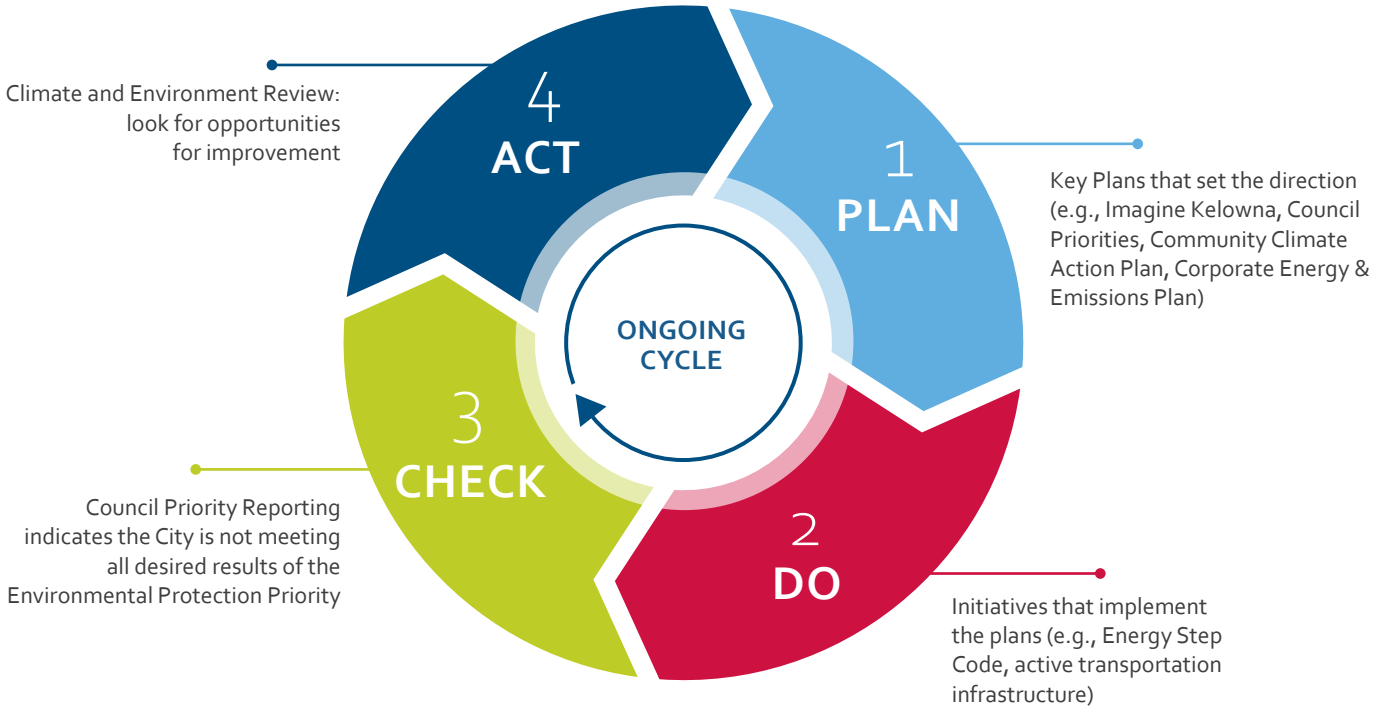
In 2007, Kelowna signed the BC Climate Action Charter, which broadened its environmental efforts towards addressing climate change; in particular, climate mitigation through emissions reduction at the corporate and community level. More recently, as impacts of climate change become more prominent and are expected to worsen, the issue of climate adaption has become an unavoidable consideration at the local scale.

As with any key business area, the City strives to continually improve performance relative to established objectives. Using the recognized Plan-Do-Check-Act (PDCA) cycle, the different elements that have led to this Review are described below and presented in Figure 3:

- **Plan:** Through Imagine Kelowna, Council Priorities 2019-2022, and plans such as the 2018 Community Climate Action Plan and Corporate Energy and Emissions Plan, the imperative for climate action and environmental stewardship was laid out.
- **Do:** The direction has been implemented through a variety of initiatives across the organization and within the community (e.g., Energy Step Code, Mill Creek Flood Protection Project, promoting wildfire resilience through Firesmart initiatives, etc.).
- **Check:** Progress was monitored through annual Council Priority reporting, which demonstrated that the City is not achieving all climate objectives (mainly reducing emissions).
- **Act:** Recognizing some of these gaps, in October 2020, Council supported staff recommendations to implement a series of initiatives to accelerate low-carbon actions in 2021.[5] To further support progress, at the 2021 Budget Deliberations, Council also supported the hiring of the two-year term Champion of the Environment position starting in 2021 to lead a comprehensive review of the City's climate and environment related policies, programs, actions, resource, and systems, and complete this report with a series of recommendations for improvements and coordination.

The motivation for a comprehensive review of the climate and environment portfolio, therefore, stems from recognition that some of the key objectives are not being met or are trending in the wrong direction. There is also recognition that as the local climate continues to change, new approaches and solutions are needed that have never been considered before.

FIGURE 3. Climate & Environment Planning Cycle



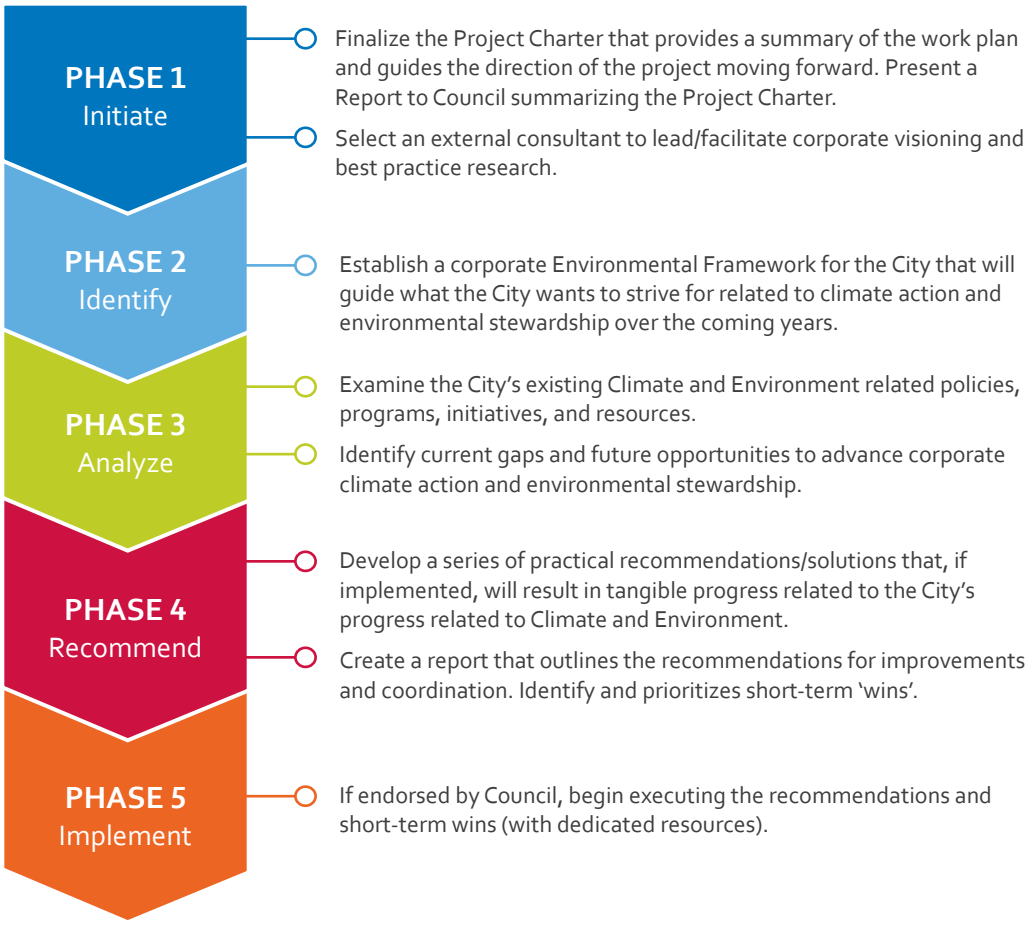
Scope

Over the past year, the Champion of the Environment led a comprehensive review of the City's climate and environment related policies, programs, resources, and systems. The overarching objectives were to:

1. Establish a Framework for the City that will define and guide C&E focal points over the coming years, including priorities/themes and goals.
2. Identify current gaps and future opportunities to advance corporate C&E performance.
3. Develop a series of practical recommendations/solutions that, if implemented, will result in tangible progress related to the City's C&E objectives.

The scope of the review includes the key phases presented in Figure 4. While implementation of recommendations is not a formal part of the review, it will be an integral part of ensuring the long-term success of the City's performance related to C&E.

FIGURE 4. Project Phases



KEY TERMS

For the purposes of this review, **Climate Action** refers to the actions that address **climate change**, which is a long-term change in the average weather patterns that have defined local, regional, and global climates. Climate action can be focused on:

- Reducing greenhouse gas (GHG) emissions (**climate mitigation**);
- Adapting to the impacts of climate change (**climate adaptation**); and
- Bridging mitigation and adaptation efforts (**low-carbon resilience**).

Environment refers to the natural environment, which includes all non-human made surroundings and conditions in which all living and non-living things exist. This includes ecological units that operate as natural systems (e.g., soil, vegetation) and natural resources (e.g., air and water). The natural environment is in contrast with the **built environment** which refers to areas that have been fundamentally transformed and influenced by human activity (e.g., buildings, infrastructure). Therefore, **Environmental stewardship** refers to the responsible use and protection of the natural environment through conservation efforts and sustainable practices.

PART 02

FRAMEWORK

Purpose

Use Cases

Vision

Pathways

Principles

Climate Resilience Framework

The roadmap to effective climate action and environmental stewardship

Principles that apply to our work:

- **Indigenous Knowledge**
- **Social Equity**
- **Triple-bottom Line**
- **Pathway co-benefits**
- **Climate-aligned Finance**

Imagine Kelowna Vision

Kelowna is a thriving mid-sized city that welcomes people from all backgrounds. We want to build a successful community that honours our rich heritage and also **respects the natural wonders that contribute to our identity. As a place with deep agricultural roots, Kelowna understands the need to protect our environment, manage growth and be resilient as our future unfolds.**

Example City Plans that inform the framework:

- Council Priorities 2019-2022
- Imagine Kelowna (The Vision to 2040)
- 2040 Official Community Plan
- 2040 Transportation Master Plan
- 2018 Community Climate Action Plan

Pathways to achieve the vision.

	CORPORATE	COMMUNITY			
PRIORITIES	Demonstrate Corporate Climate Leadership	Reduce GHG emissions	Adapt to a Changing Climate	Protect and Restore Natural Areas	Shift to a Circular Economy
DESIRED RESULTS	Climate resilience is embedded into city decision-making	Growth is centered in connected, walkable, Urban Centres and Core Area	Water consumption is in line with a changing water supply	Okanagan Lake and its tributaries are protected	Agricultural land thrives to support a sustainable local food system
	Procurement prioritizes environmental sustainability	Households depend less on the automobile and shift to sustainable modes	The community is prepared for and resilient to flooding	The community has a healthy and viable urban forest	Buildings have low embodied carbon
	Lead the way in zero-emission fleets	Vehicles are zero-emission	The community is prepared for and resilient to wildfires.	Air pollution and people's exposure to air pollutants is low	Waste is diverted from the Glenmore Landfill
	Lead the way in energy efficient buildings	New and existing buildings are energy efficient and low-carbon	The community is prepared for and resilient to extreme heat	Biodiversity and landscape diversity are preserved and enhanced	The sharing economy along with products-as-service models are growing
	The City is a trusted resource hub for community climate action	Energy is 100% renewable	Health, economic, and environmental risks from invasive species are minimized	Habitat connectivity and natural areas are protected	Resources are recovered from waste

Purpose

The City has developed the Climate Resilience Framework (the Framework) to define and guide climate action planning and environmental stewardship efforts at the City. The Framework is designed to be relevant over planning cycles and can evolve as other priorities become relevant.

The Framework is the City's roadmap to achieving the C&E elements of Imagine Kelowna's vision. It provides a clear structure on the pathways forward ensuring City staff, Council, partners, stakeholders, and residents all have a common starting place for collaboration.

The Framework is organized around **five priority pathways** that collectively help mobilize the Imagine Kelowna vision. **Each pathway consists of five desired results** that are the 'end-states' that must be met to advance each priority. The Framework also outlines **five principles**, informed by best practice research and staff engagement, that form the key values behind the vision.

The Framework and recommendations build upon key policies and plans that have guided C&E efforts at the City, including the 2040 OCP, Imagine Kelowna, Council Priorities 2019-2022, 2040 Transportation Master Plan, and 2018 Community Climate Action Plan. Thus, rather than being completely new, the Framework synthesizes the C&E related priorities and objectives form existing plans into one roadmap.

Use Cases

The Framework supports the embedding of climate low-carbon resilience and environmental stewardship at the City for multiple use cases and user groups (Table 1).[6]

TABLE 1. Use Cases of the Framework

USE CASE	The Framework can be used TO:	The Framework can be used BY:
Policy and Plan Development	Develop new policies, plans and strategies to ensure that C&E is embedded in these efforts.	• Staff • Council
Decision-Making	Inform decision-making by the City for budget development and the prioritization of projects, plans, strategies, and policies.	• Staff (Senior Leadership Team) • Council
Action Plans	Develop actions, which are developed by different departments within the City to address C&E priorities.	• Staff • Neighbouring local governments
Progress Reporting	Evaluate the City's overall progress and the effectiveness of specific policies, plans, initiatives, and departments.	• Staff • Council • Public
Communication	Help communicate the City's C&E priorities to City staff, external stakeholders, and the public.	• Staff • Council • Public • Businesses and Non-Profits • Academia • Other local governments
Applied Research	To inform a research agenda and research priorities among numerous stakeholders (e.g., academia, nonprofits, etc.)	• Academia • Non-Profits

Vision

The Framework is guided by Imagine Kelowna's vision:

> "Kelowna is a thriving mid-sized city that welcomes people from all backgrounds. We want to build a successful community that honours our rich heritage and also **respects the natural wonders that contribute to our identity. As a place with deep agricultural roots, Kelowna understands the need to protect our environment, manage growth and be resilient as our future unfolds."**

This vision describes the qualities the community wants to exemplify. The vision demonstrates a strong community appreciation for the natural environment, a desire to protect it, and to be resilient in an uncertain climate future. The Framework provides more clarity on what the City will prioritize to be bold and put the vision into action.

Pathways

The Framework is organized around five pathways to ensure the vision is achieved. The pathways focus on the following priorities:

Each pathway consists of five desired results that are the 'end-states' that must be met to advance each priority. The desired results are further intended to guide the identification and development of priority C&E initiatives. While each pathway is distinct, they are also interconnected, and together create a climate resilient system.

Demonstrate Corporate Climate Leadership

This pathway is focused on setting an example regarding climate action and environmental stewardship. The City should demonstrate leadership that other community stakeholders can follow while also delivering on some of its own corporate objectives (e.g., corporate GHG emissions reduction). This involves embedding climate resilience into decision making across the organization, practicing environmentally sustainable procurement, reducing GHG emissions in the corporate fleet and city facilities, and being an active and trusted resource for climate action for others in the community.

- **Climate resilience is embedded into City operations and asset management:** The City provides many services and often C&E are not core considerations in providing those services. Therefore, trying to find ways to ensure C&E is contemplated in everything the City does is important. Essentially this means applying a C&E lens to our service offerings.

- **Procurement prioritizes environmental sustainability:** Sustainable procurement embeds relevant environmental sustainability considerations (e.g., reduced GHG emissions, waste reduction) into processes for selecting goods and services, alongside traditional considerations like price, quality, service, and technical specifications. While this desired result is specific to environmental sustainability, sustainable procurement could also include ethical, social, and Indigenous considerations.

- **Lead the way in zero-emission fleets:** While most of the City's energy usage and GHG emissions are from buildings, the energy needed to move staff around still plays a significant role. Decarbonizing the City's fleet may be the 'low-hanging fruit' for corporate GHG emissions reduction because of proven zero-emission vehicle (ZEV) technology. The City is already converting many light duty vehicles to ZEVs, contingent on the availability of electric vehicle (EV) inventory. Going forward, as ZEV technology becomes more mainstream for medium and heavy-duty vehicles, there is opportunity to expand ZEV composition of the fleet. Further, vehicle right-sizing and mode shifting could also help the City decarbonize its fleet.

- **Lead the way in energy efficient and low-carbon buildings and infrastructure:** The energy needed to power the City's facilities is the number one source of corporate GHG emissions. The City requires the use of energy in order to operate and maintain a wide range of assets and infrastructure in order to provide services to a community with a population that is growing very quickly. This includes heating and cooling facilities such as administrative and recreational buildings. An important component to an energy program is policy around the design and construction of new civic facilities as well as addressing renewal and retrofits of existing buildings.

- **The City is a trusted resource for community climate action:** Responding to the climate crisis will require action on the part of all members of the community, whether choosing a different transportation mode, retrofitting one's home, or supporting water conservation or wildfire resilience. The City can support local implementation of policies and plans through education and awareness with the public and key stakeholders.

Reduce Community GHG Emissions

This pathway focuses on reducing community sources of GHG emissions to curb climate change, which can lead to new economic opportunities, and improve the health of people and natural systems. Aligning with IPCC recommendations to curb global warming within the 1.5° Celsius threshold, City Council recently directed staff to update the Official Community Plan community emissions reduction targets to 40 per cent below 2007 levels by 2030 and net-zero by 2050 (See Figure 5 for Kelowna's GHG emission reduction pathway to 2030). Successful low emission development in Kelowna means promoting sustainable transportation through effective land use and alternative transportation modes, supporting the shift to ZEVs, decarbonizing buildings, and shifting to renewable energy sources.

- **Growth is centered in connected, walkable Urban Centres and the Core Area:** Perhaps the simplest way to reduce emissions is to reduce the need to travel at all (i.e., reduce vehicle kilometres travelled). By locating growth closer to jobs and destinations where people can live, work and play in the same area without needing to get in an automobile, the average distance driven per person, and consequently the emissions associated with travel, could be drastically reduced.

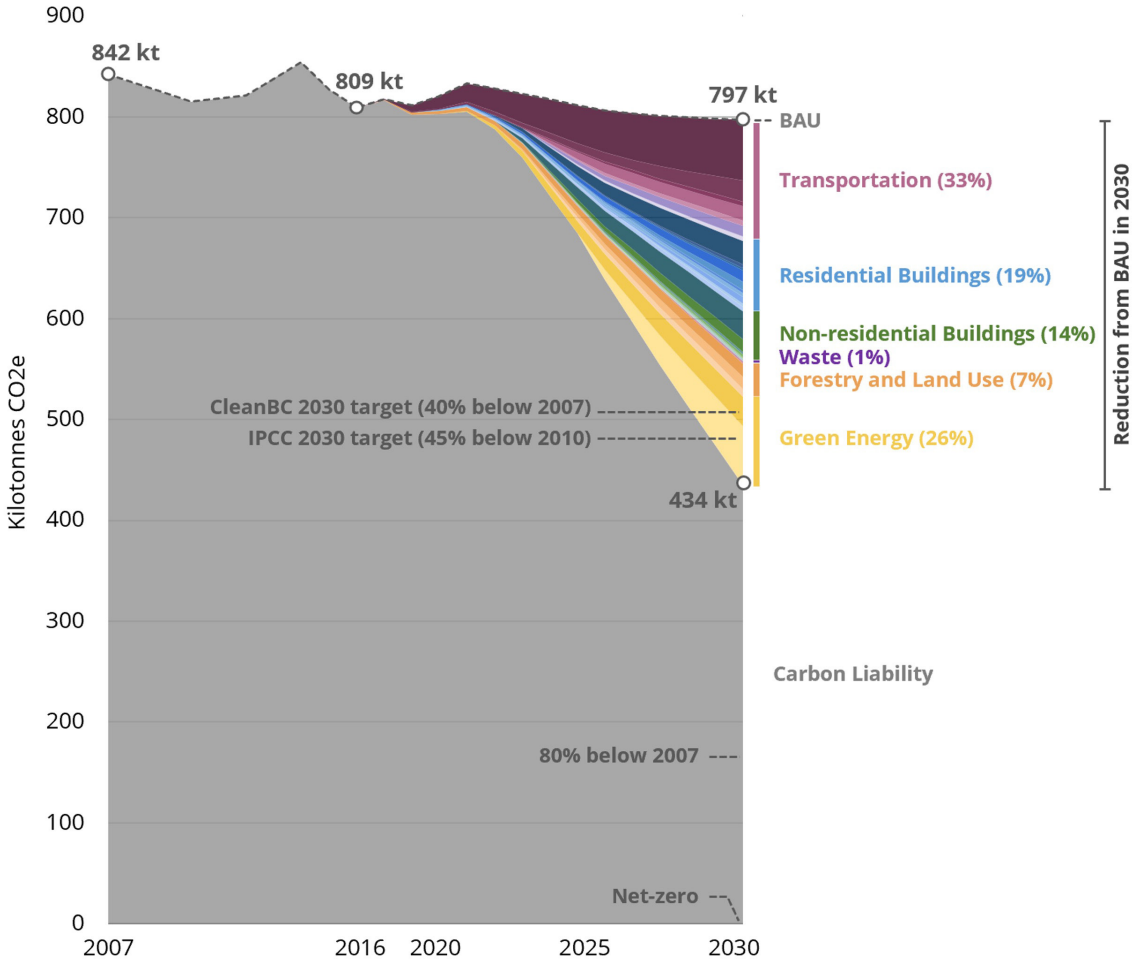
- **Households depend less on the automobile and shift to sustainable transportation modes:** Transportation accounts for over half of the community's GHG emissions, so naturally ensuring less trips are taken from gas guzzling, single occupancy vehicles will go a long way in reducing GHG emissions. This means increasing use of public transit, active transportation (e.g., walking, biking), and increasing the use of shared mobility. Car-centric cities are also centres of pollution and ill-health, so shifting investments to sustainable transportation has other co-benefits that extend beyond emissions reduction.

- **Vehicles are zero-emission:** Even with a focus on mode-shifting, Kelowna residents will continue to rely on the automobile in some capacity for the foreseeable future. With that, the challenge then is to reduce GHG emissions from kilometres travelled by automobiles in the community by shifting away from fossil fuels (i.e., internal combustion engine) to those that emit zero or low amounts of GHG emissions. These systems include EVs, hydrogen fuel-cell technology, and renewable fuels (e.g., biofuels). Currently, EVs are the only low-carbon option at the point of market transformation that can make significant impact on GHG emissions reduction over the next decade. EVs also have other benefits relative to traditional gasoline and diesel vehicles that add to their rising value (e.g., lower operating/fuel costs, lower maintenance costs, reduced noise pollution, and improved air quality in urban centres).

- **New and existing buildings are energy efficient and low-carbon:** Buildings account for 40 per cent of community GHG emissions, and most of this is attributed to fossil fuel heating and cooling systems (e.g., natural gas). Energy consumption can be reduced through better efficiency (e.g., efficient technologies, improve the building envelope), or through fuel switching from fossil fuel heating systems to clean energy technologies. Embodied carbon (i.e., the emissions associated with producing building materials) is also an important consideration of the lifecycle emissions of buildings. Embodied carbon is addressed in the "Shift to a Circular Economy" pathway.

- **Energy is 100 per cent renewable:** Achieving 100 per cent clean energy means eliminating emissions from energy use in all sectors of the economy, which could largely be achieved through other components of this pathway. In BC, this predominantly means electrification of transportation and buildings, but other clean energy sources such as renewable natural gas (RNG), and small-scale renewable energy (e.g., solar, geothermal, wind) can help shield residents from rising energy costs while supporting a resilient energy supply system.

FIGURE 5. Kelowna's community emissions reduction pathway to 2030



Adapt to a Changing Climate

Even with aggressive emissions reduction at a local and global level, Kelowna's climate has changed and will continue to over the coming decades. Therefore, the community must be prepared for and be resilient to local climate impacts that are increasing in frequency and magnitude, such as droughts, flooding, wildfires, extreme heat, and invasive species.

- **Water consumption is in line with a changing water supply:** The Okanagan has the highest water consumption per capita in Canada, and water consumption continues to grow as the population increases. There is a high demand for water use from agriculture and landscaping, and the current level of water demand is likely to result in increasing stress on the regional water supply with a changing climate. Flooding and water shortages can decrease water quality and will likely trigger higher water restrictions and water use conflicts, particularly in years where water demand increases to manage wildfire activity. Finding ways to conserve water is vital to ensure water demand does not regularly exceed supply, and to ensure our precious water resources are not depleted.

- **The community is prepared for and resilient to flooding:** Kelowna is no stranger to flooding damages, having experienced them on our rivers and lakes in recent years. With climate change driving up the frequency and intensity of flooding events, the risks and impacts to residents, the local economy, critical infrastructure, and natural areas will only continue to grow. Finding ways to prepare for and become resilient to these anticipated changes helps reduce the vulnerabilities of natural and human systems to new climate realities.

- **The community is prepared for and resilient to wildfires:** The 2017, 2018, and 2021 fire seasons proved to be three of the most historically damaging seasons on record. Similar to flooding, climate change is driving up the frequency and intensity of wildfire events, and the City needs to manage the associated risks by being proactive in preparing for and becoming resilient to the expected change.

- **The community is prepared for and resilient to extreme heat:** Local climate projections indicate summer temperatures are expected to warm considerably over time, with the hottest days getting hotter and more days with hotter temperatures. Therefore, events like 2021's early summer heat dome that caused temperatures to soar up to 10 degrees above normal and causing 32 deaths in the Okanagan are unfortunately expected to become more common. As with other climate impacts, the City needs to manage the associated risks to vulnerable populations by preparing for and becoming resilient to the expected change.

- **Health, economic, and environmental risks from invasive species are minimized:** As climate change occurs, ecosystems and species can be expected to experience stress, resulting in changes to biological diversity. Warmer temperatures and fewer frost days will enhance the potential for invasive species, pests, and pathogens to increase across the Okanagan, compromising the ability of native species to survive and triggering a loss of biodiversity. The risks to public health, the local economy and the environment need to be understood, and intervention efforts in sensitive ecosystems, riparian areas, and wetland should be prioritized.

Protect and Restore Natural Areas

There is no doubt that Kelowna's foundational quality is its natural beauty. People live and visit the area because of Okanagan Lake, the forests, the mountains, and the local biodiversity. These natural assets are invaluable from an environmental, social, and economic perspective, and therefore need to be protected, enhanced, and restored in the face of climate change and development pressures.

- **Okanagan Lake and its tributaries are protected:** Okanagan Lake is the community's greatest natural asset, drawing people to the region for lifestyle and recreation opportunities. The lake, along with its tributaries, are also an important source of water for drinking, irrigation, and fighting wildfires. As well, many of the waterfront areas that people like to visit are also important wildlife and flora habitats. The community wants the City to protect natural streams and the storm water system that feeds into Okanagan Lake to maintain higher water quality, while also balancing recreational and quality of life opportunities with environmental protection, and public ownership of the waterfront.

- **The community has a healthy and viable urban forest:** Kelowna's urban forest includes every tree in the city – on streets, in parks, public spaces, and back yards. Urban forests play important environmental and social roles: they cleanse the air, act as a carbon sink, absorbs rainwater, provide bird habitat, and improve health and well-being. Therefore, there is a strong incentive to not only protect but also restore and expand the urban forest in our city.

- **Air pollution and people's exposure to air pollutants is low:** Although the air quality in the Central Okanagan is generally acceptable, a recent PM2.5 Study in the Central Okanagan showed specific neighbourhoods may reach higher concentrations of particulate matter at times due to local wood burning sources, vehicle emissions, and road dust. Finding ways to manage or restrict the release and concentration of particulate matter and other pollutants can help improve local air quality, ensuring the air we breathe is as clean as possible.

- **Biodiversity and landscape diversity are preserved and enhanced:** Biodiversity is the richness of plant and animal species, their habitats, and the ecological processes that sustain them. This includes Kelowna's aquatic and terrestrial ecosystems. Recognizing the environmental, socio-cultural, and economic value of local biodiversity and its ecosystem services, the City wants to increase the amount and quality of Kelowna's natural areas to support biodiversity and increase access to nature. This means supporting and celebrating biodiversity by greening our operations, and restoring forest, wetland, and shoreline habitats throughout the city.

- **Habitat connectivity and natural areas are protected:** Many aquatic and terrestrial ecosystems are important because of their environmental significance as habitat for fish and wildlife, ecosystem connectivity, their contribution to local and regional biodiversity, their role in reducing climate change impacts, and their sensitivity to disturbance by development. Protecting these areas and the vital ecosystem services they provide, while also identifying new environmentally sensitive areas is important to ensure impacts associated with growth and development are minimized. In practice, this means following through with the OCPs No Net Loss Policy, which strives to balance unavoidable habitat, environment and resource losses with replacement of those items on a project by project basis so that further reductions may be prevented.

Shift to a Circular Economy

While community growth has its benefits (e.g., bringing new amenities, employment, and educational opportunities), rapid change can also bring challenges, including an increase in the creation of products, materials, and consequently waste and pollution. If the City is going to deliver on its climate action, environmental protection, and waste management objectives, transitioning from a "take-make-waste" linear system to a circular economy will be vital (see Figure 6). This can be accomplished by shifting to a sustainable local food system, reducing the embodied carbon of the built environment, reducing waste and diverting it from the landfill, recovering resources from waste, and moving to a sharing economy.

- **Agricultural land thrives to support a sustainable local food system:** More than 40 per cent of Kelowna's land base is within the Agricultural Land Reserve (ALR) and about 55 per cent of the city's land base is zoned for agriculture (including both ALR and non-ALR-land). The City and provincial partners are making strong efforts to protect valuable agricultural land and encourage a successful agricultural industry. The feedback received during Imagine Kelowna made it clear that agriculture is important to the community as a whole and not just people who are directly connected to farming. Cities are also being relied upon to play a role in developing resilient food systems, by integrating urban food security and urban agriculture into climate change adaptation and disaster management strategies.

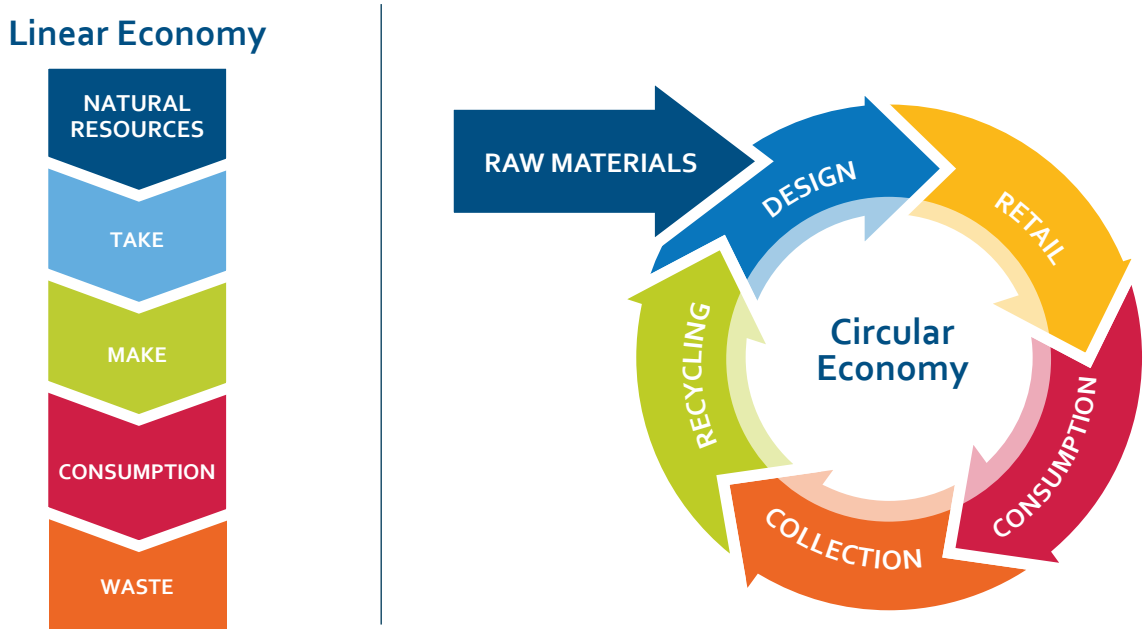
- **Buildings have low embodied carbon:** In the building industry, embodied carbon refers to the emissions arising from the manufacturing, transportation, installation, maintenance, and disposal of building materials. In contrast, operational carbon refers to the emissions due to building energy consumption only. Most of a building's total embodied carbon is released upfront in the product stage at the beginning of a building's life. Unlike with operational carbon, there is no chance to decrease embodied carbon with updates in efficiency after the building is constructed.

- **Waste is reduced or is diverted from the Glenmore Landfill:** Most garbage collected for disposal ends up in the Glenmore Landfill and a small amount is incinerated. While the landfill has a relatively long life expectancy (~70 years remaining), disposing waste at its current rate is not a sustainable solution. Landfilling can also contribute to emissions, land disturbance, and water pollution. Further, the extraction and processing of new resources needed to replace those discarded as waste leads to more pollution. Diverting waste (along with creating less waste to begin with) can help reduce the impact of solid waste on the environment and prolong the life of the Glenmore Landfill.

- **Resources are recovered from waste:** Resource recovery is using wastes as an input material to create valuable products as new outputs. While the aim is to reduce the amount of waste generated or diverting waste from the landfill, some waste will be created; but there is still the opportunities to create value from waste even after it is created. For example, capturing methane gas from decomposing liquid and solid waste and upgrading it to heat homes or using yard waste to make compost are examples of how the City has recovered value from waste.

- **The sharing economy along with products-as-a-service models are growing:** The sharing economy is an opportunity for sustainability. The possibility of using assets without the need of owning the property reduces the need for goods production and reduces waste. Systems of the sharing economy can positively impact the environment by improving resource efficiency and promoting sustainable growth by mitigating excess consumption.

FIGURE 6. Linear economy vs. circular economy[7,8]



Principles

The Framework outlines five principles, informed by best practice research and staff engagement, that form the key values behind the vision:

- Recognize the value of local Indigenous Knowledge
- Consider Social Equity in decision-making and implementation
- Prioritize initiatives with "triple-bottom-line" benefits
- Prioritize initiatives with co-benefits between Pathways
- Balance short-term savings with costs of inaction

The intent is to apply these lenses to all practices and activities related to climate action and environmental stewardship at the City. This does not mean that every initiative will address each principle; but rather, each initiative will consider each principle during conception, and apply them when appropriate.

Recognize the value of local Indigenous Knowledge

Climate change is a multi-dimensional, complex problem that requires a diversity of worldviews and perspectives, including Indigenous Knowledge Systems, to develop novel approaches to address the urgency and complexity of the issue. The syilx Okanagan People have occupied the Okanagan Region for time immemorial, living in harmony with the natural world. Their perspective, therefore, comes from a place of experience and best practice that is invaluable in addressing such a complex problem.

Indigenous engagement on climate action and environmental protection is not a check box. Deep and collaborative engagement is fundamental for the City in addressing climate change. The syilx Okanagan people should not just be consulted in shaping decisions related to climate action and environmental protection, but also in collaboratively identifying solutions.

Consider Social Equity in decision-making and implementation

The modern socioeconomic environment has contributed to ongoing social inequities for certain demographics such as low-income and disadvantaged populations, Indigenous peoples, women, racial minorities, marginalized ethnic groups, and the elderly. These inequities become exacerbated by climate change; therefore, work on climate resilience needs to have an intersectional lens to consider how different groups are affected and may be at greater risk to climate impacts.

As the effects of climate change mount, so does the urgency to ensure equity while pursuing solutions. Inadequate action will mean more lives lost, worsening inequality, and major economic disruptions. The City needs to prioritize action for climate vulnerable populations, and consider social equity at all levels of decision-making and implementation. This will also support addressing the social inequities that are driving this vulnerability.

Prioritize initiatives with "triple-bottom-line" benefits

Environmental, social, and economic wellbeing are often considered mutually exclusive: events that cannot occur simultaneously. While trade-offs are inevitable in certain instances, there are many examples of climate/environmental initiatives that have social and economic co-benefits. The concept of sustainability has evolved, but its central principle that what is good for the planet can also be good for people and profit (and vice versa) is still valid. Exploring opportunities for mutual benefits ensures the City is delivering on climate objectives while also aligning with other social and economic priorities.

Prioritize initiatives with co-benefits across Pathways

Each of the five pathways focuses on a central purpose. For example, the primary value of desired results under the "Reducing GHG Emissions Pathway" is to reduce community emissions. However, the results and corresponding actions may have other benefits that extend to other pathways. Expanding the urban tree canopy can help to protect natural areas but also will reduce emissions through carbon sequestration and support climate resilience by providing shade, making cities more comfortable during extreme heat events. Reducing embodied carbon of building materials will support the shift to a circular economy but will also help reduce corporate and community emissions. The City needs to be deliberate in searching for solutions that have co-benefits across multiple pathways. Doing so will result in efficiencies and will also ensure solutions do not contradict with other pathways.

A particular focus is bridging climate mitigation and adaptation efforts through low-carbon resilience. The City needs to prioritize integrated policies, pursue systemic actions, and invest in projects that concurrently: (1) reduce climate risks and vulnerabilities; (2) reduce emissions; and (3) advance other corporate and community priorities such as community safety, health, equity, and economic development.[8]

FIGURE 7. Low-carbon resilience approach

Balance short-term savings with costs of inaction

Climate change is having and will continue to have a financial impact on the City. As climate events become more extreme and occur more frequently, it disrupts and damages infrastructure, driving up repair costs and shortening asset lifetimes. The City needs to balance paying predictable costs today for reducing GHG emissions and building climate resilience, compared to delaying action and paying higher and unpredictable costs later to try and cope with the impact of climate change on less resilient infrastructure.

Although staff needs to demonstrate sound financial management in the short-term by seeking C&E initiatives that can save money for the City and taxpayers, it also needs to recognize that for many climate related projects, the cost of inaction will only grow over time. Therefore, the cost of inaction needs to be taken into consideration when evaluating the financial merits of C&E related initiatives.

PART 03

RECOMMENDATIONS

Recommendations and Quick Starts

Moving Forward

Recommendations and Quick Starts

Demonstrate Corporate Climate Leadership

RECOMMENDATIONS	QUICK STARTS
Apply a Climate Lens for Decision Making across the organization	• Develop a climate lens decision making tool • Develop an internal carbon price and to guide climate friendly purchasing
Reduce fleet emissions through rapid electrification of the light duty fleet	• Apply an electric first purchasing policy for new light duty vehicles
Develop 'green' standards for City facilities	• Develop a sustainable building policy for new City facilities
Expand educational resources to help residents participate in the City's climate action and environmental stewardship efforts	• Develop a Resident's Guide to Climate Action

Reduce GHG Emissions

RECOMMENDATIONS	QUICK STARTS
Prioritize efforts to decarbonize Kelowna's biggest source of emissions: Transportation	• Continue to invest in transit service and active transportation infrastructure per the Transportation Master Plan • Fund and implement Transportation Demand Management Initiatives • Support the shift to EVs through a vast charging network
Adopt a low-carbon approach to Energy Step Code	• Establish an Energy Step Code Adoption Schedule with low-carbon priority
Bring together energy and resilience into one Home Retrofit Program	• Continue to design a home retrofit program through the FCM Community Efficiency Financing Program • Pilot a home energy coordinator support service • Direct incentives to proven low-carbon technologies (e.g., electric heat pumps)

Adapt to a Changing Climate

RECOMMENDATIONS	QUICK STARTS
Combine Climate Mitigation and Adaptation into one Climate Resilient Kelowna Strategy	• Complete a Community Climate Vulnerability and Risk Assessment
Develop a strategy to expand blue and green infrastructure	• Explore options to incorporate climate resilience in roof space for new construction
Implement the proposed actions of the Community Wildfire Resilience Plan	• Expand FireSmart Programs

Protect and Restore Natural Areas

RECOMMENDATIONS	QUICK STARTS
Identify and manage natural assets, species-at-risk, and critical habitat	• Develop a strategy to monitor changes to sensitive ecosystems • Invest in relevant datasets to give a better picture of key environmental indicators • Develop a Natural Asset Management Strategy
Develop a Natural Environment Strategy with City responses to regional strategies	• Inventory and develop City responses to regional and provincial natural environment strategies, such as the Okanagan Region Biodiversity Strategy, Okanagan Lake Responsibility Plan, and Central Okanagan Non-Structural Flood Mitigation Resource Guide

Shift to a Circular Economy

RECOMMENDATIONS	QUICK STARTS
Focus waste diversion efforts on construction and demolition debris	• Complete a Construction & Demolition Debris Reuse & Recycling Feasibility Study • Explore policy for low-carbon concrete
In collaboration with regional partners, develop a Circular Economy Strategy	• Participate in the Canadian Circular Cities and Regions Initiative Peer-to-Peer Network

Corporate Climate Leadership

Apply a Climate Lens for Decision Making across the organization

Gap: Integrating climate change data and considerations needs to happen in day-to-day municipal operation, not just through major community or service delivery plans. The City has various policies and plans with a deliberate climate action focus (e.g., Community Climate Action Plan, Energy Step Code Implementation Strategy for Part 3 Buildings, Community Wildfire Protection Plan), many of which provide a clear indication of how climate mitigation or adaptation objectives are being addressed. However, the City does not have tools to ensure that climate impacts, opportunities, risks and potential benefits and savings are systematically considered in all decisions, especially those where climate is not the major motivator.

Recommendation: Climate resilience relies on effective policy planning and decision-making. From Planning and Development Services, to Engineering and Purchasing, to administrative and front-line staff, every City employee can play a role in addressing climate change. The City makes important decisions every day, for instance when it decides to construct a new building, purchase new fleet vehicles, and improve services. There are key opportunities for the City to look at these decisions with a "Climate Lens". A Climate Lens is a framework to incorporate climate change into decision-making processes and demonstrate municipal leadership.

Climate decision-making provides a comprehensive approach for decision-makers to make decisions with respect to the underlying mitigation or adaptation impacts. The IPCC defines a "good" climate decision as one that integrates climate information, impacts, potential risks, and vulnerability into an existing or proposed decision-making context. It is an iterative process centered around emissions reductions and other climate-related impacts to develop cost-effective initiatives or projects.

Quick Start: Develop a climate lens decision making tool

This Quick Start aims to create a climate lens program to give staff across the organization the resources and tools to undertake purposeful emissions analysis and climate risk assessments for relevant initiatives, enabling climate-informed decision-making. The Climate Lens will facilitate the mainstreaming of climate considerations into operations and capital project planning and major decisions.

The Climate Lens program will aim to achieve the following objectives and outcomes:

- Integrate climate considerations into strategic decision-making;
- Build staff climate competency and leadership;
- Increase climate accountability;
- Increase transparency through reporting; and
- Monitor climate performance.

The Climate Lens program will initially focus on new operating programs and capital projects to ensure future investments are aligned with the City's emissions reduction goals and climate risk adaptation needs.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
Policy/Tool	High Importance Medium Urgency	2-3 years	Ongoing	$50-100K

Quick Start: Develop an internal carbon price to guide climate-friendly purchasing

To complement a climate decision making tool, it is recommended that the City adopt an internal carbon price to ensure carbon pollution is considered in the financial analysis for corporate purchases. Although the social, environmental, and economic benefits of reducing emissions are well-established, they are often under-represented in decision-making processes. Setting a corporate carbon price is one approach that local governments can use to better account for those life-cycle benefits. Integrating a carbon price into decision making processes provides a consistent shift towards lower carbon outcomes such as renewable energy and energy efficiency.

An internal corporate carbon pricing policy would essentially be a "shadow price" used in financial analyses to compare actual and/or notional costs for different options. A corporate carbon price is not the same as a carbon tax, which is a carbon price set by a government and applied across a jurisdiction. In those cases, the carbon tax is paid by residents, businesses, and other organizations based on the carbon pollution they emit, thereby providing an incentive for them to reduce their carbon pollution. In this case, the carbon price is used only to inform decision-making, but there is no real fee paid.

While the price would need to be determined, other local governments, such as Metro Vancouver and City of Vancouver, have applied a net carbon price of $150 per tonne of CO_2e, escalating annually using a 1.06 multiplier after 2022.[9] Other examples of local governments that have an internal carbon price include New Westminster, District of Saanich, and Dawson Creek.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
Policy/Tool	High Importance Medium Urgency	3-6 months	10 years	$10-25K

Reduce fleet emissions through rapid electrification of the light duty fleet

Gap: The City's fleet is comprised of around 270 vehicles made up of a variety of classes, makes, and models. As per the Green Fleet Strategy, over the next 10 years the City anticipates a two per cent annual growth in fleet size, and if procurement continues with business-as-usual practices, a 20 per cent growth in fleet emissions by 2031 is expected. There are zero-emission vehicle (ZEV) replacement options available for many of the vehicle classes within the City's fleet, and as electric vehicle (EV) technology continues to improve, it is likely those options will expand, especially for medium- and heavy-duty vehicles. The City has pledged to convert 10 per cent of the light duty vehicle fleet to EVs by 2023 through the West Coast Electric Fleets initiative, and, in 2021, recommended a fleet-specific GHG reduction target that matched the Provincial Transportation target of 27-32 per cent below 2007 emissions by 2030. However, this was prior to the release of CleanBC Roadmap to 2030 in the Fall of 2021, and the EV landscape continues to change rapidly. Additional EV purchases in the coming decade are needed to achieve deeper emissions reductions.

Recommendation: To lead the way in zero-emission transportation, it is recommended the City electrify all on-road fleet vehicles based on known technological availability over the next 10 years. The Green Fleet Strategy indicates this would result in a 49 per cent reduction in on-road emissions compared to 2021. Further emissions reductions could be achieved with fleet rightsizing, optimal fleet utilization, reductions in EV capital costs, off-road fleet vehicle electrification, increases in the carbon tax, and additional EV replacement options for medium- and heavy-duty vehicles. While this level of EV adoption would increase the City's capital spend, it would reduce operating expenses. As a result, the total life cycle costs of the fleet could be reduced.

Quick Start: Apply an electric first purchasing policy for new light duty vehicles and install the infrastructure to support the shift

Supply issues aside, EV technology is available now for most light-duty vehicles. Of the vehicle classes within the City's fleet, there are ZEV replacement options available currently or within the next three years for the following vehicle classes:

- Cars
- SUVs
- Light-duty trucks
- Select Heavy Duty Trucks
- Vans

With price parity between EVs and internal combustion engine vehicles expected by 2025, lower operating costs, and the environmental benefits of EVs, the shift to EVs is making more and more sense. It is important for the City to capitalize on replacement cycles for light duty vehicles because purchasing decisions lock customers into a particular vehicle for 3-5 years, depending on the lifecycle. Therefore, it is recommended the City develop an electric first purchasing policy that will change the mindset from needing to justify an EV purchase to needing to justify why not to purchase an EV. An internal carbon price could be applied to support the business case.

A critical component for elec¬tric vehicle fleets is the charging infrastructure required to maintain or improve the operating flexibility offered by gas-powered fleets. To support the EV transition outlined in the City's Green Fleet Strategy, a Battery Electric Vehicle (BEV) Infrastructure Assessment was completed that outlined the charging requirements needed to support the transition to BEVs. The study identified any required utility upgrades for charging infrastructure at 10 City facilities. It is recommended that charging infrastructure be funded and installed as per the study's recommendations. Grant funding should be pursued where appropriate.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
Policy & Procurement	High Importance High Urgency	3-6 months	10 years (potentially ongoing)	$50,375,974*
Infrastructure	High Importance High Urgency	Costing study complete	10 years	$1,830,000

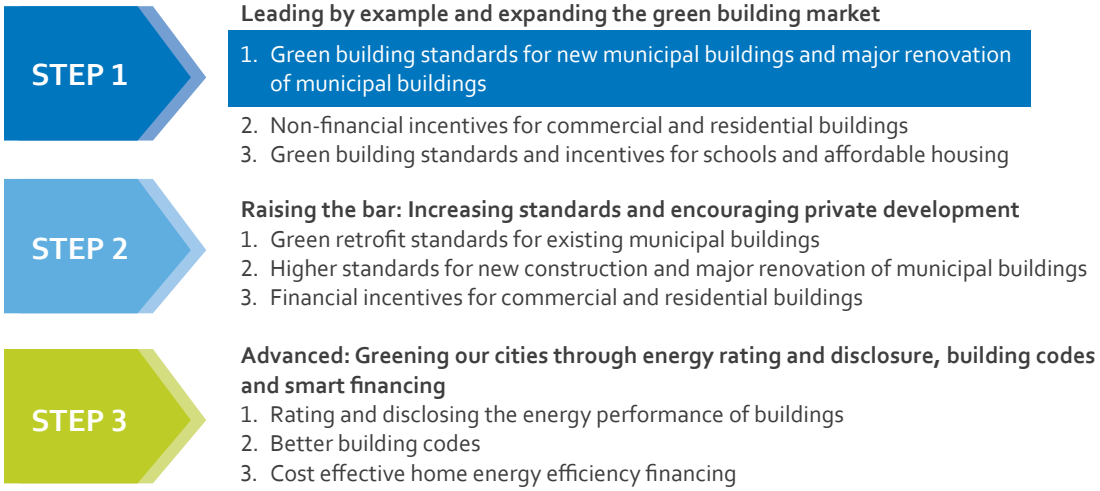
** Only a $516,398 premium comparing ICE-to-EV and ICE-to-ICE purchases over the next 10 years.*

Develop 'green' standards for City facilities

Gap: Through the *BC Climate Action Charter* the City committed to carbon neutral corporate operations. Further, through the 2018 Corporate Energy and Emissions Plan, the City set a target to reduce corporate emissions by 12 per cent below 2007 levels by 2022. Available data suggests that the City's corporate emissions remained stagnant between 2007 and 2018.[1] Buildings account for 43 per cent of corporate emissions, and currently the City does not have standards in place to ensure that construction of new buildings and renewals to components of existing buildings are built to a defined energy efficiency or low-carbon standard. As such, while some new and existing buildings have incorporated green features, many have not.

Recommendation: Municipal buildings can serve as a model for developing community-wide energy efficiency and environmental sustainability practices for all new construction and development. As outlined by the U.S. Green Building Council, the first step in establishing a greener built environment is to establish green development standards focused on new municipal buildings and major renovation of municipal buildings (Figure 8).

FIGURE 8. Recommended municipal steps for implementing green building policies



Focusing on municipal buildings can demonstrate municipal leadership as these buildings are highly visible and provide an opportunity to educate community members about the benefits of green buildings. Moreover, these sites can be used to increase local expertise of building maintenance and operations and reduce operational costs, while helping to achieve the City's corporate emissions reduction targets.

Quick Start: Develop a sustainable building policy for new City buildings

A Corporate Green Building Policy should be developed that outlines the City's obligation to a certain level of performance or standard for all new buildings. The policy would primarily address building energy and emissions performance and would demonstrate the City's commitment to climate action. Further, a policy would demonstrate leadership and would provide guidance to encourage the application of green building practices in private sector development, which could result in additional energy and emissions reduction at the community level.

The policy should be reviewed every three to four years to reflect changes in building practices and technology. In addition, the policy should align with a recognized third party certification program (e.g., Leadership in Energy and Environmental Design (LEED), Zero Carbon, Energy Step Code, Passive House) to ensure consistency and validate the approach. The policy should be cost-effective, provide high enough standards to achieve desired emissions reduction results, provide flexibility, and consider additional funds to cover the capital costs for these improvements.

While the policy should initially focus on new buildings, going forward requirements for undertaking retrofits of existing civic buildings should also be incorporated.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
Policy	High Importance High Urgency	3-6 months	Ongoing	$10-25K

Expand educational resources to help residents participate in the City's climate action and environmental stewardship efforts

Gap: Effective climate action and environmental stewardship at the community scale requires everyone to work together, including residents, businesses, community organizations, institutions, neighbouring local governments, and senior levels of government. While the City has shown leadership in areas through progressive policy, it has not been as active in educating the public and stakeholders on the importance of addressing the climate crisis and demonstrating what others can do to support the City's climate action and environmental protection efforts.

Recommendation: The City can demonstrate climate leadership by better supporting residents and businesses to reduce emissions, adapt to a changing climate, protecting natural areas, and minimizing/diverting waste. While some people understand the urgency around climate action and the various co-benefits (e.g., acting on climate change helps improve health and well-being, protect the natural environment, save money, support clean energy jobs, and ensure quality of life for future generations), many people do not. Further, many Kelowna residents do not understand what they can do at a personal or household level that could create positive change.

Mobilizing citizen engagement is essential to reach the City's C&E objectives. The City can and should support this through:

- More frequent updates on C&E initiatives using City channels (e.g., available incentives, new policies and programs, pertinent resources)
- Facilitating educational opportunities for the public or targeted stakeholders (e.g., speaking engagements)
- Developing resources that demonstrate how residents and businesses can support City initiatives at home or work

While general education and awareness is important, tailored information that links to specific City initiatives ensures that action at the household/business level aligns with and positively impacts City progress.

▶ Quick Start: Develop a Resident's Guide to Climate Action

The Climate Resilient Kelowna Strategy is expected to be complete in 2023 and will outline how to reach bold emissions reduction targets and adapt to major climate impacts in the community. While the City will establish bold policy, the community plays a considerable role in achieving Kelowna's climate targets. To complement the Climate Resilient Kelowna Strategy, the City should develop an accompanying guidebook for residents to (1) help them learn about climate change and its importance; (2) demonstrate what they can do to in their own lives to reduce emissions and adapt to a changing climate; and (3) provide information on programs and incentives available to help.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
Policy	High Importance Medium Urgency	6 months	5 years	$10-25K

Reduce GHG Emissions

Prioritize efforts to decarbonize Kelowna's biggest source of emissions: Transportation

Gap: Transportation accounts for over half of the emissions locally and recent community emissions modelling indicates if the City is to reach the recommended 2030 emissions reduction target of 40 per cent below 2007 levels, 33 per cent of the reduction needs to come from the transportation sector. The most recent community emissions data indicates emissions increased 3.8 per cent between 2007 and 2018 (Table 2), with transportation emissions remaining fairly flat; therefore, more needs to be done to decarbonize the transportation sector in Kelowna.

TABLE 2. Community emissions change from 2007 to 2018

	Absolute GHG emissions (tonnes CO_2e)	
	Total Emissions	% absolute change since 2007
2007	841,789	—
2016	808,874	↓ 3.9%
2018	874,156	↑ 3.8%

Recommendation: Investment in decarbonizing the transportation sector makes sense not only because it is the largest source of community emissions, but also because there are viable technologies already available. Whether it is mode shifting to public transit, bicycles, or e-bikes, or fuel switching from gasoline to electric, the barrier to decarbonizing the transportation sector is not based on readiness, but rather willingness to change. The City can help support the shift to low-carbon transportation options through infrastructure investments (e.g., active transportation corridors, EV charging infrastructure), incentives (e.g., low-income E-Bike incentives, EV charging rebates), education and awareness, supporting and advocating for policies at higher levels of government, and regulation (e.g., EV-readiness bylaws for new residential construction).

There are various social and economic co-benefits to investing in transportation that extend beyond emissions reduction. A shift to zero-emission vehicles supports clean air and public health, and a shift to active transportation can improve personal health and fitness while reducing the need to expand costly infrastructure for automobiles. Therefore, while emissions reduction investments in other sectors often only generate environmental benefits, the business case for transportation decarbonization is easy to make because the many co-benefits address multiple City priorities.

This recommendation does not mean transportation is the emission reduction 'silver bullet' and all other decarbonization efforts should be abandoned. Rather, it means transportation initiatives that have a strong emissions reduction potential need to move forward, efforts need to be amplified through new initiatives, and key transportation projects should be prioritized when funding is limited.

Quick Start: Continue to invest in transit service and active transportation infrastructure per the Transportation Master Plan

As indicated in the 2040 Transportation Master Plan (TMP), "The TMP aims to double the trips made by transit and quadruple the number of trips made by bicycle by 2040. Transit service will be increased over time in coordination with BC Transit. However, the key to making biking an attractive option is building a network of comfortable routes protected from traffic. This is an important strategy for accommodating growth in our Urban Centres and Core Area." Shifting as many car trips as possible to active transportation (e.g., biking and walking) is imperative to help reduce vehicle kilometres travelled (VKT) and GHG emissions. Therefore, it is critical that the City follow through with the build out of the active transportation corridors (ATCs) proposed in the TMP as quickly as possible.

This is not an additional recommendation to the TMP, but rather reinforces the importance of the ATCs from an emissions reduction lens. Therefore, the build out of this infrastructure should occur at an accelerated pace, or at least in-line with the proposed schedule in the TMP. Co-benefits include: increasing physical activity and improving health, improving air quality, reducing road congestion and saving money on gas and parking. In addition, several active transportation corridor projects were placed in Scenario 3 of the TMP, which included projects that were recommended, but not ultimately included in the TMP project list due to cost constraints. To maximize climate benefits, these projects should also be advanced.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
Infrastructure	High Importance High Urgency	In progress	18 years as per TMP (in progress)	$84 million (capital) $8.04 million (operating)

Quick Start: Fund and implement Transportation Demand Management Initiatives

The 2040 TMP proposes many actions to increase the supply of transportation routes and options but contains relatively little funding for moderating or shaping the demand for new transportation options. Research shows these transportation demand management (TDM) initiatives can be highly cost effective. TDM actions can work in tandem with the City's infrastructure investments to improve the utilization of the City's low-carbon transportation options. A modest investment in programs, roughly one per cent of the $1.3B value of the TMP, could offer a high return in terms of reducing emissions and congestion.

Several TDM programs are currently recommended in the TMP, though funding has not yet been secured. Examples include:

- **Income qualified transit passes:** The City would offer discounted monthly transit passes for income qualified residents.
- **The employee commute trip reduction program:** A program to encourage more workers to commute by walking, biking, transit, or to work remotely. Tactics could include education, incentives, and grants.
- **Income qualified E-bike purchase incentives:** The City could provide rebates on e-bike purchases for low-income and senior residents.
- **School busing partnership with SD23:** The City could work with School District 23 and the Province to find ways to increase the number of students taking school buses to school, for example by lowering the distance threshold for busing students. This would be a cost-effective way to help reduce emissions as well as peak hour traffic congestion.

- **Transit Travel Training Program:** Formalize general transit training to encourage and empower people to use conventional transit.
- **Safe-Routes-to-School Expansion:** Helps provide schools with travel planning and infrastructure improvements to make it safer for students to bike or walk to school.

In relation to CleanBC, the province's target is to go from a sustainable mode share of 24 per cent to 30 per cent province-wide by 2030 (i.e., an increase in sustainable mode share of 6 per cent). With the proposed initiatives in the TMP, Kelowna's target would go from 15 per cent to 21 per cent.

Additionally, the TMP noted several TDM initiatives that could further improve climate outcomes with additional funding. All together, with a total investment of $1.5 million annually to fully fund all Travel Demand Management recommendations, it is estimated the TMP's VKT could be further reduced from a 10 percent increase by 2040 to only a 5 percent increase by 2040.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
Incentive and Educational Programs	High Importance High Urgency	In progress	3-5 years	$1.5 million annually

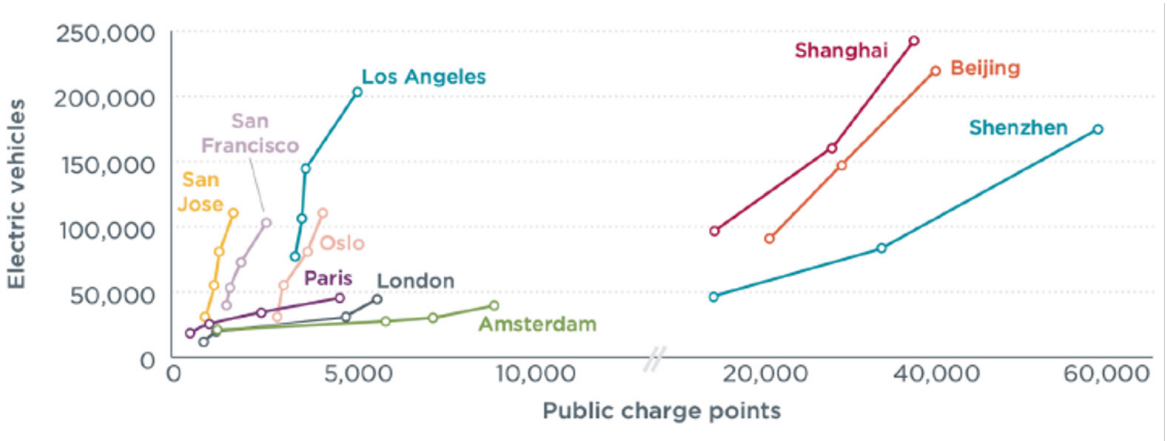
Quick Start: Support the shift to EVs through a vast charging network

Price parity between electric vehicles and internal combustion engine vehicles is expected by 2025,[10] and provincial and federal mandates require an escalating annual percentage of new light-duty zero emissions vehicles' sales and leases, reaching 100 per cent by 2035. The City's Community EV & E-Bike Strategy was endorsed by Council in Fall 2021. The Strategy has an overarching vision that Kelowna is a city where charging an EV and riding an E-Bike is easy, convenient, and affordable. To realize this vision, the Strategy has the following objectives:

- Increase access to EV charging on private property.
- Expand the public EV charging network.
- Increase awareness and knowledge level of EVs, EV charging options, and E-Bikes among residents.
- Support and accelerate fleet and shared mobility (e.g., carshare, bikeshare, ridesharing, ride-hailing) electrification.
- Expand E-Bike infrastructure and improve E-Bike affordability

In order to encourage residents to adopt EVs, municipalities must build EV charging infrastructure at scale. As Kelowna is a city where many households have private parking spaces, the initial focus should be on policy to advance home charging. However, public EV infrastructure can help prompt a shift to EVs by making prospective EV owners more confident that they will have access to the required infrastructure. An analysis of data in major cities by C40 Cities found that EV ownership is correlated with public charging points (Figure 9), although this will vary depending on access to residential charging.

FIGURE 9. Ratio of electric vehicles to public charging points for leading city markets, 2015-2018.[11]



Since the Strategy was adopted, staff have implemented several initiatives outlined in the Strategy (e.g., complete a public EV charging infrastructure gap analysis, expand the off-street public Level 2 charging network, offer residential EV charging incentives for multi-unit residential buildings), but there are still many foundational initiatives that need to move forward in the short-term or current initiatives need to be enhanced. Several key initiatives to implement in the short-term include:

1. **Implement EV Ready requirements for new residential developments:** all residential archetypes including each parking stall for MURBs need to have the infrastructure installed to support Level 2 charging.
2. **Expand the public charging network to support "garage orphans":** Continue to use city assets (e.g., parking lots, parkades, recreation centres) to strategically expand the public charging network to support EV owners without access to charging at-home or at-work.
3. **Support for retrofitting existing buildings with EV charging**: Recognizing that access to at-home charging is particularly challenging for MURB residents, continue to offer (1) financial incentives for the planning or installation of EV chargers in existing MURBs, and (2) educational support to incorporate EV charging options into their buildings.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
1. Policy	High Importance High Urgency	Complete	Ongoing	–
2. Infrastructure		Ongoing	10 years	$135K annually
3. Incentives		5 years	5 years	$75K annually

Adopt a low-carbon approach to Energy Step Code

Gap: In 2019, the City became an early adopter of Energy Step Code, which is a provincial policy that aims to create healthier, more efficient and more comfortable buildings by requiring increasing levels of energy efficiency. The Step Code is designed to help both local government and industry incrementally move toward a future in which all new construction across the province is "net-zero energy ready" by 2032. Through the CleanBC Strategy, the Province has set the direction for future iterations of the BC Building Code to require Step Code compliance through a step-by-step path so that, compared to current base BC Building Code, new homes will be:

- 20 per cent more energy efficient by 2022
- 40 per cent more energy efficient by 2027
- 80 per cent more energy efficient by 2032[12]

Through the CleanBC Roadmap to 2030, the Province indicated it will be adding a new carbon pollution standard to the BC Building Code, supporting a transition to zero-carbon new buildings by 2030.

Currently, the City's Step Code Strategy for Part 9 and Part 3 Buildings only addresses the lower steps and there is no indication of future adoption dates of higher steps. Furthermore, the City has not adopted a low-carbon approach, meaning many new buildings may not be reducing emissions at the expected level even if energy efficiency is improving.

Recommendation: One of the main lessons learned from engagement for the first phase of Step Code implementation is that Industry wants predictable building requirements. While higher levels of energy efficiency may be challenging for some, it is much more likely that builders can reach those higher performance levels if they can start planning for it early. At a policy level, this means providing as much advanced notice of eventual requirements as possible.

The advantage of Step Code is that the requirements have already been outlined, so it is possible for local governments to establish a predictable Step Code schedule with minimal risk that the policy landscape will change. Further, once the Province releases the new carbon pollution standard to the BC Building Code and provides adoption options for local governments, there should be a clear path forward towards net-zero carbon new buildings.

It is recommended that the City be an early adopter of the higher steps of Step Code and outline an advanced approach to low-carbon requirements for new buildings, which will provide Industry with clarity on Kelowna's requirements moving forward.

Quick Start: Establish an Energy Step Code Adoption Schedule with low-carbon priority

Once the Province releases the new carbon pollution standard to the BC Building Code, the City should determine its own pathway to zero-carbon buildings in advance of the Province's schedule. This means not only outlining the next adoption phase but also mapping out all remaining phases with specific adoption dates for each step and low-carbon requirements. This can be accomplished through a Council Policy or Energy Step Code Adoption Schedule.

Similar to the first Step Code adoption phase in 2018 and 2019, an engagement process should be initiated to facilitate collaboration between the City and the building and development industry to determine how to best use the Step Code to meet climate action targets while providing industry predictability and consistency.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
Policy	High Importance High Urgency	1 year	Ongoing	Staff time only

Quick Start: Implement a Step Code Compliance Assurance Program

The development of a Step Code adoption schedule does not mean the work is over. In fact, the bulk of the work begins as new phases are implemented. As Step Code is still a relatively new policy, the City needs to support staff, industry, and the community through the transition, especially as more stringent energy efficiency and low-carbon performance levels are adopted. The City must also ensure the appropriate compliance mechanisms are in place, to provide assurance that buildings are being built to the proposed 'steps'. The benefits of Step Code are only realized if buildings are confirmed to be constructed to the performance level indicated.

This Quick Start has two components:

1. Hire a Green Building Specialist Term Position: Currently, industry and staff support for Step Code falls on the Community Energy Specialist in the Policy & Planning Department. Although the Community Energy Specialist is responsible for Step Code policy development, the day-to-day operations of Step Code implementation add to an already fully subscribed workload. Understanding that Step Code compliance assurance is the responsibility of the municipality and staff must ensure that appropriate compliance checks are in place the void should be filled by a term staff position. The position will largely focus on reviewing Part 9 residential building permit applications to ensure the accuracy of Step Code submissions from a procedural and technical perspective. The position will also liaise with staff, industry, and the community for capacity building.

2. Continue the Step Code Compliance Assurance Program: In 2022, a pilot Step Code Compliance Assurance Program was developed and implemented which involved third party review of 10 Part 9 Step Code submissions. This was to ensure Step Code compliance and that proper procedures were being followed. The pilot program helped staff identify common issues with the energy efficiency components of building permit applications and allowed for capacity building with Energy Advisors and the building industry. It is recommended the Compliance Assurance Program be continued for at minimum two years based on the success of the pilot program. If the Green Building Specialist has the technical expertise to conduct the compliance assurance program, then this component may not be needed.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
1. Staff Position	High Importance High Urgency	6 months	2 years	~$100K
2. Program		In progress	Ongoing	$10-25K

Bring together energy and resilience into one Home Retrofit Program

Gap: In the 2018 Community Climate Action Plan, it was assumed that to meet a modest emissions reduction target of four per cent below 2007 levels by 2023, one per cent of the existing residential building stock would need to be retrofitted annually, achieving at least a 30 per cent improvement in energy efficiency. That equates to retrofitting around 550-600 homes annually. While data is not readily available to confirm this, energy efficiency often ranks near the bottom of people's motivation for completing renovations; therefore, with minimal municipal retrofit programs during this period, it is very unlikely that that target was reached. As Council recently directed staff to update the OCP with more ambitious emissions reduction targets, the number of homes needing energy retrofits will increase.

From a program design perspective, the focus of home retrofit programs to this point has been on energy efficiency because it can lead to emissions reduction and energy savings. However, measures that can increase a buildings resilience to climate impacts are often ignored. As local climate impacts (e.g., floods, wildfires, extreme heat) increase in frequency and magnitude, home resilience measures are becoming equally as important.

Recommendation: Recognizing that municipal levers are relatively limited for decarbonizing and building resilience in existing buildings, action should be prioritized around addressing some of the major barriers to home retrofits. Through engagement, it is clear that the main barriers are (1) the high capital cost of upgrades combined with the lack of financing options to overcome the high cost, and (2) lack of adequate information and support to make informed decisions.[13] It is important to find ways to reduce "sticker shock" as energy-saving and resilience retrofits need to be affordable for homeowners. While

rebates are available from the Provincial and Federal Government and FortisBC, community members feel it is overwhelming to try to understand current rebates, stay up to date on new offers, and access maximum cost savings.

To address these barriers, the City should develop a Home Retrofit Program that brings together energy and resilience measures. The City is a trusted source of information in the community, and a structured program that provides support to households along the retrofit journey could help address the gaps identified above. The program should include financing options, energy and resilience support service (i.e., energy 'concierge') to help homeowners navigate the complicated retrofit journey, and incentives targeted towards proven low-carbon (e.g., electric heat pumps) and resilient technologies.

The program should replace the need for a full Community Energy Retrofit Strategy because the City's resources will have more value for a more targeted approach that can be mobilized quickly as opposed to a more general strategy where action is less defined. With municipal levers being relatively limited for existing buildings and the policy landscape in constant flux at other levels of government, a program approach allows the City to pivot if necessary or incorporate policy changes (e.g., Provincial Alterations Code expected in 2024) into the program.

Quick Start: Continue to design a home retrofit program through the FCM Community Efficiency Financing Program

In 2021, the City completed a retrofit financing feasibility study through the Federation of Canadian Municipalities' (FCM) Community Efficiency Financing Program (CEF). The study's main conclusion is that third party financing is the only viable retrofit financing option in the short-term. The recommendation is for the City to begin to design a retrofit program by building relationships with local financial institutions to develop retrofit financing products and submit an application to FCM for credit enhancement. If the City were ultimately successful in their application to FCM, the parameters of the retrofit loan products could be renegotiated to achieve more favourable terms for new applicants.

Whilst the City of Kelowna could proceed with this approach alone, it may be beneficial to collaborate with other Municipalities in the region. Benefits of a regional approach may include: stronger interest from local/regional financial institutions to participate in the program, stronger application to FCM for credit enhancement, greater interest and awareness of residents, and economies of scale in program marketing and delivery.

There are two steps to implementing a full program through FCM CEF:

1. **Complete a Program Design Study:** Lays the groundwork for a home energy upgrade financing program by documenting the details of what the program would entail.
    - Grants of up to $175,000 to cover up to 80 per cent of eligible costs (remaining 20 per cent needs to be dedicated from the City).
2. **Implement a Capital Program:** If the City partners with third-party lenders, participating lenders can access this funding to offset their risk by providing partial coverage for losses that may arise. The program would also unlock preferential financing products for homeowners that would otherwise not be made available in the absence of the credit enhancement (e.g., below-market interest rates, extended repayment terms, or expanded underwriting criteria).
    - Credit enhancement of $2 million pledged by GMF to support third-party financing
    - Applicant must demonstrate a minimum leverage ratio of 5:1 (credit enhancement to third party capital)
    - Grant of up to $5 million to cover up to 80 per cent of costs (not to exceed the total start-up and operating costs)

While FCM CEF is currently geared only towards energy measures, combining energy and resilience measures may be considered an innovative approach that should be explored.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST*
1. Study	High Importance High Urgency	1 year	4 years	Up to $210,000
2. Program		1 year		Up to $5 million

** Primarily grant funded.*

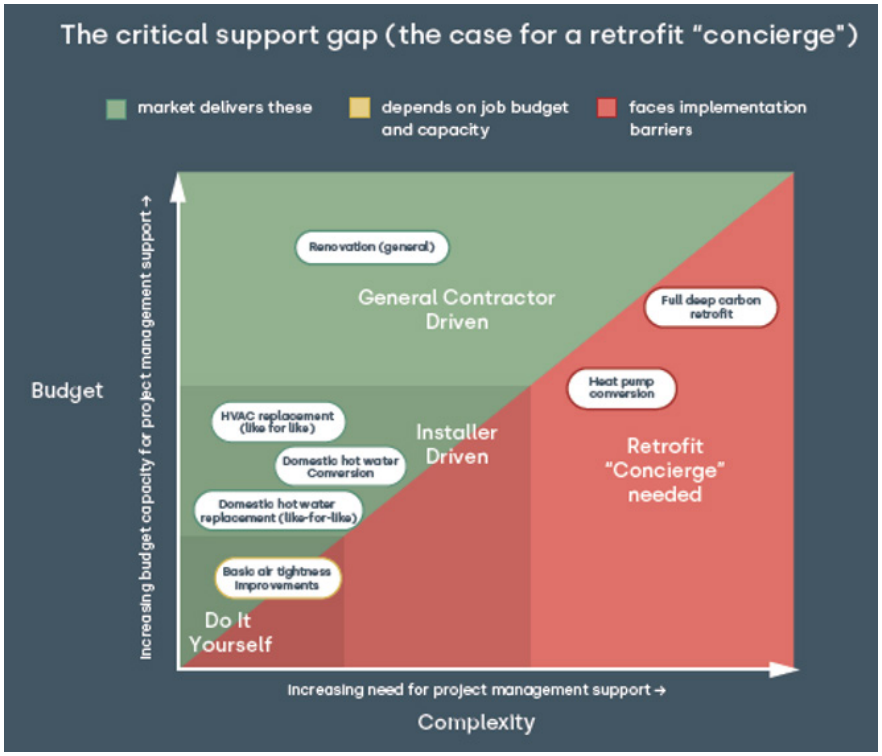
Quick Start: Pilot a home energy coordinator support service

The retrofit journey is a complicated one. Despite government and utility incentives, many households are not identifying and implementing home energy retrofit measures, even when there are clear benefits. This could be for a variety of reasons, including:

- Complexity of home systems and retrofit approaches (technical aspects, costs, energy savings, GHG benefits)
- Confusion on current rebate eligibility and "stackability".
- Challenging contractor interactions and advice on products and services
- Budget/financing uncertainties

A recent market research report by OPEN Technologies and Vancity indicates the homeowner retrofit journey is currently fragmented and overwhelming, particularly for relatively small but highly complex jobs that do not financially justify a general contractor in a coordinating role (Figure 10).[14]

FIGURE 10. The case for a retrofit concierge/coordinator



To directly address these barriers, the City could develop a one-to-one coordinator service between homeowners and home energy auditors, contractors, utility/government rebate programs, and financing providers. Essentially the coordinator would support homeowners through all steps in the upgrade process, including: identifying candidate homes for retrofits, engaging with homeowners to identify opportunities for upgrades and rebates, connecting homeowners with Energy Advisors, reviewing Energy Advisor recommendation, and supporting measure implementation.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST*
Pilot Program	High Importance High Urgency	Complete	2 years	$70K annually

** Seek grant funding. Expected $70,000 annually from the City if no grant funding available.*

Quick Start: Direct incentives to proven low-carbon technologies

For many residents the reason for not investing in home energy improvements is straightforward: it costs too much. While other levels of government and FortisBC offer a variety of incentives, there is still room for the City to provide financial support towards the measures that will have the greatest impact on emissions reduction, especially if the added incentive can impact a purchase decision. With heating and cooling from emissions insensitive energy sources (e.g., natural gas, propane) accounting for most of a home's energy and emissions, it makes sense to direct financial support towards fuel switching technologies that will result in direct emissions reduction. Currently, the most viable technology in market is electric air-source heat pumps.

Through the BetterhomesBC Program the Province offers $3,000 for a Tier 2 Central ducted heat pump if fuel switching from a fossil-fuel system. Recognizing that the Provincial incentive may not be enough to entice someone to fuel switch to an electric heat pump, between September 2021 and August 2022 the City is offering a $2,000 municipal top-up that is administered through the Province. So far, the City's dedicated funding amount has almost been exhausted, indicating high uptake of the incentive. One key benefit of the program is that it is administered through the Province, so the top-up simply gets added to the Provincial incentive. This eases the administrative burden on the City, which is important with limited staff resources.

Based on the success of the first year of the top-up, it is recommended the City contribute to the municipal top-up program for at least three more years, and increase the annual investment so more local homeowners can benefit. An investment of $100,000 annually over the next three years is recommended, which has the potential to benefit 150 Kelowna homes.

Going forward, the City should continue to monitor low-carbon technologies, and diversify the top up if other technologies are a viable solution in directly reducing emissions.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST*
Incentive	High Importance High Urgency	1 month	3-5 years	$100K annually

Adapt to a Changing Climate

Combine Climate Mitigation and Adaptation into one Climate Resilient Kelowna Strategy

Gap: The 2018 Community Climate Action Plan demonstrated the City's commitment to climate action through a set of initiatives to help the community reduce emissions by 4 per cent below 2007 levels by 2023. While a step in the right direction, this plan is focused solely on GHG emissions reduction (i.e., climate mitigation). Although the City has pioneered or been involved in various climate adaptation work such as flood planning and wildfire resilience, climate adaptation planning has not occurred at the community level, considering all potential climate impacts to the community. Further, climate mitigation and adaptation have not been considered together more systematically through a lens of low-carbon resilience.

Recommendation: As discussed in Section 2, one of the principles of the Framework is to look for co-benefits between pathways. In particular, there are many harmonious opportunities for low-carbon resilience that reduce both emissions and climate risk (e.g., green infrastructure and distributed energy systems that diversify energy sources and reduce the risk of system failure during a stress or shock situation). It is and will continue to be fundamental to consider mitigation and adaptation efforts and investments in an integrated way to identify interdependencies and synergies that maximize efficiencies and cost-effectiveness and minimize risk.

Currently the City is in the process of laying the groundwork for a revised Climate Resilient Kelowna Strategy, with the intention of developing strategies for both emissions reduction and climate adaptation at the community level. It is recommended that the City continue the development of this dual plan and look for opportunities to integrate these two concepts through low-carbon resilience (where possible), rather than have them as completely separate sections of the same plan.

▶ Quick Start: Complete a Community Climate Vulnerability and Risk Assessment

Evaluating the threat posed by climate change begins with an assessment of the changes to which a community is exposed, the sensitivity of the local community to these changes, their potential impacts, and the local capacity to adapt. These are the steps of a Climate Vulnerability and Risk Assessment (CVRA), which is the technical basis for climate adaptation planning and strategy development.

The results of the CVRA 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., wildfires, floods, storms, drought).

The City recently began the CVRA with a consultant and is aiming to have the study complete by the end of 2022.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST*
Study	High Importance High Urgency	6-8 months (in progress)	8 years (2023-2030)	$60K

** Already funded through 2022 budget*

Develop a strategy to expand blue and green infrastructure

Green and blue infrastructure include all natural or human-made elements that provide or perform some form of ecological or hydrological function or process. Blue infrastructure refers to water elements, like rivers, canals, ponds, wetlands, and floodplains; green infrastructure refers to natural assets (e.g., trees, lawns, hedgerows, parks, fields, and forests), enhanced assets (e.g., rain gardens, bioswales, stormwater ponds), and engineered assets (e.g., permeable pavement, green roofs). Both are seen as cost-effective, environmentally sustainable solutions to address a changing climate.

Gap: Kelowna's existing green and blue infrastructure is helping to combat the impacts of climate change. This is particularly true for the city's parks and tree canopy. There are currently many City plans, strategies, and initiatives that are collectively contributing to protecting or increasing green and blue infrastructure in the city (e.g., Official Community Plan, Subdivision and Development Services Bylaw, etc.). However, despite current efforts, the community is still experiencing climatic impacts, which are only projected to grow or worsen in urban areas.

The Climate Projections Report for the Okanagan Region found that, by the 2050's, the city can expect a higher number of hot days per year (days with >30° C) and the hottest days to get hotter. At the same time, rainfall is also projected to increase in the Spring and Fall but decrease in the Summer. What makes these changes particularly difficult is that Kelowna is expected to grow substantially over the next few decades. Increased development of urban areas can create micro-climates that affect climatic variables, including temperature. For example, the urban heat island effect creates higher surface and air temperatures from the higher density of buildings and heat absorbing materials and replacement of pervious vegetated surfaces with impervious built surfaces which reduce evaporative cooling. The increase in impervious surfaces and decrease in vegetation can also contribute to flooding risk in urban areas, as less stormwater can infiltrate into the ground, increasing runoff. Projected temperature and precipitation changes are expected to further intensify these effects.

Recommendation: To become increasingly resilient to changing climate, considerable expansion of green and blue infrastructure is needed (particularly heat and flooding in urban areas). This means protecting and enhancing existing green and blue infrastructure, incorporate them into the existing built form, and ensuring they are considered at the onset of new projects.

Many of the City's current plans and initiatives noted above are already contributing to this approach, but often in uncoordinated ways. The planning and implementation of green and blue infrastructure requires a city-wide systematic and holistic view to ensure that opportunities for efficiencies and benefits across departments can be identified. Achieving this will require significant cross-coordination between City departments. Therefore, it is recommended that the City develop a coordinated and comprehensive city-wide strategy to significantly expand blue and green infrastructure in a more structured way.

▶ Quick Start: Explore options to incorporate climate resilience in roof space for new construction

As Kelowna continues to grow and more land is occupied by medium to large buildings, there is an increasing amount of roof space that is adding minimal to no value to the building or the community. Most conventional rooftops actually compound climate-related issues such as the urban heat island effect and stormwater management.

Some communities like the City of Toronto have adopted bylaws that require green roofs (i.e., a vegetative layer grown on a rooftop) for new developments, along with other initiatives to support green roofs. Essentially green infrastructure on rooftops, green roofs provide shade, remove heat from the air, and reduce temperatures of the roof surface and surrounding air. Green roofs have other

co-benefits such as reducing building energy use, controlling stormwater, and adding aesthetic value and habitat for plants and animals.

In consideration of some of the benefits of green roofs along with the growing amount of wasted rooftop space in the community, it would be prudent for the City to evaluate policy options to create more value for rooftops. However, without knowing the suitability of green roofs in Kelowna's climate, the study should consider other beneficial rooftop uses such as cool roofs (i.e., reflective and emissive materials that remain cooler than traditional materials during peak temperatures) and renewable energy (e.g., solar panels). The study should outline what municipal levers are available and provide recommendations on an optimal policy option the City could adopt.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
Study	High Importance High Urgency	6-8 months	Ongoing	$25-50K

Implement the Community Wildfire Resilience Plan

Gap: Kelowna continues to face an ever-increasing threat of wildfire, as the 2017, 2018, and 2021 fire seasons proved to be three of the most historically damaging seasons on record. Unfortunately, climate projections indicate local wildfire events are only going to increase in both frequency and magnitude. Through the City's 2016 and 2011 Community Wildfire Protection Plans (CWPPs), recommendations for wildfire risk reduction initiatives were made, but the community continues to be exposed to a number of wildfire risks based on the natural environment and has continued development into the wildland urban interface. Several neighbourhoods still face hazardous conditions, and at the household levels, the dissemination and uptake of FireSmart programs throughout the City is relatively low, which has frequently resulted in landscaping decisions that directly expose residents to fire hazards.[15]

Recommendation: Increasing potential for wildfires in the community means more proactive measures are needed to minimize wildfire risks. The 2021 Community Wildfire Resilience Plan (CWRP), currently in draft form, is an opportunity to decrease community wildfire risk through a stronger focus on the FireSmart disciplines: education, legislation & planning, development considerations, interagency cooperation, cross-training, emergency planning, and vegetation management. It is recommended the City implement the proposed action plan, leveraging Community Resiliency Investment (CRI) grants whenever possible.

Quick Start: Expand FireSmart Programs

Per the new CWRP, supporting public education around FireSmart principles, wildfire risk & mitigation, and associated initiatives that relate to climate (e.g., cultural/prescribed burning as a primary option for managing grass fuel risk) are important and should be carried out immediately to support wildfire resilience. Further, a 2022 pilot of the Community FireSmart Chipping Program has been successful and should be continued in future years. The annual program offers service assistance for residents to remove and dispose of hazardous vegetation from the home ignition zones around their properties.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
Program	High Importance High Urgency	3-6 months	Ongoing	$45K annually

Protect and Restore Natural Areas

Develop a Natural Environment Strategy with City responses to key regional or provincial plans and strategies

Gap: As a relatively large municipality, the City leads many of its own strategies and plans that relate to stewardship of the natural environment (e.g., Urban Forestry Strategy, Area-Based Water Management Plan). However, as environmental and climate impacts do not follow political boundaries, many plans and strategies that affect aspects of the City's natural environment are completed at a regional, watershed, or provincial level. This is a viable approach because it ensures collaboration amongst the many different stakeholders that could be impacted by a particular issue and allows resources to be shared for efficiency.

Although City staff are typically involved in the development of major regional or provincial plans and strategies where the City is a stakeholder, it is less clear how the City implements such initiatives. Because the City is not the 'owner' of the regional plan or strategy, there is less accountability towards following through with implementation. Consequently, many of the recommended policies from regional plans and strategies for aspects of the natural environment and climate adaptation (e.g., biodiversity, foreshore management) have not been implemented at the city-level. The grey area between City-led and regional or provincial strategies results in a less-defined approach for municipal management of the natural environment.

Recommendation: The City needs a comprehensive strategy to identify and manage aspects of the natural environment. An effective and efficient approach would be leveraging regional planning initiatives for implementation at the municipal scale and formalizing City responses where appropriate. This approach would save the City resources because it would avoid spend time and money on plan development (or in some cases re-development). It would also allow the City to customize implementation efforts by selecting only the elements of the plan or strategy it sees as important or applicable to Kelowna's context. Where no regional or provincial strategy exists for a key aspect of Kelowna's natural environment, City-specific strategies could then be considered.

To ensure the City stays accountable to regional responses, each response should be presented and endorsed by City Council in the same way as a City-led strategy.

▶ Quick Start: Inventory and develop City responses to regional and provincial natural environment strategies, such as the Okanagan Region Biodiversity Strategy, Okanagan Lake Responsibility Plan, and Central Okanagan Non-Structural Flood Mitigation Resource Guide

While the City has a pulse on relevant regional and provincial initiatives, the first step in determining how to leverage strategies at other levels of government is to identify, document, and track all that may apply. Relevant strategies should be mapped according to the desired results of the "Protect and Restore Natural Areas" pathway of the Framework and OCP policies.

Not every regional plan or strategy that may impact the City's natural areas is worthy of a formal response, but there are some initiatives that are already complete that provide policy direction for what local governments can do from an implementation perspective: the Okanagan Region Biodiversity Strategy , kɬúsx̌nítkʷ (Okanagan Lake) Responsibility Planning Initiative (in progress), and Central Okanagan Non-Structural Flood Mitigation Guide.

Biodiversity is an important component of the 'Protect and Restore Natural Areas' pathway of the Framework, along with the Natural Environment Chapter of the 2040 OCP. Some municipalities

(e.g., City of Surrey) have created their own Biodiversity Conservation Strategy, but the City does not currently have strong direction or strategy related to biodiversity. The Okanagan Region Biodiversity Strategy was led by the Okanagan Collaborative Conservation Program and is an environmental policy framework that sets priorities for identifying, preserving, and restoring important natural areas. One section of the strategy provides strategic direction and opportunities for action for local governments. For example, land use planning and development, financing biodiversity conservation, creating incentives for private landowners, science and information, and partnerships and collaboration. As this strategy is now several years old, if there is opportunity for a new strategy in the short-term, the City should be involved in strategy development, and create a subsequent response to the updated strategy.

kɬúsx̌nítkʷ (Okanagan Lake) Responsibility Planning Initiative is designed to bring syilx and non-syilx partners together to address the cumulative impacts threatening the long-term viability of Okanagan Lake and its ecosystems to provide clean drinking water, habitat for fish and wildlife, erosion and flood control, and contribute to climate change mitigation. The planning process is syilx led and the project aims to change land use planning by creating new decision-making processes, policies, and practices for stronger environmental protection that provide meaningful and lasting change. While the City is involved in the planning process, a formal response will ensure recommended actions are addressed.

Although flood mitigation aligns more closely to the 'Adapt to a Changing Climate' pathway of the Framework, protecting our water resources is an important consideration for protecting natural areas as well. The Central Okanagan Non-Structural Flood Mitigation Guide is a toolbox of flood mitigation actions that are not large, engineered structures (e.g., dikes and dams). For example, land stewardship, land use management, building management, education and awareness, emergency response, insurance and disaster financial assistance.[19] A City response to this plan could support the actions from the Climate Resilient Kelowna Strategy, and ensure adequate local action for non-structural flood mitigation.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
Study	High Importance Medium Urgency	6-8 months (per strategy)	Ongoing	Staff time only

Identify and manage natural assets, species-at-risk, and critical habitat

The term municipal natural asset refers to the stock of natural resources or ecosystems that a jurisdiction could rely upon or manage for the sustainable provision of one or more services. The stocks of ecosystem resources are natural capital in the sense that these resources are assets that yield goods and services ("flows"), which over time are essential to the sustained health and survival of the local population and economy. In the local government context, it is important to understand, measure, manage, and account for natural assets in the same way it is for engineered assets. Doing so can enable local governments to provide core services such as stormwater management, water filtration, and protection from flooding and erosion, as well as additional services such as those related to recreation, health, and culture. Outcomes of what is becoming known as municipal natural asset management can include cost-effective and reliable delivery of services, support for climate change adaptation and mitigation, and enhanced biodiversity.

Gap: In 2020, the City participated in the Municipal Natural Asset Initiative (MNAI) with a cohort of other local governments across Canada to develop an inventory of natural assets in the community. A second project with MNAI is currently underway in coordination with regional partners and is focused on incorporating ecosystems and species at risk as well as critical habitat into the natural asset inventories. While these are positive steps forward, additional work is needed to prioritize and implement management options that will result in tangible progress on natural asset, species at-risk, and critical habitat protection.

It is also recognized that while the City utilizes spatial data for key environmental indicators, including natural assets, many of the inventories are based on provincial or regional data which may be coarse or outdated; thus, the datasets may not capture more detailed environmental attributes or recent changes such as developments that are necessary to inform appropriate management actions.

Recommendation: As with most strategic areas, tangible progress or value is not realized until management actions are implemented. Through MNAI, the City completed the assessment phase of the asset management process which includes an inventory and conditions assessment of natural assets in the community (Figure 11). To capitalize on the benefits of this assessment work, the City should continue the natural asset management process through the planning and implementation phases. This equates to developing long-term goals and service delivery requirements from natural assets, completing natural asset operations and maintenance plans for priority assets, completing a financial plan for natural assets, and ongoing adaptive management.

Understanding that the data used to generate an initial inventory of natural assets and environmentally sensitive areas was based on relatively coarse or outdated data, the City should explore other options to gather higher resolution spatial data (see Quick Start below). Doing so could result in more informed management actions that reflect the true state of natural areas.

FIGURE 11. Natural Asset Management Process

Quick Start: Develop a strategy to monitor changes to sensitive ecosystems

OCP policies 14.5.7 and 14.5.8 require land use and development projects to have "no net loss" of natural terrestrial and aquatic ecosystem's function and productivity. No net loss is a principle that strives to balance unavoidable habitat, environment, and resource losses with replacement of those items so that damages resulting from human activities are balanced by equivalent or greater gains in habitat and biodiversity. Population growth, development pressures and climate change threaten the community's terrestrial and aquatic ecosystems and species. Development sprawl, habitat loss, and conditions such as fires and floods challenge biodiversity and ecosystem health on multiple fronts. In the face of an uncertain and limited resources at higher levels of government, Kelowna must take a leadership role in protecting the resources within its boundaries.

While no net loss policy has been applied for over a decade, understanding its success is challenging. Monitoring changes to environmentally sensitive terrestrial and aquatic ecosystems is difficult, and to this point, an approach has not been developed to determine if this principle is effectively being executed. Kelowna and area have the privilege of having some of the rarest ecosystems in the country and to ensure these are around for centuries, it is recommended a strategy be developed to that identifies a path forward for ensuring changes to sensitive ecosystems can be adequately monitored.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
Strategy	High Importance High Urgency	3-6 months	Ongoing	$25-50K

Quick Start: Invest in relevant datasets to give a better spatial perspective of key environmental indicators

The City relies on certain datasets to benchmark conditions of environmental indicators. For example, developing an inventory or baseline of urban tree canopy, sensitive ecosystems, natural assets, and Okanagan Lake foreshore relies on third party data acquired in various ways (e.g., aerial imagery, water surveys, field sampling). Such data is valuable, but understanding that it only provides a snapshot in time of environmental conditions and methods have improved over time, the City should invest in important data such as:

- **Light Detection and Ranging (LiDAR):** LiDAR is a remote sensing technique that is based on measuring the time it takes a laser pulse to strike an object and return to the source. Typically, a laser scanner is flown in an airplane, the exact location of which is tracked by a GPS satellite. LiDAR has many uses and has value for spatially identifying natural and man-made features within a community at a very granular level including urban tree canopy, natural assets, impervious versus pervious areas, and Okanagan Lake foreshore, as well as aid the City in flood and wildfire mitigation efforts.
- **Foreshore Inventory Mapping (FIM):** The FIM methodology is used to quantify the level of disturbance (from a natural condition) that has occurred along lake shorelines. It allows staff to assess the rate of change occurring along shorelines. FIM serves to benchmark current foreshore conditions for regulatory agencies and for investigations into possible illegal foreshore activities or development. The most recent FIM for Kelowna was completed in 2016 and showed there was only 41.4 per cent of natural shoreline remaining, down from 42.81 per cent in 2009.
- **Sensitive Ecosystem Inventory (SEI):** The City has an inventory and maps of environmentally sensitive areas including creeks, wetlands, grasslands, old growth forests, and sensitive ecosystems. Twenty-seven creeks and 278 wetlands have been identified within the city. The SEI helps the City, the development community and residents better understand and manage environmentally sensitive ecosystems. The most recent SEI for Kelowna was completed in 2007.

Investing in up-to-date data and inventories will allow the City to have an accurate picture of the community's natural areas, and could help inform an updated Natural Environment Development Permit Area.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
Data and Mapping	High Importance Medium Urgency	3-6 months	Ongoing	$120-150K every 3 years

Quick Start: Develop a Natural Asset Management Strategy

As illustrated in Figure 11, managing natural assets is an ongoing process. The City, through a partnership with the Municipal Natural Asset Initiative, was able to complete a high level natural asset inventory in 2021 as an initial set. More needs to be done to continue to understand the value of our natural assets and how to integrate the management of these with other assets. This includes developing long-term goals and service delivery requirements from natural assets, completing natural asset operations and maintenance plans for priority assets, completing a financial plan for natural assets, and ongoing adaptive management. Outputs could help comprise a stand-alone Natural Asset Management Plan or inform natural asset components of broader asset management plans.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
Strategy	High Importance Medium Urgency	1-2 years	Ongoing	$100-200K

Shift to a Circular Economy

Focus waste reduction diversion efforts on construction and demolition debris

Gap: Over the past few years, Kelowna has been Canada's fastest growing Census Metropolitan Area, with a population growth rate of 14 per cent between 2016 and 2021. Coinciding with population growth, the community has also seen a sharp increase in development, with a record number of annual residential building permits issued in 2021. While this "building boom" has its benefits (e.g., bringing new amenities, employment, and educational opportunities), it also brings challenges, including an increase in the creation of construction and demolition debris (CDD) that makes it to the Glenmore Landfill.

Construction and demolition debris make up the largest component of waste at the Glenmore Landfill, which, therefore, presents one of the greatest challenges and opportunities when considering waste diversion and extending the life of the landfill.

Recommendation: While zero waste is a worthy aspirational target, the reality is there is a long way to go, and waste reduction and diversion efforts should prioritize the areas that could have the biggest impact and/or where there are proven solutions. The combination of development growth and knowing that CDD waste is the largest component of waste at the Glenmore Landfill, make it a suitable area to focus on through a waste management lens. Furthermore, example policies and local government interventions from BC and around the world indicate there are real world examples to follow that could be applied locally; meaning policy to manage CDD waste is not a pipe dream but an area with opportunities for practical application in the short-term. It is therefore recommended that the City focus waste reduction and diversion efforts on CDD waste by evaluating municipal policy options. This does not mean that research into other waste streams (e.g., organics) should cease, but resources should be prioritized for CDD in the short-term.

Quick Start: Complete a Construction & Demolition Debris Reuse & Recycling Feasibility Study

A significant amount of CDD material can be redirected to other value-added uses and processes, creating new jobs and revenue for the region, extending the life of the landfill, as well as reducing CO_2 emissions in producing new materials. However, the City does not have a full understanding of the waste reduction/diversion options for CDD material and what could be the optimal policy solution to limit CDD waste at the landfill.

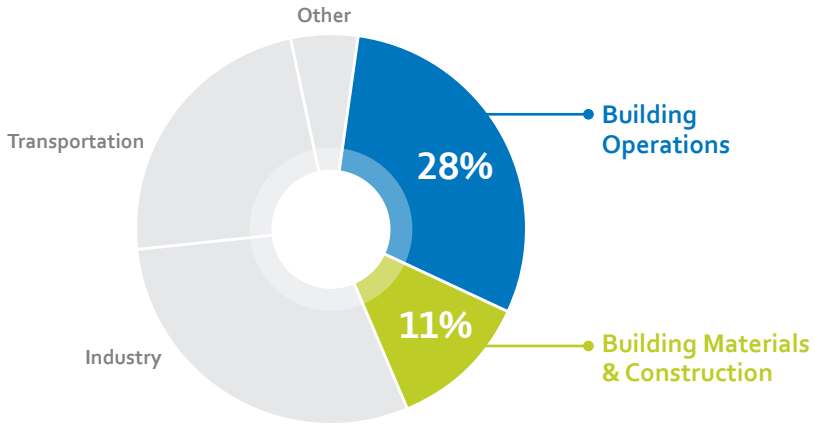
Utility Services is planning on performing deconstruction rather than demolition on three to four City owned houses in 2022. It is recommended that this study be carried out and supported by analysis of the diversion percentages from deconstruction, as well as a broader CDD market capacity assessment. The study should be carried out in partnership with the RDCO.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
Study	High Importance Medium Urgency	6-8 months	Ongoing	$35K (funded)

Quick Start: Explore policy for low-carbon concrete

Municipalities typically focus on reducing buildings operational emissions, rather than embodied emissions arising from the material to construct a new building. While cities do have more direct control over operational emissions, embodied emissions account for 11 per cent of annual global emissions (see Figure 12). Moreover concrete, steel, and aluminum are responsible for 23 per cent of global emissions, most of which arise from the use of these materials in buildings.

FIGURE 12. Share of annual global CO_2 emissions[20]



A growing number of municipalities are developing approaches to tackle this challenge. For example, in 2019, the County of Marin in California's Bay Area passed the Bay Area low-carbon concrete codes (the first of their kind in North America) as an amendment to the County's building code. To comply with the code, buildings must be built with concrete that includes a limited amount of cement or concrete with a limited amount of embodied emissions, as per the Low Carbon Concrete Code.

In November 2021, the City of Langford became the first jurisdiction in Canada to adopt a low-carbon concrete bylaw. The bylaw applies to city-owned or solicited projects and private construction projects greater than 50 cubic meters. Starting June 1, 2022, concrete used for these projects must be produced using post-industrial carbon dioxide mineralization technologies or another technique that leads to lower embodied CO_2.

Considering the growing importance of embodied emissions, especially with the increasing number of large buildings in Kelowna that have concrete construction in many cases, and the precedence in municipal policy, the City should explore a policy for low-carbon concrete.

TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
Study	High Importance Medium Urgency	6-8 months	Ongoing	$10-25K

In collaboration with regional partners, develop a Circular Economy Strategy

Gap: As Kelowna continues to grow, eliminating waste and pollution, circulating products and materials, and regenerative nature are increasingly important considerations. Looking for solutions that can minimize environmental impacts from growth are vital in ensuring the long-term sustainability of our region. If the City is going to deliver on some of its climate action, environmental protection, and waste management objectives, transitioning from a "take-make-waste" system to a circular economy will be vital.

While waste management is not new for local governments, the transition to a circular economy is. At this point, there are few examples (particularly in North America) of local governments that have transitioned from circular theory to practice. The City is at a similar stage; recognizing the need and benefits of transitioning to a circular economy but not understanding how to translate the theory into actionable policy.

Recommendation: In contrast to the traditional linear economy with short-sighted design, high consumption, and the storage or attempted destruction of the resulting waste, a circular economy is based on closing the loop with a holistic and regenerative perspective on design, production, consumption and disposal. Cities are well-positioned for a circular economy system due to their proximity of citizens, producers, retailers, and service providers. Local benefits of a circular economy could include more jobs and entrepreneurial activity in areas such as remanufacturing, repair, logistics and services.

The City is in the early stages of its circular economy journey, but understanding some of the benefits, it would be prudent to start to think more strategically about practical application. Over the coming years, developing a Circular Economy Strategy that outlines how the City will help support a shift to a local circular economy through its municipal levers will have co-benefits for climate, waste management, and economic objectives. With many of the components of a circular economy having regional implications (e.g., waste management), it is recommended the development of a Circular Economy Strategy be carried out with regional partners such as the Regional District of Central Okanagan and other member municipalities if there is interest.

Quick Start: Participate in the Canadian Circular Cities and Regions Initiative Peer-to-Peer Network

To support local governments in their quest to shift to a circular economy, FCM, the National Zero Waste Council, Recycling Council of Alberta, and Recyc-Quebec established the Circular Cities & Regions Initiative. The Peer-to-Peer (P2P) Network is one of the main initiatives and provides "In-depth access to circular economy experts and the opportunity to discuss approaches, opportunities and challenges with peers from across the country. Two foundational workshops and key resources on circular economy provided by the Ellen MacArthur Foundation."[21]

As the City is in the early stages of its circular economy journey, the P2P Network would help the City understand the opportunities for incorporating circular principles, learn from other local governments across Canada who are on a similar journey, and understand the municipal policy levers for change. If successful on an application, the learnings from the P2P Network could be applied to the development of a Circular Economy Strategy in the coming years.

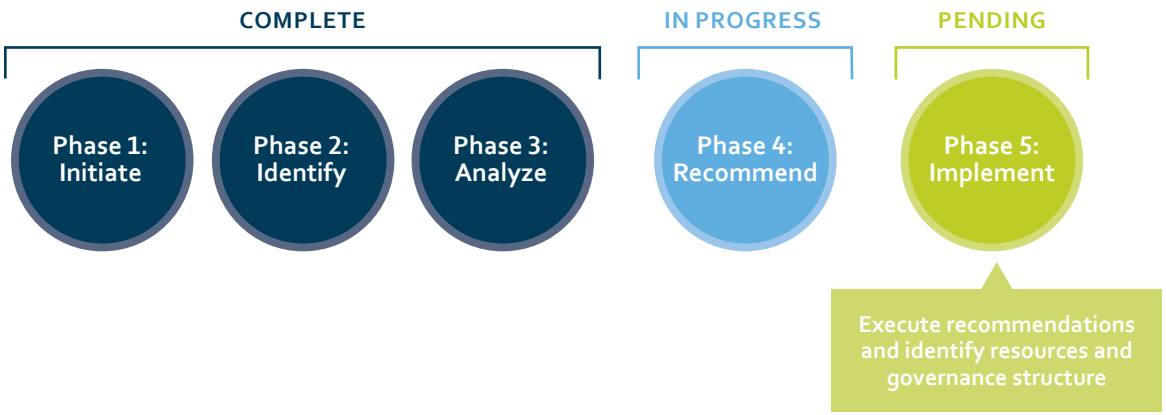
TYPE OF INITIATIVE	PRIORITY	DEVELOPMENT TIMEFRAME	IMPLEMENTATION TIMEFRAME	COST
Network/ Project	Medium Importance High Urgency	1 month (complete)	1 year	Staff time only

Moving Forward

While progressive policy and programs are important to advance climate and environmental priorities, to succeed in its tasks, the City needs the structures, systems, and resources in place to make decisions, oversee the delivery of services, and report on performance.

Therefore, the City needs a strong governance system that provides the appropriate level of staffing resources, the appropriate staffing structure, and the appropriate budget. The City also needs to determine how best to engage with external stakeholders on C&E initiatives. Recommendations for effective governance are not provided in this report; however, in Phase 5 (Implement) of the Review, the Champion of the Environment will work with the City Manager and the Senior Leadership Team to identify governance components in advancing and operationalizing the Framework and recommendations.

FIGURE 13. Remaining phases of Climate & Environment Review



As the Framework shows, effective climate action and environmental stewardship has many different pieces. The recommended initiatives in Section 3 represent foundational opportunities and short term wins to advance the Framework, but this by no means captures everything. It is recognized the City has in place many existing C&E initiatives and new initiatives will be needed as additional problems arise and technologies change. Therefore, the City will need to be proactive and adaptable moving forward to adequately address contemporary climate and environmental challenges.

APPENDICES

Appendix A

Activities of the Climate and Environment Review

Staff completed the following activities related to the Review:

- **Phase 1 – Project Initiation:**
  - *May – June/21:* Completed the Project Plan.
  - *July/21:* Engaged Neilson Strategies Inc. to lead/facilitate corporate visioning and Governance Best Practice Review.
- **Phase 2 – Identify Corporate Priorities:**
  - *July – November/21:* Researched elements of the draft Climate Resilience Framework, including a review of current City priorities/objectives related to climate action and environmental stewardship (C&E), and best practices from other communities.
  - *October 19/21:* Hosted a workshop with 35 City Staff to brainstorm a C&E corporate vision, set of priorities, and list of objectives that informed the Climate Resilience Framework.
  - *November/21:* Created the draft Climate Resilience Framework that was informed by the October 19 workshop and internal/external research.
- **Phase 3 – Analyze Current State to Determine Gaps:**
  - *July/21 – April/22:* Conducted 25 structured interviews with City Department Managers and/or Subject Matter Experts to begin analyzing the City's existing C&E related policies, programs, initiatives, systems, and resources.
  - *July/21 – April/22:* Reviewed current C&E related City policy, plans, strategies, systems, and initiatives.
  - *January/22 – June/22:* Engaged a consultant to complete a Governance Best Practice Review from other municipalities across Canada to assess governance components (e.g., staffing, funding, organizational structure, external engagement) related to C&E.
  - *January/22 – May/22:* Engaged a consultant to conduct a Policy Best Practice Review drawing on local approaches and actions being undertaken by other communities.
- **Phase 4 – Recommend Action**
  - *April/22 – July/22:* Synthesis and analysis of the initial findings to better understand and frame the character of change underway in the City, the gaps in action, and the opportunities to advance C&E efforts. This informed a revised Climate Resilience Framework and development of potential actions within the City's context.
  - *Summer/22:* Present Framework and Recommendations Report to Council.
- **Phase 5 – Implement the Recommendations**
  - To Be Determined

Appendix B

Implementation Plan

PATHWAY: Demonstrate Corporate Climate Leadership

Recommendations	Quick Starts	Priority (Importance and Urgency)	Development Timeframe	Implementation Timeframe	Estimated Operating Cost	Estimated Capital Cost	Additional Staff Needed?
Apply a Climate Lens for Decision Making across the organization	Develop a climate lens decision making tool	High Importance Medium Urgency	2-3 years	Ongoing	$50K-100K	–	Yes
	Develop an internal carbon price to guide climate friendly purchasing	High Importance Medium Urgency	3-6 months	10 years	$10K-25K	–	Yes
Reduce fleet emissions through rapid electrification of the light duty fleet	Apply an electric first purchasing policy for new light duty vehicles	High Importance High Urgency	3-6 months	10 years (potentially ongoing)	$17.2 million (vehicle lifecycle)	$34.8 million*	No
Develop 'green' standards for City facilities	Develop a sustainable building policy for new City buildings	High Importance High Urgency	3-6 months	Ongoing	$10K-25K	–	No
Expand educational resources to help residents participate in the City's climate action efforts	Develop a Resident's Guide to Climate Action	High Importance High Urgency	6 months	5 years	$10K-25K		Yes

PATHWAY: Reduce GHG Emissions

Recommendations	Quick Starts	Priority (Importance and Urgency)	Development Timeframe	Implementation Timeframe	Estimated Operating Cost	Estimated Capital Cost	Additional Staff Needed?
Prioritize efforts to decarbonize Kelowna's biggest source of emissions: Transportation	Continue to invest in transit service and active transportation infrastructure per the Transportation Master Plan	High Importance High Urgency	In progress	20 years as per TMP (in progress)	$8.04 million	$84 million	No
	Fund and implement Transportation Demand Management Initiatives	High Importance High Urgency	In progress	3-5 years	$1.5 million annually ($4.5 million-7.5 million total)	–	Yes
	Support the shift to EVs through a vast charging network	High Importance High Urgency	In progress	3-5 years	$75K annually ($225K-375K total)	$135K annually ($600K- 1 million total)	Yes

** Only a $516,398 premium comparing ICE-to-EV and ICE-to-ICE purchases over the next 10 years.*

Recommendations	Quick Starts	Priority (Importance and Urgency)	Development Timeframe	Implementation Timeframe	Estimated Operating Cost	Estimated Capital Cost	Additional Staff Needed?
Adopt a low-carbon approach to Energy Step Code	Establish an Energy Step Code Adoption Schedule with low-carbon priority	High Importance Medium Urgency	1 year	Ongoing	(Staff time only)	–	No
	Implement a Step Code Compliance Assurance Program	High Importance High Urgency	In progress	Ongoing	Consultant: $10 K-25K Staff Position: $100K	–	Yes
Bring together energy and resilience into one Home Retrofit Program	Continue to design a home retrofit program through the FCM Community Efficiency Financing Program	High Importance High Urgency	2 years (combined Program Design and Capital Program)	4 years	Program Design: up to $210,000 Capital Program: up to $5 million	–	Yes (only for Capital Program)
	Pilot a home energy coordinator support service	High Importance High Urgency	Complete	2 years	$70,000 annually ($140K total)	–	Yes
	Direct incentives to proven low-carbon technologies	High Importance High Urgency	1 month	3-5 years	$100K annually ($300K-$500K total)	–	No

PATHWAY: Adapt to a Changing Climate

Recommendations	Quick Starts	Priority (Importance and Urgency)	Development Timeframe	Implementation Timeframe	Estimated Operating Cost	Estimated Capital Cost	Additional Staff Needed?
Combine Climate Mitigation and Adaptation into one Climate Resilient Kelowna Strategy	Complete a Community Climate Vulnerability and Risk Assessment	High Importance High Urgency	6-8 months (in progress)	8 years (2023-2030)	$60K (funded)	–	No
Develop a strategy to expand blue and green infrastructure	Explore options to incorporate climate resilience in roof space for new construction	High Importance Medium Urgency	6-8 months	Ongoing	$25K-50K	–	No
Implement the Community Wildfire Resilience Plan	Expand FireSmart Program	High Importance High Urgency	3-6 months	Ongoing	$45K annually	–	No

PATHWAY: Protect and Restore Natural Areas

Recommendations	Quick Starts	Priority (Importance and Urgency)	Development Timeframe	Implementation Timeframe	Estimated Operating Cost	Estimated Capital Cost	Additional Staff Needed?
Identify and manage natural assets, species-at-risk, and critical habitat	Develop a strategy to monitor changes to sensitive ecosystems	High Importance High Urgency	3-6 months	Ongoing	$25K-50K	–	No
	Invest in relevant datasets to give a better picture of key environmental indicators	High Importance High Urgency	3-6 months	Ongoing	$120K every 3 years	–	No
	Develop a Natural Asset Management Strategy	High Importance High Urgency	1-2 years	Ongoing	100K-200K	–	No
Develop a Natural Environment Strategy with City responses to regional strategies	Inventory and develop City responses to regional and provincial natural environment strategies, such as the Okanagan Region Biodiversity Strategy, Okanagan Lake Responsibility Plan, and Central Okanagan Non-Structural Flood Mitigation Resource Guide	High Importance Medium Urgency	6-8 months (per strategy)	Ongoing	(Staff time only)	–	Yes

PATHWAY: Shift to a Circular Economy

Recommendations	Quick Starts	Priority (Importance and Urgency)	Development Timeframe	Implementation Timeframe	Estimated Operating Cost	Estimated Capital Cost	Additional Staff Needed?
Focus waste management efforts on construction and demolition debris	Complete a Construction & Demolition Debris Reuse & Recycling Feasibility Study	High Importance Medium Urgency	6-8 months	Ongoing	$35K (funded)	–	No
	Explore policy for low-carbon concrete	High Importance Medium Urgency	6-8 months	Ongoing	$10K-25K	–	No
In collaboration with regional partners, develop a Circular Economy Strategy	Participate in the Canadian Circular Cities and Regions Initiative Peer-to-Peer Network	Medium Importance High Urgency	1 month (complete)	1 year	(Staff time only)	–	No

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City of Kelowna

kelowna.ca

City of Kelowna

Climate and Environment Review:

Framework and **Recommendations** Report

August 8, 2022

Purpose

- THAT Council **receive, for information**, the staff report on the Climate and Environment Review;

- AND THAT Council **endorse the Framework and recommended initiatives** outlined in the *Climate Resilience & Environmental Stewardship Review: Framework and Recommendations Report*;

- AND FURTHER THAT Council **direct the City Manager to work with staff in bringing Recommendations and priority Quick Starts into the 2023 budget process**.

Importance

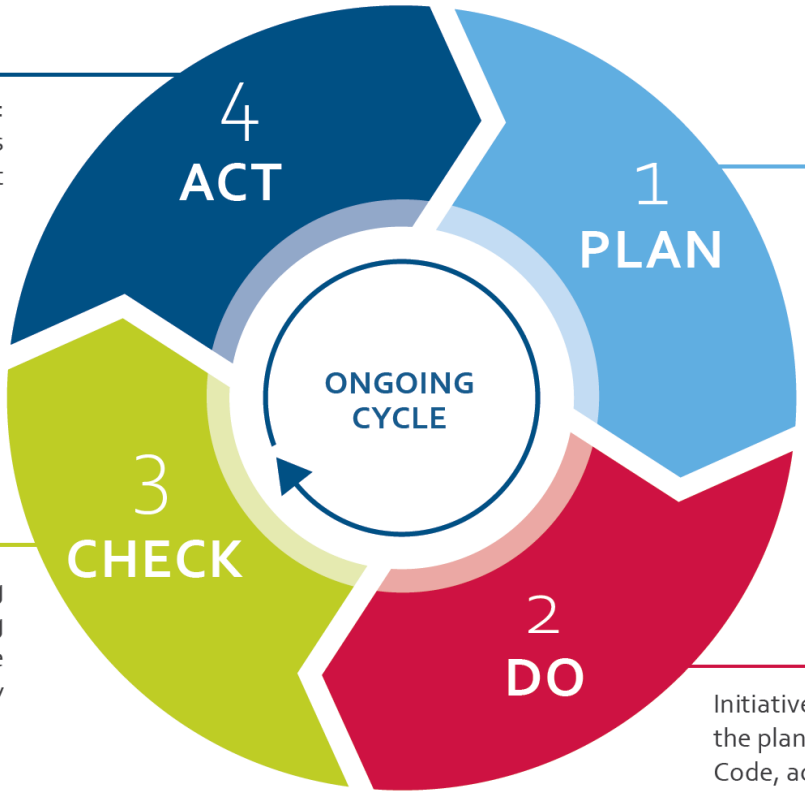
Greenhouse Gas Emissions

A Changing Climate

Impacts on Natural Areas

Waste

Motivation



Climate and Environment Review: look for opportunities for improvement

Key Plans that set the direction (e.g., Imagine Kelowna, Council Priorities, Community Climate Action Plan, Corporate Energy & Emissions Plan)

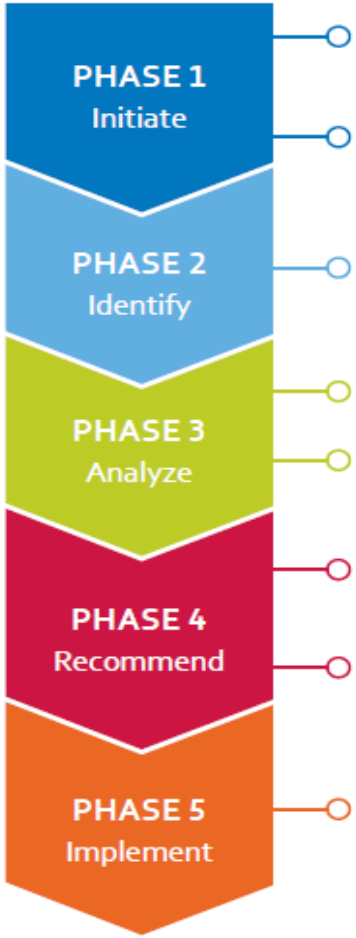
Council Priority Reporting indicates the City is not meeting all desired results of the Environmental Protection Priority

Initiatives that implement the plans (e.g., Energy Step Code, active transportation infrastructure)

Objectives

- **Establish a Framework** that will define and guide Climate Action & Environmental Stewardship (C&E) focal points.
- **Identify current gaps and future opportunities** to advance corporate C&E performance.
- **Develop recommendations/solutions** that, if implemented, will result in tangible progress related to the City's C&E objectives.

Process



Project planning

Initial Report to Council

Establish draft Framework (2nd Report to Council)

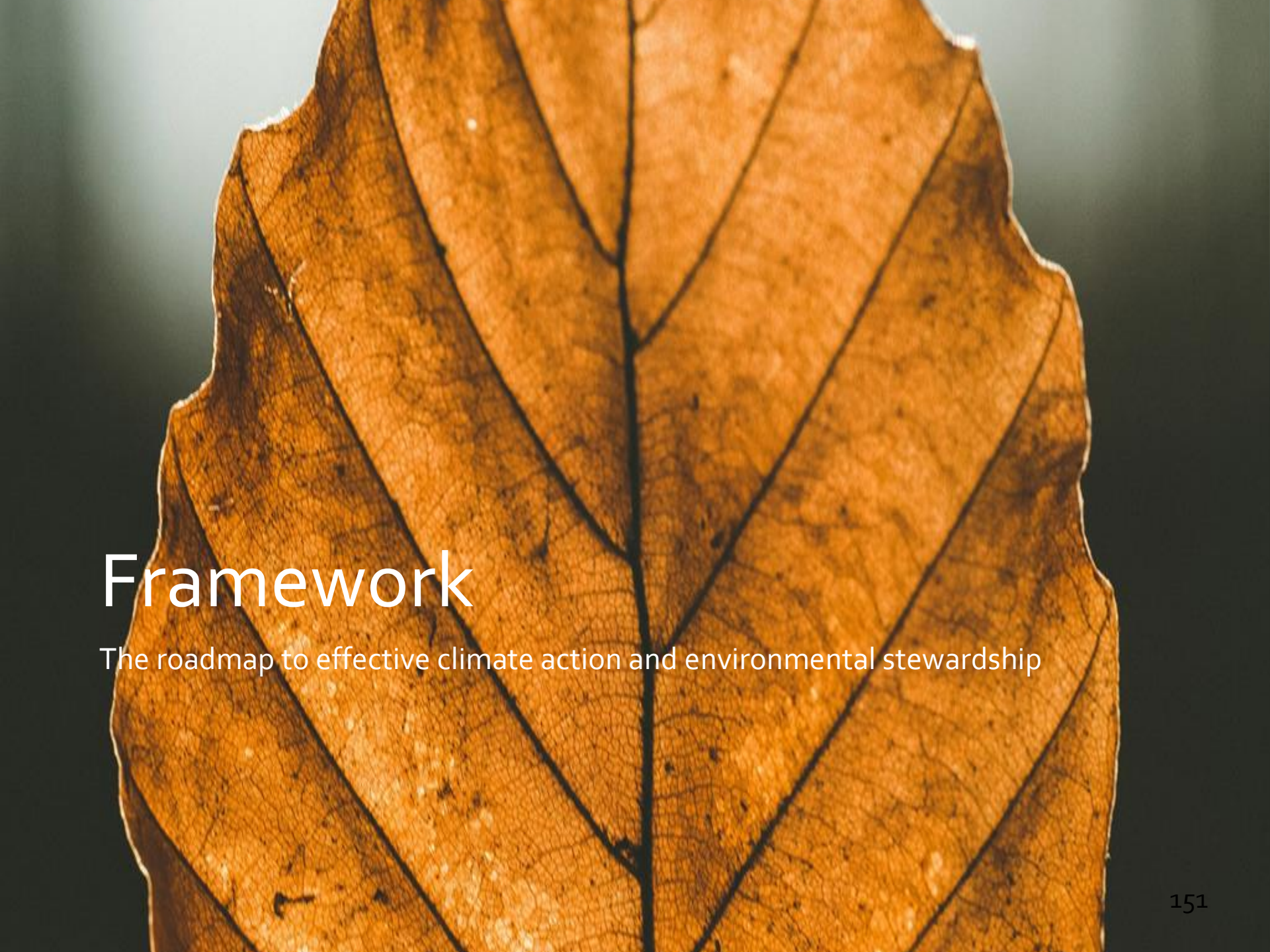
Determine current state

Identify gaps and opportunities

Final Framework

Recommendations (3rd Report to Council)

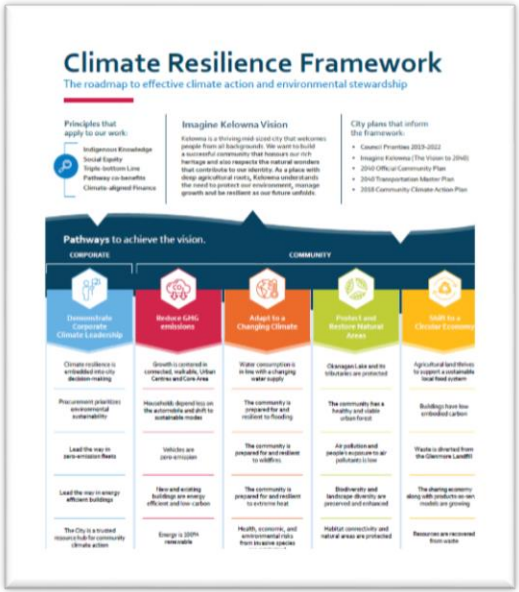
Implement priority Recommendations and Quick Starts (and identify resources and governance structure)



Framework

The roadmap to effective climate action and environmental stewardship

Framework



"Kelowna is a thriving mid-sized city that welcomes people from all backgrounds. We want to build a successful community that honours our rich heritage and also **respects the natural wonders that contribute to our identity. As a place with deep agricultural roots, Kelowna understands the need to protect our environment, manage growth and be resilient as our future unfolds."**

- Demonstrate Corporate Climate Leadership
- Reduce community GHG emissions
- Adapt to a Changing Climate
- Protect Natural Areas
- Shift to a Circular Economy

Pathways

Demonstrate Corporate Climate Leadership

- Climate Lens
- Sustainable Procurement
- Zero-Emission Fleet
- Low-Emission Buildings
- Supportive Resources

Reduce community GHG emissions

- Walkable, Connected City
- Alternative Transportation
- Zero-Emission Vehicles
- Low-Emission Buildings
- Renewable Energy

Adapt to a Changing Climate

- Water Conservation
- Flooding
- Wildfires
- Extreme Heat
- Invasive Species

Protect Natural Areas

- Okanagan Lake
- Urban Forest
- Air Quality
- Biodiversity
- Healthy Ecosystems

Shift to a Circular Economy

- Local Agriculture
- Embodied Carbon
- Waste Reduction and Diversion
- Resource Recovery from Waste
- Sharing Economy

Principles

- Recognize the value of local **syilx Indigenous Knowledge**
- Consider **Social Equity** in decision-making and implementation
- Prioritize initiatives with **"triple-bottom-line" benefits**
- Prioritize initiatives with **co-benefits between Pathways**
- Balance **short-term savings with costs of inaction**

Source: Shaw et al. (2021). A Low Carbon Resilience Decision Tool for Local Government

Use Cases

Used For:	Used By:
Policy and Plan Development	• Staff • Council
Decision-Making	• Staff (Senior Leadership Team) • Council
Action Plans	• Staff • Neighbouring local governments
Progress Reporting	• Staff • Council • Public
Communication	• Everyone
Applied Research	• Academia • Non-Profits

Recommendations

A set of recommendations that outline opportunities and "Quick Starts" to advance the Framework

Corporate Climate Leadership: **Climate Lens**

City of Kelowna

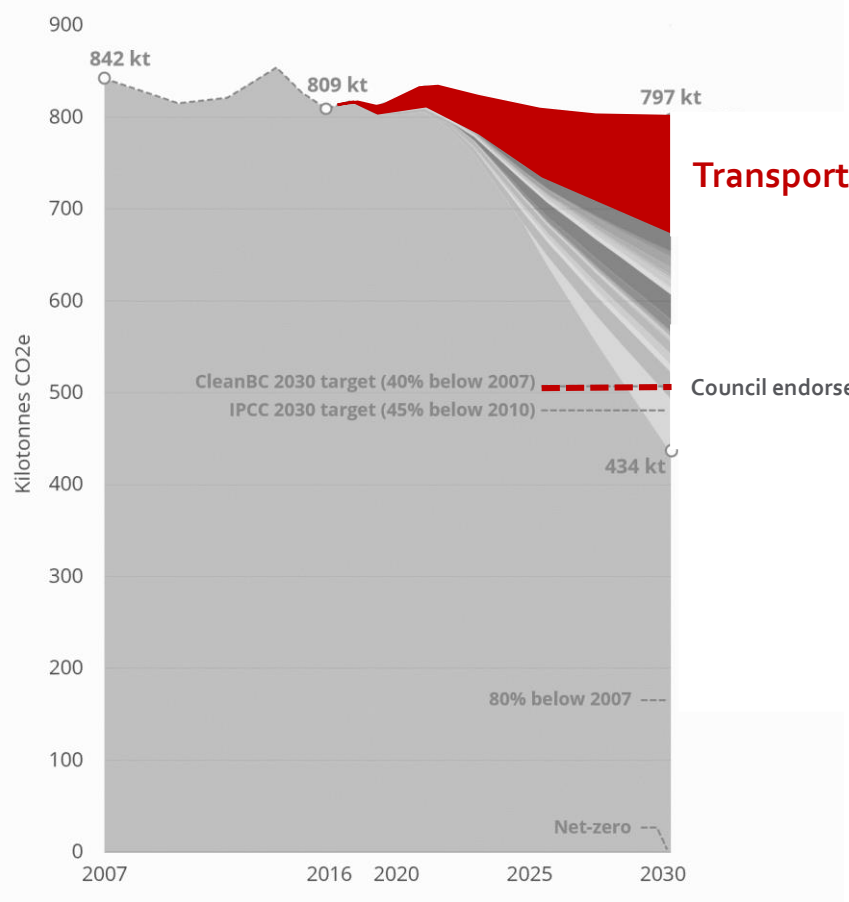
Gap	Recommendation	Quick Starts
Climate impacts and opportunities are not systematically considered in all City decisions	Apply a Climate Lens for decision making across the organization	• Develop a climate lens decision making tool • Develop an internal carbon price to guide climate-friendly purchasing

Corporate Climate Leadership - Green Standards

Gap	Recommendation	Quick Start
No standards to ensure new buildings and renovations to existing buildings are built to a defined energy or emissions standard	Develop 'green' standards for City facilities	Develop and apply a sustainable building policy for new City buildings

Reduce GHG Emissions - Transportation

Gap	Emissions reductions not at level needed to meet targets
Recommendation	Prioritize efforts to decarbonize Kelowna's biggest source of emissions: Transportation
Quick Starts	• Continue to invest in transit service and active transportation infrastructure per the TMP • Fund and implement Transportation Demand Management Initiatives • Support the shift to EVs through a vast charging network



Reduce GHG Emissions - Resilient Retrofits

Gap

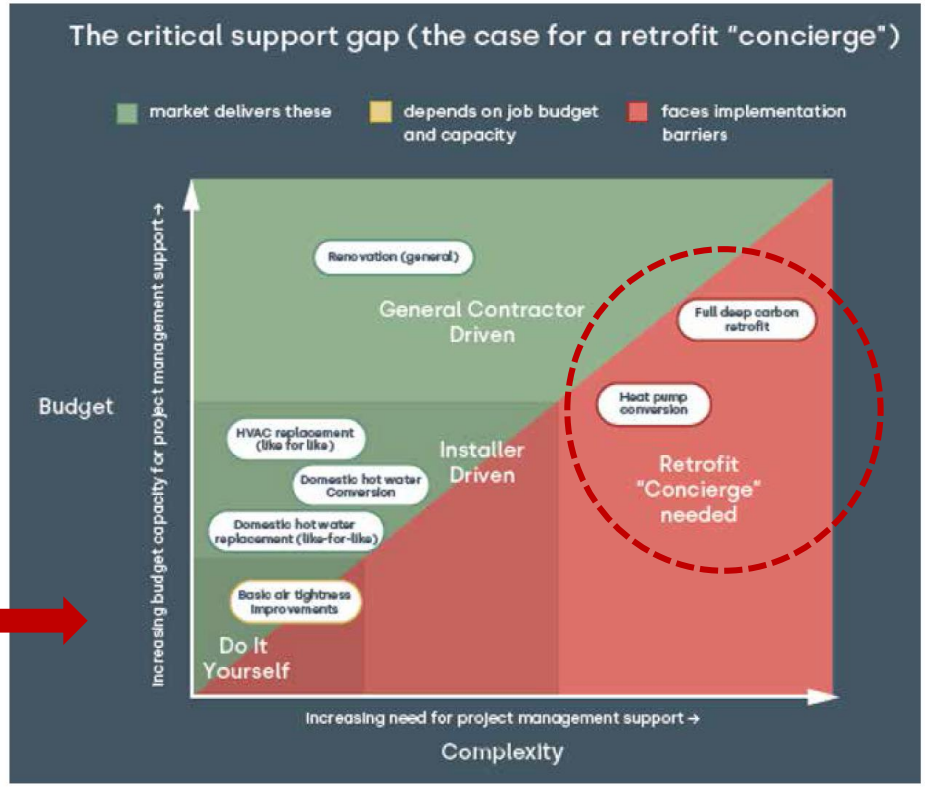
- Retrofits not occurring at the required rate and scale
- Climate resilience measures not included in retrofit programming

Recommendation

Bring together energy and resilience into one Home Retrofit Program

Quick Starts

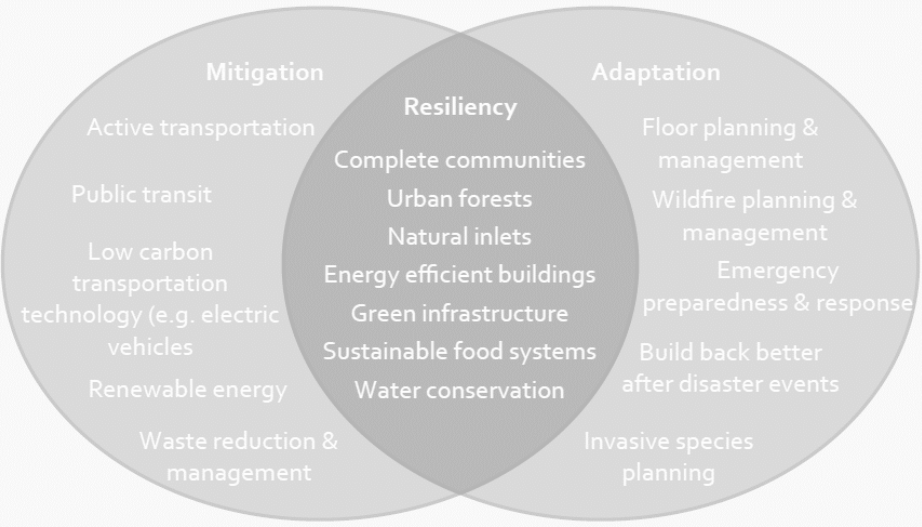
- Continue to design a home retrofit program through FCM Community Efficiency Financing Program
- Pilot a **Home Energy Concierge** support service
- Direct incentives to proven low-carbon technologies



Source: OPEN Technologies & VanCity (2022). Stuck.

Adapt to a Changing Climate - Resilience Strategy

Gap	Recommendation	Quick Start
Climate adaptation planning has not occurred at the community level, considering all potential climate impacts	Combine Climate Mitigation and Adaptation into one Strategy	Complete a Community Climate Vulnerability and Risk Assessment



Adapt to a Changing Climate - Green Infrastructure

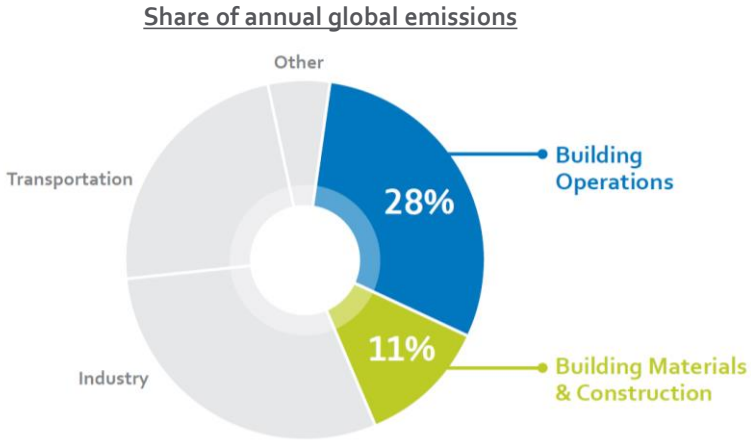
Gap	• No systematic, coordinated approach to green and blue infrastructure • No value from roof space
Recommendation	Develop a strategy to expand blue and green infrastructure
Quick Start	Explore options to incorporate climate resilience in roof space for new construction

Protect Natural Areas: **Regional Response**

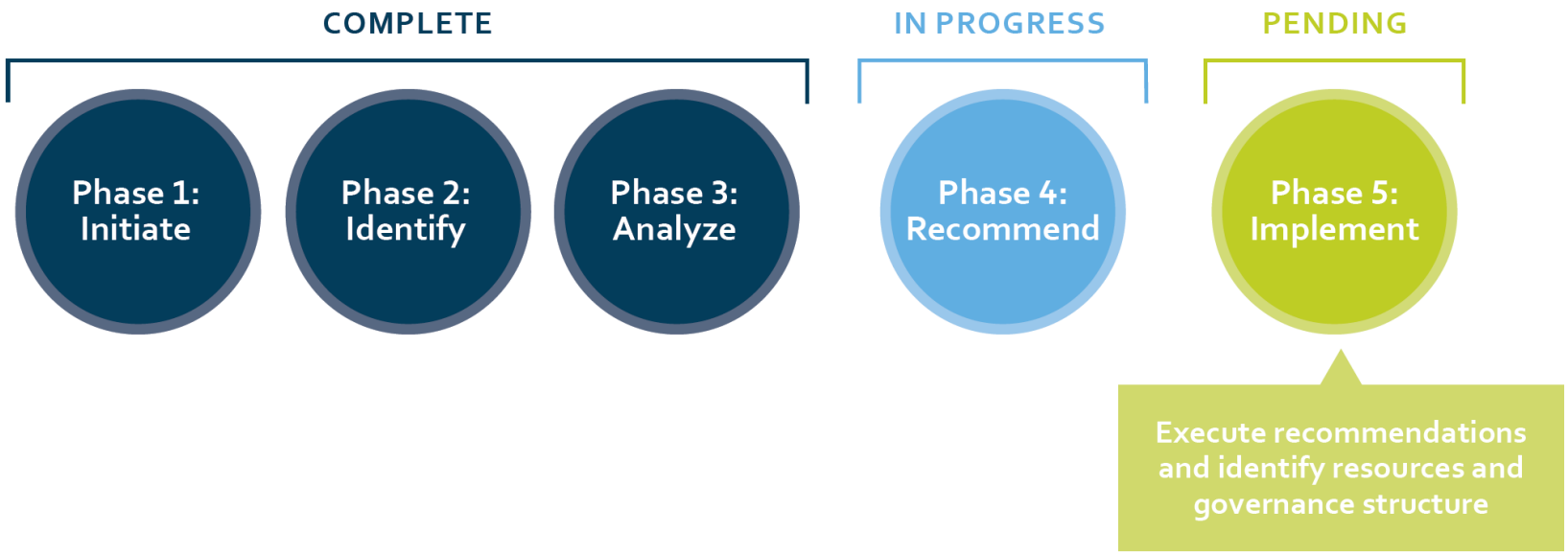
Gap	Recommendation	Quick Start
Many recommended initiatives from regional strategies related to the natural environment not addressed by the City	Develop a Natural Environment Strategy with City responses to key regional or provincial plans and strategies	Inventory and develop City responses to regional and provincial natural environment strategies. For example: • Okanagan Region Biodiversity Strategy • kɬúsx̌nítkʷ (Okanagan Lake) Responsibility Planning Initiative • Central Okanagan Non-Structural Flood Mitigation Resource Guide

Shift to a Circular Economy - Construction Waste

Gap	Recommendation	Quick Start
~35-40% of waste disposed at the landfill is construction and demolition debris (CDD)	Focus waste reduction diversion efforts on CDD	• Complete a CDD Reuse & Recycling Feasibility Study • Explore policy for low-carbon concrete



Next Steps


COMPLETE
IN PROGRESS
PENDING
Phase 1: Initiate
Phase 2: Identify
Phase 3: Analyze
Phase 4: Recommend
Phase 5: Implement
Execute recommendations and identify resources and governance structure

Questions?

Report to Council

Date:	August 8, 2022
To:	Council
From:	City Manager
Subject:	Community Wildfire Resiliency Plan Update
Department:	Parks Services

Recommendation:

THAT Council receives, for information, the report from the Parks Services Department, dated August 8, 2022, with respect to the 2022 Community Wildfire Resiliency Plan;

AND THAT Council endorse the 2022 Community Wildfire Resiliency Plan as attached to the report from the Parks Services Department dated August 8, 2022;

Purpose:

For Council to update the previous Community Wildfire Protection Plan with the Community Wildfire Resiliency Plan for the next 5 years.

Background:

Community Wildfire Protection Plans are strategic five-year documents that define the risk from wildfires in an identified area, identify measures necessary to mitigate those risks, and outline a plan of action to be implemented. Recently, the format and title of these plans has changed to Community Wildfire Resiliency Plans (CWRP) to better reflect that wildfire is both an integral and pervasive event that communities must be able to manage effectively, particularly in the face of climate change.

The first Community Wildfire Protection Plan (CWPP) for Kelowna was completed in 2004, following the devastating 2003 fire season and in response to recommendations made by the FireStorm 2003 Provincial Review. The City of Kelowna undertook updates to the CWPP in 2011 and 2016.

Discussion:
Works Completed from 2016 to 2021

Many of the 47 prioritized recommendations of the 2016 CWPP have been addressed, across categories including:

- enhanced public and elected official awareness and understanding of wildfire risk in our community,
- improved structural planning and protection of critical infrastructure,
- ongoing emergency preparedness for emergency evacuations,
- wildland fire training for Kelowna Fire Department members,
- municipal policy and planning review, and
- fuels management activities on both public and private lands.

Of particular note, in the past five years the City has:

- completed approximately 125 hectares of forest fuel mitigation including all of Knox Mountain Park East,
- completed a review of the Wildfire Development Permit process,
- developed a Total Access Plan for strategic suppression planning, and
- implemented a pilot targeted grazing project near Gallagher's to address grass fuels.

Current Issues:
The City of Kelowna continues to face challenging and pressing wildfire risk due to both the natural environment and development into the wildland urban interface. We are located in a fire-dependent region that has historically relied on frequent, light intensity fires to maintain the health of our ecosystem. Years of suppressed fire and fuel buildup has led to higher risk of severe fires when they occur, resulting in increased impact to landscape and more difficult conditions for suppression. Climate change exacerbates this situation through fluctuating weather patterns that impact fire behaviour, particularly prolonged drought and increased summer temperatures.

With respect to the built environment, the City has a number of interface and intermix neighbourhoods that require comprehensive wildfire mitigation actions. Wildfires pose a risk to homes in these areas directly from adjacent forest or grassland, or through ember showers that can travel up to two kilometers from active fire. Recommendations made within the new CWRP provide guidance on reducing risk and improving conditions for suppression efforts in these existing neighbourhoods and align with the 2040 Official Community Plan that provides foundational strategic direction in limiting growth in interface areas.

Key Actions in the Next Five-Year Plan:
The new CWRP has been developed in accordance with provincial guidelines to provide an updated action plan for proactive protection of our community, infrastructure and natural landscape. The CWRP identifies 16 high priority items, 20 moderate priority items and seven low priority action items, categorized by lead agency and timeframe. Progress has been achieved or is ongoing for several actions, including the development of a dedicated FireSmart webpage (kelowna.ca/firesmart), updating our Urban Forest Management Strategy, interagency collaboration and provision of support to citizens to remove hazardous vegetation from their private properties. Key priority items for completion over the next five years include:

- Completion of a Municipal Evacuation Plan

- Adoption of the Wildfire Development Permit Terms of Reference document
- Completion of FireSmart assessments of critical infrastructure
- Continued multi-agency wildland fire training within the Kelowna Fire Department
- Complete a community water delivery assessment for suppression requirements across all four water purveyors

A full list of the 43 recommendations can be found in Table 1 of the attached 2022 CWRP.

Conclusion:
The next step is to review priority items with associated projected timelines and coordinate resourcing and funding requirements for completion.

Internal Circulation:
Communications
Planning & Development Services
Fire Department
Infrastructure Operations Department
Park Services
Policy and Planning Department
Urban Forestry
Utility Services

Considerations applicable to this report:

Existing Policy:
2016 Community Wildfire Protection Plan

Financial/Budgetary Considerations:
Where possible, completion of actions items will be covered through existing internal operating funds. Larger projects and/or activities requiring additional input will be provided for through continued Community Resiliency Investment grant applications, alternative grant applications or capital budget requests.

Considerations not applicable to this report:
Legal/Statutory Authority:
Legal/Statutory Procedural Requirements:
External Agency/Public Comments:
Communications Comments:

Submitted by: T. Bergeson, Urban Forestry Technician

Approved for inclusion: M. Logan, Infrastructure Delivery General Manager

Schedule 1 – 2022 Community Wildfire Resiliency Plan

cc: Acting Divisional Director, Financial Services
City Clerk
Divisional Director, Corporate and Protective Services
Divisional Director, Corporate Strategic Services
Divisional Director, Partnership & Investments
Divisional Director, Planning & Development Services
Fire Chief

Community Wildfire Resiliency Plan

City of Kelowna

June 10, 2022

DRAFT

Submitted by:

B.A. Blackwell & Associates Ltd.
270 – 18 Gostick Place
North Vancouver, BC, V7M 3G3

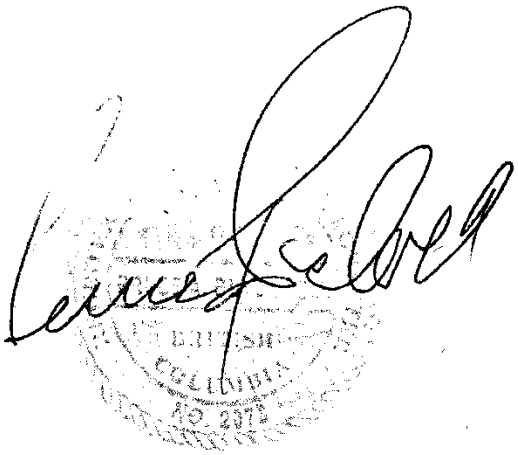
Submitted To:

Tara Bergeson – Parks Department
1359 K.L.O. Road
Kelowna, BC V1W 3N8

B.A. Blackwell & Associates Ltd.

City of Kelowna

REGISTERED PROFESSIONAL SIGN AND SEAL

RPF PRINTED NAME	
Bruce Blackwell	2073
DATE SIGNED	
June 29, 2022	
I certify that the work described herein fulfills the standards expected of a member of the Association of British Columbia Forest Professionals and that I did personally supervise the work.	
Registered Professional Forester Signature and Seal	
	

Cover Photo Credit: Shawn Talbot Photography, https://shawntalbot.com/ ; Image granted on a one-time usage for the CWRP. Images may not be shared with any third parties or for any additional use.

ACKNOWLEDGEMENTS

The authors would like to thank Tara Bergeson (Urban Forester) and Andrew Hunsberger (Urban Forestry Supervisor) for their direct involvement with planning, reviewing, and contributing to this Community Wildfire Resiliency Plan. The authors would also like to thank: Scott Cronquist (Deputy Fire Chief), Rick Euper (Fire & Life Safety Educator), and Travis Whiting (Fire Chief); and Tracy Guidi (Sustainability Coordinator); Chris Ray (Community Energy Specialist); Dean Strachan (Community Planning & Development Manager); Danielle Noble Brandt (Policy & Planning Department Manager); Ian Wilson (Infrastructure Operations Manager); and Christine Matte (Community Communications Manager); Ben Sandy (Wildfire Assistant – Penticton Zone) and Wayne Darlington (Manager of Park Planning, Capital Projects, and Visitor Services – Regional District of Central Okanagan) for their contribution to the plan. Some contributed through participation with the City of Kelowna Community FireSmart Resiliency Committee and others through separate correspondence and information sharing.

This report would not be possible without the Community Resiliency Investment (CRI) Program and funding from the Union of British Columbia Municipalities (UBCM).

EXECUTIVE SUMMARY

The Community Wildfire Resiliency Plan (CWRP) is the latest evolution in a comprehensive wildfire risk reduction initiative throughout the Province of British Columbia. A CWRP has its roots in the Community Wildfire Protection Plan (CWPP) framework, which was originally established in BC in response to the series of devastating wildfires in 2003. Since then, many communities in BC have continued to face an ever-increasing threat of wildfire, as the 2017, 2018, and 2021 fire seasons proved to be three of the most historically damaging seasons on record. CWRPs are currently being developed at many jurisdictional and geographic scales, and are individually tailored to address the needs of different communities in response to their size, their capacity, and the unique threats that they face. Despite these differences, the provincial goals of a CWRP remain the same and are founded in the seven FireSmart disciplines: Education, Legislation & Planning, Development Considerations, Interagency Cooperation, Cross-Training, Emergency Planning and Vegetation Management.

This CWRP will help to guide City Council, City staff, the Kelowna Fire Department, local residents, tourists, and stakeholders in becoming more resilient in the face of an ever-increasing wildfire threat. Recommendations for wildfire risk reduction initiatives that were made in the City of Kelowna's 2016 and 2011 CWPPs were revisited and progress was reviewed. Although achievements have been made, Kelowna continues to be exposed to a number of wildfire risks based on the natural environment and continued development into the wildland urban interface. While an improved Wildfire Development Permit process has assisted in reduction of forest fuels in the interface – including lands transferred to the City for park space – they do not currently provide for the quantification, mitigation, or management of grassland fuels. At the homeowner level, the dissemination and uptake of FireSmart programs throughout the City is low, which has frequently resulted in landscaping decisions that directly expose residents to fire hazards.

This CWRP provides an updated action plan to outline the most effective and realistic path forward to proactively protect the community, infrastructure, and natural landscape that the City of Kelowna is known for. Organized by the seven FireSmart disciplines, Table 1 below displays the key recommendations that form this action plan. The implementation of these recommendations will require a motivated and coordinated effort by multiple levels of government and stakeholders – which is a basic requirement for forming a strong and resilient community. As Kelowna is projecting substantial population growth in the immediate future and the wildfire environment is continually evolving, this CWRP should be updated within five years of adoption to capture changes in regulation, development and threat.

Table 1. The City of Kelowna's CWRP Prioritized Action Plan

Item #	Priority	Recommendation	Lead Agency	Timeframe
E1	High	**Create a FireSmart Coordinator position to oversee the delivery of a comprehensive FireSmart program.**	City of Kelowna (Parks Services, and / or Kelowna Fire Department)	1 year
E3	Moderate	**Promote FireSmart information and wildfire preparedness through social media and other outreach opportunities.**	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	Ongoing
E4	High	**Promote FireSmart information and wildfire preparedness through television or radio advertisements.**	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	Ongoing
E5	Moderate	**Host FireSmart workshop(s) for residents.**	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	Ongoing (two workshops could be hosted in a 5-year timeline).
E6	Moderate	**Give FireSmart presentations in local schools.**	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department), School District 23	Ongoing
E7	High	**Engage directly with residents in priority neighborhoods to offer Home Ignition Zone assessments and deliver wildfire preparedness information.**	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	Ongoing
E8	High	**As emergency evacuation plan(s) are completed, engage with residents to provide relevant emergency preparedness information.**	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department), RDCO	1-3 years (pending completion of evacuation planning)
E9	Low	**Engage with Kelowna Chamber of Commerce, Tourism Kelowna, and/or Destination BC to assess the potential feasibility of hosting a collaborative FireSmart campaign aimed at tourist audiences.**	City of Kelowna (Potential FireSmart coordinator, Parks Services, and / or Kelowna Fire Department), Destination BC, Tourism Kelowna	1-3 years
E10	Moderate	**Host FireSmart / wildfire preparedness booths at public events and/or festivals during the summer.**	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	Ongoing (suggest participation in 2-3 events per season)
E11	Moderate	**Promote uptake into the FireSmart Neighbourhood Recognition Program.**	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	3-5 years

Item #	Priority	Recommendation	Lead Agency	Timeframe
E12	Moderate	**Install signage at locations of recent fuel treatments**	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	Ongoing
L1	Moderate	**Update the Urban Forest Management Strategy**	City of Kelowna (Parks Services), consultant support	1-2 years
L2	Moderate	**Adopt a standard for fuel management in parks and green spaces.**	City of Kelowna (Parks Services), consultant support	1-3 years
L3	Low	**In 2026, initiate an update of this CWRP.**	City of Kelowna (Parks Services), consultant support	5 years
L4	High	**Adopt the Wildfire DP Terms of Reference.**	City of Kelowna (Planning & Development)	1-3 years
L5	High	**The Wildfire DP should Include/incorporate the construction and major renovation of new single-family homes on existing lots into the Wildfire DP process'.**	City of Kelowna (Planning & Development)	3-5 years
L6	Low	**Implement the recommendations of the Non-Structural Flood Mitigation Resource Guide**	City of Kelowna	Ongoing
L7	Low	**Amend the Subdivision, Development & Servicing Bylaw (Bylaw #7900) to include a requirement for the installation of fire hydrants outside linear parks and natural area parks.**	City of Kelowna (Planning & Development, Parks Services)	1 year
D1	High	**Engage a qualified professional (such as a Local FireSmart Representative) to update or complete formal FireSmart assessments of critical infrastructure.**	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	3-5 years
D2	Moderate	**Use fire-resistant construction materials, building design and landscaping for all critical infrastructure when completing upgrades or establishing new structures**	City of Kelowna (Engineering, Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	Ongoing
D3	Moderate	**Develop a standard for early review of prospective parks locations at the neighborhood planning stage, by Kelowna Parks Services staff.**	City of Kelowna (Potential FireSmart Coordinator, Planning & Development, Parks Services, and / or Kelowna Fire Department)	3-5 years
D4	Moderate	**Assess the feasibility of purchasing easements around subdivision boundaries in order to install perimeter trails.**	City of Kelowna (Potential FireSmart Coordinator, Planning & Development, Parks Services, and / or Kelowna Fire Department)	3-5 years
I1	Moderate	**Collaborate with the MoF, BC Parks and BCWS to promote knowledge sharing about completed and ongoing wildfire risk reduction projects near Kelowna, and to strategize mid- to long-range planning for future adjacent treatment areas.**	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department, MoF, BC Parks, BCWS	1-3 years

Item #	Priority	Recommendation	Lead Agency	Timeframe
I2	Moderate	**Schedule regular meetings of members of the Community FireSmart Resiliency Committee (CFRC).**	City of Kelowna (all parties involved in CFRC)	Ongoing (at least one meeting annually)
I3	Moderate	**Through the CFRC meetings or another planning table, initiate and maintain regular information sharing meetings with RDCO staff, and other municipalities in the Central Okanagan.**	City of Kelowna, RDCO or other municipality staff as applicable.	Ongoing (at least one meeting annually)
I4	Moderate	**Engage with operators (e.g., BC Hydro, Fortis BC) to encourage completion of FireSmart assessments for privately owned critical or hazardous infrastructure.**	City of Kelowna, RDCO, private operators	1-3 years
I5	Moderate	**Engage with Indigenous communities to identify opportunities for collaboration related to community wildfire resilience initiatives.**	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	Ongoing (at least one meeting annually)
C1	High	**Hold periodic multi-agency training exercises focused on interface wildfire incident response with BCWS and / or other mutual aid partners.**	Kelowna Fire Department	Ongoing (two in-person exercises could be held in a five-year timeframe)
C2	Moderate	**The Kelowna Fire Department should maintain and expand the annual interface wildfire training programs offered to its members, as well as continuing to support workshops and training days.**	Kelowna Fire Department	3-5 years
C3	Low	**Attend the annual FireSmart conference.**	City of Kelowna (Kelowna Fire Department, Parks Services)	Ongoing
EP1	High	**Review back up power source options for all critical infrastructure.**	City of Kelowna (Kelowna Fire Department, Utilities)	1-3 years
EP2	High	**Complete and participate in regular testing of a wildfire incident pre-plan.**	City of Kelowna (Kelowna Fire Department, Parks Services	1-3 years
EP3	High	**Evaluate the utility of adopting an electronic emergency alert system for City of Kelowna residents that is deployable by City staff.**	City of Kelowna (all parties involved in CFRC), consultant support	1 year
EP4	High	**Complete a community water delivery assessment for suppression requirements across all four water purveyors.**	City of Kelowna (Utilities), utility providers, consultant support	1-3 years
EP5	Moderate	**Based on the results of the fire flow/water availability assessment, evaluate the utility of installing dry hydrants in natural areas and acquiring lake water compatible pumps to support suppression response in more isolated areas of the municipality.**	City of Kelowna (Kelowna Fire Department, Utilities), consultant support	1-3 years

Item #	Priority	Recommendation	Lead Agency	Timeframe
EP6	Moderate	**Identify municipal buildings, such as community centers or libraries, as clean air spaces and promote their use during occurrences of poor air quality.**	City of Kelowna, RDCO	1-3 years
EP7	High	**Evaluate the feasibility of obtaining a structural protection unit (SPU) for the City.**	City of Kelowna (Kelowna Fire Department), consultant support	1 year
EP8	High	**Review, update, and regularly revise a Total Access Plan.**	City of Kelowna (Kelowna Fire Department, Parks Services), BCWS, consultant support	1-3 years
EP9	High	**Complete a municipal evacuation plan, drawing on the outcomes of the RDCO evacuation planning process (in progress, to be completed 2022).**	City of Kelowna (Kelowna Fire Department, Parks Services), consultant support	1-3 years
V1	High	**Maintain or expand the current fuel treatment program, for both forest and grass fuels.**	City of Kelowna (Parks Services)	3-5 years (ongoing)
V2	Moderate	**Offer support for residents to dispose of flammable debris and vegetation from FireSmart landscaping initiatives on private property.**	City of Kelowna (Parks Services, potential FireSmart Coordinator)	Ongoing
V3	Low	**Continue to track information on completed fuel treatments within the City of Kelowna.**	City of Kelowna (Parks Services, potential FireSmart Coordinator)	Ongoing
V4	Low	**Monitor treatment effects from the surface fuel reduction grazing trial in south Kelowna (scheduled for 2022).**	City of Kelowna, BCWS	1-3 years

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FREQUENTLY USED ACRONYMS

AOI	Area of Interest
BC	British Columbia
BCWS	British Columbia Wildfire Service
BEC	Biogeoclimatic Ecosystem Classification
CDC	Conservation Data Centre
CFFDRS	Canadian Forest Fire Danger Rating System
CFS	Community Funding and Support
CI	Critical Infrastructure
CIIZ	Critical Infrastructure Ignition Zone
CRI	Community Resiliency Investment
CWPP	Community Wildfire Protection Plan
CWRP	Community Wildfire Resiliency Planning
DP	Development Permit
EMBC	Emergency Management British Columbia
FBP	Fire Behavior Prediction System
FESBC	Forest Enhancement Society of British Columbia
FESIMS	Forest Enhancement Society Information Management System
FPA	Fire Protection Area
FSCCRP	FireSmart Canada Community Recognition Program
HIZ	Home Ignition Zone (also see Structure Ignition Zone)
HRVA	Hazard Risk and Vulnerability Analysis
KFD	Kelowna Fire Department
LRMP	Land and Resource Management Plan
MoF	Ministry of Forests
MOTI	Ministry of Transportation and Infrastructure
NDT	Natural Disturbance Type
PSTA	Provincial Strategic Threat Assessment
OCP	Official Community Plan
RDCO	Regional District of Central Okanagan
SWPI	Strategic Wildfire Prevention Initiative
UBCM	Union of British Columbia Municipalities
VAR	Values at Risk
WRR	Wildfire Risk Reduction
WUI	Wildland Urban Interface

SECTION 1: INTRODUCTION

In August of 2003, the Okanagan Mountain Park fire consumed over 25,000 hectares of forest and park land and destroyed 239 homes on the southern edge of Kelowna, thrusting the City into a focal role regarding wildfire risk reduction efforts. In response to the 2003 fire and other devastating interface wildfires, the provincial government began directing funding towards community wildfire resiliency initiatives, which have allowed jurisdictions of all sizes to proactively address their unique vulnerabilities with creative solutions. The City of Kelowna has taken advantage of these initiatives and programs, having developed Community Wildfire Protection Plans (CWPP) in 2011 through Diamond Head Consulting and through B.A. Blackwell & Associates (Blackwell) in 2016.

Kelowna has used these CWPPs to take many productive strides toward reducing the threat of wildfire to the community, but the City's exposure to wildfire still remains extreme. Each fire season in recent years has threatened the landscapes and communities of the Okanagan Valley. Evacuation orders have become the norm for multiple communities, and structure losses have been witnessed as recently as August of 2021. An ever-challenging climate, hazardous topography, and development trends that have seen growth extend further into the wildland urban interface (WUI) have put Kelowna in a difficult position. To continue addressing this challenge, Blackwell was retained by the City of Kelowna to develop this Community Wildfire Resiliency Plan (CWRP).

Figure 1. Aerial view of the 2003 Okanagan Mountain Park Fire. (Photo courtesy of NASA/GSFC/METI/Japan Space Systems, and U.S./Japan ASTER Science Team)

1.1 PLAN PURPOSE AND GOALS

The intent of this CWRP is to provide a realistic and actionable plan to guide the City of Kelowna's wildfire risk reduction initiatives through the next five years. Programs and efforts adopted through this plan will help form a foundation that can be carried forward in perpetuity to build a resilient community. While Kelowna's previous CWPPs have extensively defined the wildfire risk within the City and focused on fuel management initiatives at the stand and landscape level, this CWRP will largely focus on opportunities for increasing public awareness of this wildfire risk, increasing interagency connection, and emergency planning.

Future population growth, land use and policy decisions will guide the City in the coming years, and the importance of managing for resilience to wildfire cannot be understated. Tied to the seven FireSmart[1] Canada disciplines, this CWRP will focus on the following strategies to provide for the future resiliency of Kelowna:

1. Establishing a more robust program of FireSmart education amongst City representatives and staff, residents, and tourists, and developing a City-led program to assist residents in performing mitigation activities.
2. Assessing current legislation, regulations, and community plans as they relate to wildfire preparedness in Kelowna.
3. Strengthening interagency and inter-departmental cooperation to better coordinate risk-reduction efforts between multiple stakeholders within Kelowna, and with nearby communities.
4. Advocating for continual wildfire training within the Kelowna Fire Department (KFD), and for annual cross-training between the KFD, BC Wildfire Service (BCWS), City of Kelowna staff, and external emergency management personnel.
5. Assessing the current framework of emergency preparedness in Kelowna, and the robustness of pre-planning for small- and large-scale evacuations.
6. Expanding current vegetation management efforts within the City to include new management strategies to address grassland hazard.

CWRPs in British Columbia are funded by the Union of BC Municipalities (UBCM) under the Community Resiliency Investment (CRI) FireSmart Community Funding and Supports (FCFS) Program. As per funding requirements, this CWRP is completed according to the 2021 CRI template.

1.2 CWRP DEVELOPMENT SUMMARY

The CWRP development process consisted of four general phases:

1. Consultation

Key players were assembled to form Kelowna's Community FireSmart Resiliency Committee (CFRC). The CFRC for Kelowna's includes the key planners and responders involved in Kelowna's local FireSmart initiatives, wildfire resiliency planning, and wildfire and emergency response management. The CFRC is further described in Section 5.4.

Meetings and interviews were planned to obtain information on wildfire risk mitigation initiatives currently in place or completed, review existing plans, policies, bylaws, and current resources, identify areas of concern and vulnerabilities, and to determine priorities and potential mitigation strategies. Members of the CFRC were consulted at the onset of the project planning phase via questionnaires, and

[1] FireSmart™ and the FireSmart logo are registered trademarks of Partners in Protection Association (PiP)

on an ongoing basis throughout plan development. The CFRC was integral in the CWRP review process and approval.

Information sharing took place with First Nations identified through the consultation area database regarding the locations of potential fuel treatments and to identify any potential cultural values at risk requiring protection.

2) Review of Relevant Plans and Legislation

All municipal, regional, and provincial bylaws, policies, plans, and guidelines were reviewed, and sections within that are relevant to the CWRP are identified (Section 2: Relationship to Other Plans and Legislation).

3) Identification of Values at Risk and Wildfire Risk Assessment

The identified values at risk are described in Section 3.2: Values at Risk and concepts of wildfire threat and risk are elaborated on in Section 4: Wildfire Risk Assessment. The wildfire threat to Kelowna was assessed through a combination of the following approaches:

- Natural fire regime and ecology
- Provincial Strategic Threat Analysis
- Local wildfire threat assessment.

4) Developing an Action Plan

An effective wildfire risk reduction action plan (including leading and participating entities, a timeframe for action/completion, metric for success, and estimated cost and/or hours to complete) was developed considering a full range of activities relating to the following seven FireSmart disciplines:

- Education (Section 5.1)
- Legislation and Planning (Section 5.2)
- Development Considerations (Section 5.3)
- Interagency Cooperation (Section 5.4)
- Cross-training (Section 5.5)
- Emergency Planning (Section 5.6)
- Vegetation Management (Section 5.7)

The CFRC should continue to meet periodically, as needed to coordinate the fulfillment of this report's recommendations (consider annually or bi-annually, before or during the fire season – per recommendation in Table 17).

SECTION 2: RELATIONSHIP TO OTHER PLANS AND LEGISLATION

Wildfire can affect all aspects of a community. As a result, there are many plans that relate to this CWRP. The intent of this section is to review all municipal, regional, and provincial bylaws, policies, plans, and guidelines and identify any sections that are relevant to wildfire emergency planning and response.

2.1 LOCAL AUTHORITY EMERGENCY PLAN

The Central Okanagan Regional Emergency Plan is administered by the KFD, and is the guiding plan for emergency response and post-emergency recovery. This is a comprehensive plan shared with the City of West Kelowna, Peachland, Lake Country, and Westbank First Nation. Revised in 2020 and tested with evacuations in the 2021 wildfire season, this plan defines operations of the Emergency Operations Centre (EOC), and addresses local states of emergency and emergency communications. No additional Kelowna-specific emergency and/or evacuation plans exist, and this emergency plan will not be directly discussed any further in this CWRP.

2.2 LINKAGES TO OTHER CWPPS/CWRPS

As mentioned earlier, this CWRP is the latest evolution of Kelowna's 2011 CWPP and the 2016 CWPP. The assessments and methodologies from those two reports have been considered throughout the development of this document. The work put into those documents has helped pave the way for mitigation efforts within and adjacent to Kelowna; ten years after the 2011 CWPP, the successes and challenges of implementing the various recommendations has formed the backbone for this CWRP action plan.

Within the City of Kelowna boundaries, there are a number of parks and natural areas managed by the Regional District of Central Okanagan (RDCO). A CWPP was developed for these areas in 2020 by Cabin Forestry, and will be referenced later in this document. As well, communities and regional districts up and down the Okanagan Valley have completed CWPPs, and a wide array of land managers (municipalities, First Nations, government, forest licensees, conservation groups etc.) have performed a variety of measures to become more resilient to wildfire. Recommendations in this CWRP should be assessed through a synergistic approach with neighbouring jurisdictions where appropriate.

2.3 CITY OF KELOWNA 2040 OFFICIAL COMMUNITY PLAN

Early in 2022, Kelowna adopted a new Official Community Plan (OCP) which will shape the growth, land uses, and policies that will guide the City through the year 2040.

The OCP was developed around 10 foundational "Pillars", three of which have direct relevance to the purpose and goals of this CWRP.

1. *Stop planning suburban neighbourhoods.*
    I. *Limiting urban sprawl into suburban and rural neighbourhoods will limit population in these wildland urban interface (WUI areas.*
2. *Protect and restore our environment*
    I. *Protecting Kelowna's land, water, and air, and restoring ecosystems to a healthier state.*
3. *Take action on climate*
    I. *Becoming a more resilient community in the face of a changing climate*.

Table 2 provides a summary of objectives and policies from Kelowna's 2040 OCP that are directly relevant to this CWRP and have influenced our decisions. These objectives and policies will be frequently referenced in the remainder of the document.

Table 2. Summary of objectives and policies from Kelowna's 2040 OCP, with relevance to this CWRP.

OCP Objective	Relationship to CWRP
Objective 7.1: *Enable the completion of planned suburban neighbourhoods.*	• Policy 7.1.1 supports the review of, and amendments to, adopted Area Structure Plans for Suburban neighbourhoods. • *Area Structure Plans are long range planning documents that provide direction for development. Review and amendment of Area Structure Plans are tools the City can use to influence the course of development in the wildland urban interface in Kelowna.*
Objective 7.2: *Design suburban neighbourhoods to be low impact, context sensitive and adaptable.*	• Under this objective, policies note various ways neighborhood design should adapt to local features, such as steep slopes and proximity to the Kelowna airport. • *Wildfire hazard and proximity wildland-urban interface are additional local features to which suburban neighborhoods should be adapted.*
Objective 7.10: *Maintain connectivity for emergency response and evacuation.*	• Under this objective, policies mandate that road networks in suburban areas be designed to allow for multiple points of access/egress to facilitate emergency response and to support evacuations. • *Emergency response and evacuation planning are two key components of effective community wildfire resilience planning.*
Objective 9.2:	• Under this objective, policies support applying an indigenous lens when undertaking 2040 OCP

OCP Objective	Relationship to CWRP
Strengthen the relationship with the syilx/Okanagan people through initiatives and processes to advance and support reconciliation.	implementation actions, and recognizing documents such as Calls to Action from the Truth and Reconciliation Commission and the United Nations Declaration on the Rights of Indigenous People when implementing OCP actions. • *Information sharing, consultation, and cooperation with First Nations is supported by FireSmart interagency cooperation.*
Objective 9.3: *Develop diverse partnerships to advance complex social planning issues and increase community wellbeing.*	• Under this objective, policies support pursuing government partnerships, involving multiple stakeholders, engaging the community, and coordinating programs regionally. • *Interagency Cooperation is one of the seven FireSmart disciplines.*
Objective 10.1: *Acquire new parks to enhance livability throughout the city.*	• Policy 10.1.3 requires that priority future park locations of future are those that are connected to existing parks, and provide lake or linear park access. • Policy 10.1.6 requires that in phased developments, future parks and open space networks should be identified and confirmed through zoning. • Policy 10.1.15 aims to ensure that wildfire hazards are mitigated prior to property acquisition by Kelowna and that they have adequate access for maintenance and linear trails. • Policy 10.1.20 mandates avoiding locating public utilities in parks and natural open spaces unless overall public benefit and environmental management best practices can be demonstrated. • *Policies relating to park acquisition strategy and park location selection, and policy to ensure wildfire hazards are mitigated prior to park acquisition by Kelowna are strategies aligned with FireSmart development considerations.*
Objective 10.2: *Ensure parks and public spaces are connected to each other and accessible for all citizens.*	• Policy 10.2.10 aims to optimize trail locations next to developments for multiple objectives, including to provide a wildfire fuel break. • *Policy 10.2.10 aligns with FireSmart development considerations.*
Objective 10.5: *Encourage partnerships to acquire and deliver parks and public spaces.*	• Policy 10.5.2 supports the acquisition of RDCO lands to protect sensitive ecosystems. • *Land acquisition will introduce new areas for which Kelowna should consider pre-existing wildfire risk and FireSmart vegetation management strategies.*
Objective 12.8: *Support the community to prepare for and become resilient to the impacts of climate change.*	• Policies discuss the creation of a centralized warning system, supporting emergency planning and preparedness, preparing the community to be 72-hour reliant, and creating strong neighbourhoods.

OCP Objective	Relationship to CWRP
	• *Policies align with considerations for FireSmart emergency planning*
Objective 12.11: *Increase resilience to extreme weather events.*	• Policy mandates a 'build back better' approach in the event of catastrophic loss that might occur in the event of natural disasters • *Best practices for FireSmart development considerations, and FireSmart legislation and planning is to increase resilience proactively, before catastrophic loss.*
Objective 14.2 *Protect and expand a healthy and viable urban forest.*	• Under this objective, policies support expanding and enhancing the city's tree canopy, planting indigenous vegetation, prioritizing trees in development, and connecting habitat through the urban forest. • *Best practices of FireSmart vegetation management are to follow guidelines or recommendations of a Qualified Professional to plant fire-friendly shrubs and vegetation, manage them appropriately, or remove where necessary to reduce hazard.*
Objective 14.5 *Protect and restore environmentally sensitive areas from development impacts.*	• Policies mandate that developments be designed to avoid environmentally sensitive areas, and that existing vegetation must be retained. Objective 14.5.2 notes that vegetation loss may be necessary as recommended by a qualified professional, to minimize risk, in the Wildfire Development Permit area. • *Objective 14.5.2 aligns with FireSmart vegetation management best practices.*
Objective 15.1 *Reduce wildfire risk to health and safety of the public, property and infrastructure.*	• Policy 15.1.1 requires that subdivision design incorporates wildfire hazard reduction considerations. • Policy 15.1.2 requires access and egress to at-risk neighborhoods be improved. • Policy 15.1.3 states that property-owners should be encouraged to use FireSmart principles on their properties. • Policy 15.1.4 mandates management of forest fuels, using new & conventional technologies, and traditional syilx/ Okanagan knowledge, in accordance of a changing climate. • Policy 15.1.5 requires development permits for subdivision, rezoning, or construction of multi-family, commercial, institutional and industrial development. • Policy 15.1.6 requires Guided by a QP through a wildfire hazard assessment, perform fuel mitigation on properties transferred to the City prior to the transfer. • *Policies align with multiple FireSmart disciplines.*

2.4 LOCAL BYLAWS

There are a number of local and regional bylaws that have relevance to future wildfire risk reduction efforts within the City of Kelowna. Table 3 below demonstrates a summary of these bylaws (and covenants) and remarks on their implications toward ideas within the CWRP.

Table 3. Summary of local and regional bylaws that have direct relevance to the CWRP.

Bylaw	Description and Relationship to CWRP
Fire and Life Safety Bylaw City of Kelowna, No. 10760	Any burning for the purpose of fuel reduction or hazard abatement on private or public property requires a permit and is only permitted when the venting is >65 ('Good' begins at 55).
Tree Protection Bylaw City of Kelowna, No. 8041	Historically has placed prohibitions on cutting trees within hazardous condition Development Permit Areas, unless permitted. Recommended actions within a wildfire hazard assessment supersede the prohibitions of this bylaw.
Smoke Control Regulatory Bylaw RDCO, No. 773	Administered as part of the RDCO Regional Air Quality Program – a joint initiative that Kelowna is a part of. This bylaw does not consider burning for forest fuel management or fire hazard reduction to be "open burning", and therefore does not apply. Burning under an approved community wildfire risk reduction framework can be performed under the relaxed setbacks of the Open Burning Smoke Control Regulation (OBSCR) Division 2.
Bylaw 7900 Subdivision, Development and Servicing Bylaw	• road requirements (widths, lengths allowed, etc.) • landscaping • hydrant requirements
Bylaw 6000 Zoning Bylaw	• landscape requirements

2.5 OTHER LOCAL PLANS

The City of Kelowna has a number of other local plans in place that have influenced the historic and current efforts of risk mitigation within the City, and that have also shaped the recommendations of this CWRP. These plans are developed collaboratively by a number of different City departments, with considerable input from the general public.

Table 4. Summary of additional local plans with direct relevance to the CWRP.

Plan Type	Description and Relationship to CWRP		
Area Structure Plans (ASP)	Linked to the OCP, these Plans guide new developments within Suburban Neighbourhoods and/or Rural Lands. The following ASPs have already been endorsed by Council:		
	Gallagher's Canyon Golf Resort (2001)	Quail Ridge (1994)	Kirschner Mountain (2002)
	Southwest Okanagan Mission (Neighbourhood 1 – 1996)	Highway 33 East (1997)	Bell Mountain (2003)

Plan Type	Description and Relationship to CWRP		
	Southwest Okanagan Mission (Neighbourhood 1 – 2000)	Glenmore Highlands (2000)	Vintage Landing (2005)
	Southwest Okanagan Mission (Neighbourhood 3 – 2007)	Central Park Golf Course (2000)	University South (1997)
	Tower Ranch (1993)	Canada Lands (2000)	North Clifton (2014)
Neighbourhood Plans	• Linked to the OCP, these Plans guide the development and redevelopment (generally) within the Urban Centers and Core Areas.		
Servicing Plan and Transportation Master Plan	• These two plans are being developed in conjunction with the OCP. The 2040 Servicing Plan is the plan for construction of new services or expansion of existing services to accommodate new growth. and was not available for viewing at the time of writing the CWRP. • The recently endorsed 2040 Transportation Master Plan will not be reviewed in depth. • One exclusive note references wildfires and/or evacuations, and is supportive of recommendations within this CWRP: • With reference to suburban neighbourhoods: “An entire neighbourhood may have a single point of access which creates challenges for emergency response and evacuation.” The idea of proactively considering emergency access routes alternative to public streets is discussed.		
2017 Kelowna Integrated Water Supply Plan (Strategic Value Solutions Inc.)	• Provides a plan for Kelowna to develop a city-wide integrated water system, that is more sustainable, clean, and cost-effective in response to projected population growth. • Phase 1 of this plan continues to be implemented, and has involved the construction of five new pump stations and reservoirs.		

2.6 LINKAGES TO HIGHER LEVEL PLANS AND LEGISLATION

Adopted in 2001, the Okanagan-Shuswap Land and Resource Management Plan (LRMP) provides guidance for land management decisions on Crown land within the Plan boundaries. While the majority of lands within the boundaries of this CWRP are not designated as Crown land, the objectives, ministerial orders, and non-legal planning objectives of the LRMP should be reviewed, considered, and addressed through any physical wildfire risk reduction planning. Where there are adjacent and/or overlapping values at risk, spatially explicit ministerial orders, or other notable values as defined by the LRMP, the appropriate land manager should be consulted and a collaborative solution should be developed. Table 5 will review some of the key management goals of the LRMP, and other high-level plans and legislation that are relevant to this CWRP.

Table 5. Higher Level Plans and Relevant Legislation

Plan/Legislation	Description and Relationship to CWRP

Regional District of Central Okanagan Clean Air Strategy (2015)	• Multi-jurisdictional effort to define strategies to meet set goals regarding air quality in the region. Of the sixteen strategies outlined, two are directly related to prescribed fire and fuel management:
	  ○ Aim to eliminate smoke from burning (agriculture, forestry, and land clearing)
	  ○ Aim to eliminate backyard burning in residential neighbourhoods

Okanagan-Shuswap LRMP	• Provides a framework to manage a variety of landscapes throughout the Okanagan-Shuswap corridor, to provide for a diversity of timber and non-timber forest values. Land management objectives and strategies within the LRMP that surround the municipal boundaries of Kelowna should continue to be considered within City limits. • On multiple occasions, the LRMP references the potential use of prescribed burning to achieve both fire hazard mitigation and ecosystem restoration objectives, especially in the NDT4a (grassland site series).
Okanagan-Shuswap Natural Resource District (DOS) Fire Management Plan[2]	• The Draft DOS 2021-2023 Fire Management Plan (FMP) outlines values at risk on the landscape as they relate to wildfire suppression tactics. These values are ranked between four themes: human life and safety, property and critical infrastructure, high environmental and cultural values, and resource values. • Outputs of the FMP and any resulting fire analyses may form the basis of a wildfire being categorized as a "managed wildfire". Due to the extremely high number of values at risk within the AOI of this CWRP, it is increasingly unlikely that an active wildfire would not be actioned aggressively.
Open Burning Smoke Control Regulation (OBSCR)	• Updated in recent years, the OBSCR now provides a special division for open burning under a plan for community wildfire risk reduction. When burning under an approved WRR framework, the setbacks for open burning have been relaxed. • Changes to the OBSCR have not yet been factored into the City's bylaw for open burning (Bylaw No. 10760).
BC Parks Management Plans and Fire Management Plans	• Existing plans for nearby provincial parks include the Myra Bellevue Park Management Direction Statement (2005), which describes values, management issues, and priority objectives. • BC Parks may publish park Management Plans or Fire Management Plans for provincial parks adjacent to the City of Kelowna (e.g. Okanagan Mountain Provincial Park and Myra Bellevue Provincial Park). Management Plans provide detailed strategic management direction. Fire Management Plans provide the same, but specifically deal with wildfire management issues.

[2] Draft of the 2021-2023 Okanagan-Shuswap FMP shared by Brent Lipinski, Land & Resource Coordinator, Okanagan-Shuswap Natural Resource District (Sept. 30 2021).

SECTION 3: COMMUNITY DESCRIPTION

Kelowna is a rapidly expanding city in one of the most wildfire-prone valleys in BC. According to the 2021 census, Kelowna's population has grown to 144,576, a 13.5% increase since 2016. [3] Kelowna's population is expected to increase by approximately 45,000 people and be over 180,000 by 2040. As such, the 2040 OCP targets approximately 73% of this future growth to take place within its five Urban Centres and the surrounding Core Area in the form of infill and redevelopment in existing neighbourhoods. The remainder of the city's growth would take place in suburban neighbourhoods and the Gateway district (which includes the UBCO campus) with little to no growth in rural lands. Much of the suburban neighbourhoods, Gateway and rural lands are characterized by hillsides, steep slopes and forested lands identified as wildfire interface areas.

Figure 2. Cityscape of Kelowna, looking south from downtown. The unforested band of hillside in the far background is a result of the 2003 Okanagan-Mountain Park fire. Photo Credit: Shawn Talbot Photography.

Outdoor attractions and recreation are a major draw to Kelowna for tourists, many of which are from outside BC. Published in 2020, a study by InterVISTAS on the economic impact of tourism in the greater Kelowna area estimated that 70% of tourists came from outside BC.[4] This points to a need to continue to protect the natural areas within and adjacent to the City, and ensure that wildfire preparedness, prevention, and mitigation measures are communicated to more than the permanent population. Statistics regarding home type and home ownership in Table 6 below also illustrate a requirement to build a resilience to wildfire among the rental population and across a breadth of home types.

[3] Statistics Canada, Census Profile 2021 Census of Population

[4] 2018 Economic Impact of Tourism in the GKA, InterVISTAS, 2020. Accessed from: https://assets.simpleviewinc.com/simpleview/image/upload/v1/clients/kelowna/Tourism_Kelowna_Economic_Impact_of_Tourism_Industry_2018_FINAL_22Sep2020__24db9ad2-b5d2-4b46-b1d7-1cc49a5f19e5.pdf

Table 6. Socio-economic statistics from Kelowna.

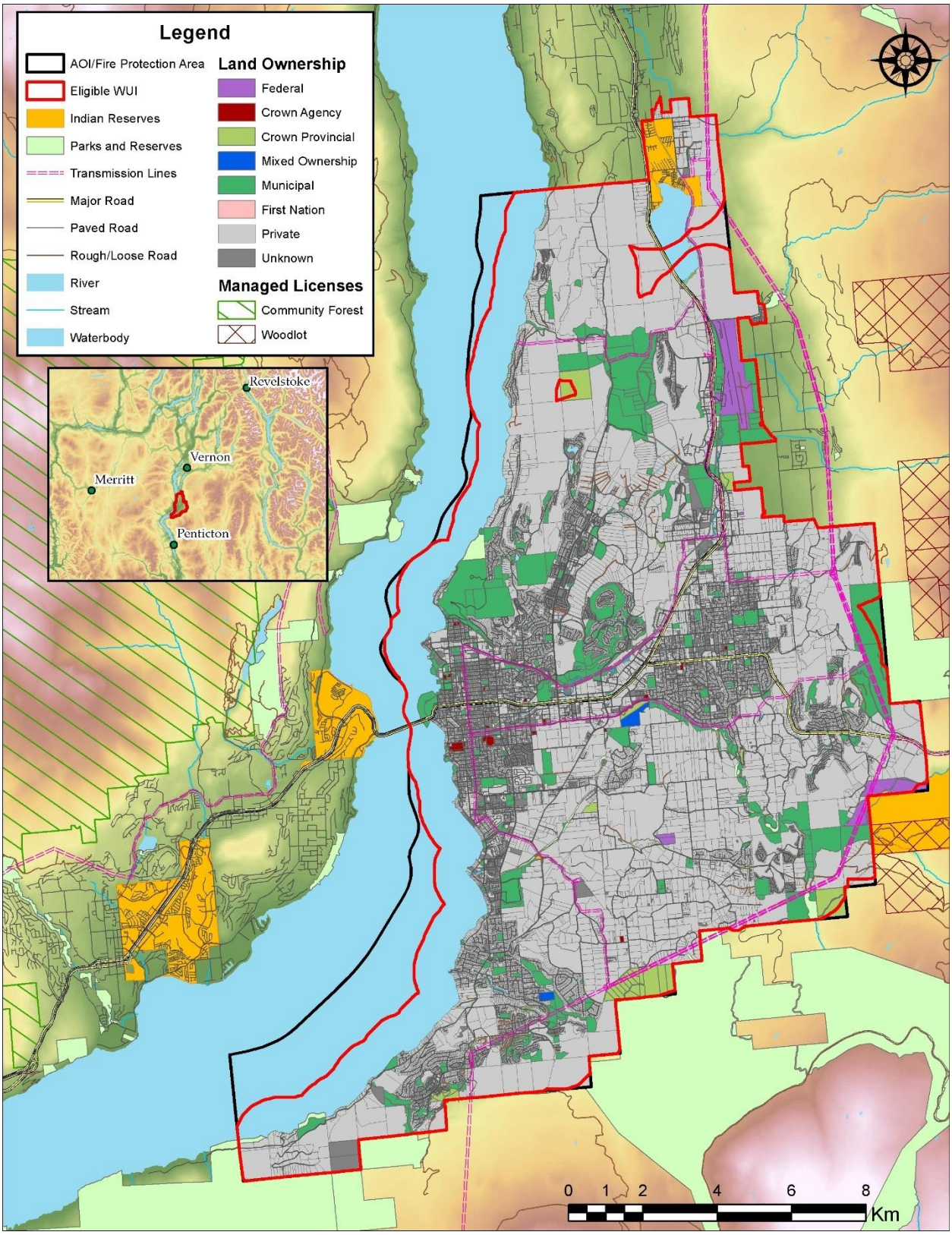
Metric	Value		Data Source
Population Age Distribution	Age 0-14 Age 15-65 Age 65+	13% 67% 20%	2021 Environics Analytics Estimates
Direct Economic Impact; Tourism Sector (2018)	Same-Day Visitors	400K	Report: 2018 Economic Impact of Tourism in the Greater Kelowna Area, InterVISTAS.
	Overnighters	2.1M	
	Visitor Spending	$443M	
	Jobs	9,210	
	GDP	$642M	
	Economic Output	$1.4B	
Homes Owned and Rented	Single-detached Homes	50%	Stats Canada, 2016 Census
	Homes owned	67%	2021 Environics Analytics Estimates
	Homes rented	33%	
Residence Type	Single-detached	44%	
	Semi-detached / row	13%	
	Apartment (low and high)	42%	
	Other dwelling type	1%	

3.1 AREA OF INTEREST AND WILDLAND-URBAN INTERFACE

The Area of Interest (AOI) for this CWRP has been restricted to the municipal boundary of Kelowna. The 2011 and 2016 CWPPs provided assessments and recommendations that included a 3-km and 2-km buffer around this boundary, respectively. While this CWRP does not extend past city boundaries, an approaching or internal wildfire will not stop at city boundaries either. It should be recognized that collaborative initiatives and decision-making with adjacent land-owners – be it private, Crown, or within a Provincial Park– is a requirement for resilience. Within the AOI, the majority of land is privately owned (77%). Large portions of private land will be developed in the future but are presently comprised of continuous tracts of forested land. Municipally-held land makes up 13.4%. First Nations lands are recorded under 'Unknown', 'First Nation', and 'Federal' ownership categories and total 270.4 ha.

Table 7. Land ownership area within Kelowna.

Land Ownership	Hectares
Crown Agency	34
Crown Provincial	732
Federal	277
Municipal	2665
Mixed Ownership	31
First Nation	2
Private	15376
Unknown	772



Map 1. Overview map of the Kelowna CWRP Area of Interest.

3.2 VALUES AT RISK

Building community wildfire resilience within Kelowna is an end-goal that begins with first providing for the safety and well-being of individual residents and tourists, and then expanding this focus to the neighbourhood and community level. Different efforts are required at different spatial and temporal scales in order to build this resilience, but will always be based on the same foundational values: human life, property, infrastructure, cultural and natural environment.

The following sections identify and describe key critical infrastructure and values-at-risk across several different categories. They summarize information made available since the 2016 CWPP draft, as well as information on newly constructed critical infrastructure unlisted in the last report. A spatial inventory of critical infrastructure was available at the time of drafting this report, while it was not available in 2016, and it provides an extensive explanation of the City's resources. After analysis, the most relevant values-at-risk are reviewed in the following sections and were used in the development of recommendations in Section 5: FireSmart Principles.

Critical infrastructure, for the purposes of this report, is defined as assets that are essential for the functioning of government and society, namely, water, food, transportation, health, energy and utilities, safety, telecommunications and information technology, government, finance, and manufacturing.[5] Within municipal boundaries, critical infrastructure provides essential services to the City on a day-to-day basis and during emergency situations. Protection of critical infrastructure and values at risk during a wildfire event is an important consideration for emergency response effectiveness, ensuring that coordinated evacuation can occur if necessary and that essential services can be maintained or restored quickly in an emergency. Critical infrastructure is shown on Map 2, Map 3, and Map 4.

3.2.1 EMERGENCY RESPONSE, PUBLIC SERVICES, AND COMMUNICATIONS

Emergency response services and infrastructure have not changed significantly since the 2016 CWPP. This includes police, fire department, ambulance service, and emergency operations centre structures, which continue to meet capacity for the City. The KFD maintains their pre-existing seven fire stations throughout the City, with Station 1 functioning as the EOC for the RDCO; however, the 2016-2030 Kelowna Fire Department Strategic Plan identifies the need to build another station in the future. Additionally, in the 2016 CWPP, nine communication towers were identified; however, there are currently several dozen privately operated cell towers throughout the AOI.

As a result of the expanded critical infrastructure inventory held by Kelowna, an increased number of critical infrastructure sites have been identified in this CWRP, compared to the 2016 CWPP. The critical infrastructure inventory includes assets operated by public (federal, provincial, and local governments)

[5] Government of British Columbia. (2016). *British Columbia Emergency Management System*. Retrieved from: https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/embc/bcems/bcems_guide_2016_final_fillable.pdf

and private agencies. Map 2 shows privately operated critical infrastructure, and cultural values at risk within the AOI, from the critical infrastructure inventory. Map 3 shows emergency response and government facilities, operated by Kelowna local government, as well as provincial and federal agencies. Map 4 shows the locations of public and privately operated utilities, as well as high environmental values (species at risk occurrences).

3.2.2 ELECTRICAL POWER

No substantial changes have occurred to electrical service for the City since 2016. Distribution still occurs through a network of wood pole transmission and underground infrastructure supplied by Fortis BC. The vulnerability of wood pole distribution lines to fire remains present.

There are several Fortis facilities to support the electric and gas pipeline distribution network within the AOI. No major FortisBC projects are planned which overlap the municipality, although upgrades are planned for a facility at Cary Road & Enterprise Way. A BC Hydro transmission line expansion project is planned for West Kelowna, with completion proposed in 2025. Although this will not service residences within the AOI, it will support resiliency for the neighboring community, with indirect benefits to Kelowna.

3.2.3 WATER AND SEWAGE

Water supply in Kelowna is split into four different water providers: the City of Kelowna Water Utility, Glenmore-Ellison Improvement District (GEID), Rutland Waterworks, and Black Mountain Irrigation District. In 2018 the SE Kelowna Irrigation District (SEKID) was dissolved, and the City Utility has taken over the assets and liabilities of water supply to SEKID customers. These four providers utilize a variety of high-elevation reservoirs and dams, groundwater supply and lake-water supply through both gravity-fed and pumping systems. Where improvements are currently being made to residential water supply (i.e., through the replacement of SEKID), presumably the supply for fire protection needs will also be increasingly sustainable, as these flows will continue to be supplied through the existing irrigation systems. As of 2019, proactive wildfire risk reduction initiatives began to take place in both the GEID and BMID, under the guidance and funding of the Forest Enhancement Society of BC (FESBC).[6]

Water Provider	Water Source & Systems	Comments
City Utility	**Okanagan Lake** Intakes: Poplar Point, Eldorado, Cedar Creek, Swick Road. Multiple pump stations and reservoirs.	**Recent upgrades/construction:** Jean Road reservoir and pump station; Stellar Drive pump station; Dall Road reservoir; Adams reservoir; Hayes reservoir; Lower Crawford pump station. **Vulnerabilities:** Power supply for the pump stations and/or ability to provide backup power sources (e.g. generator).

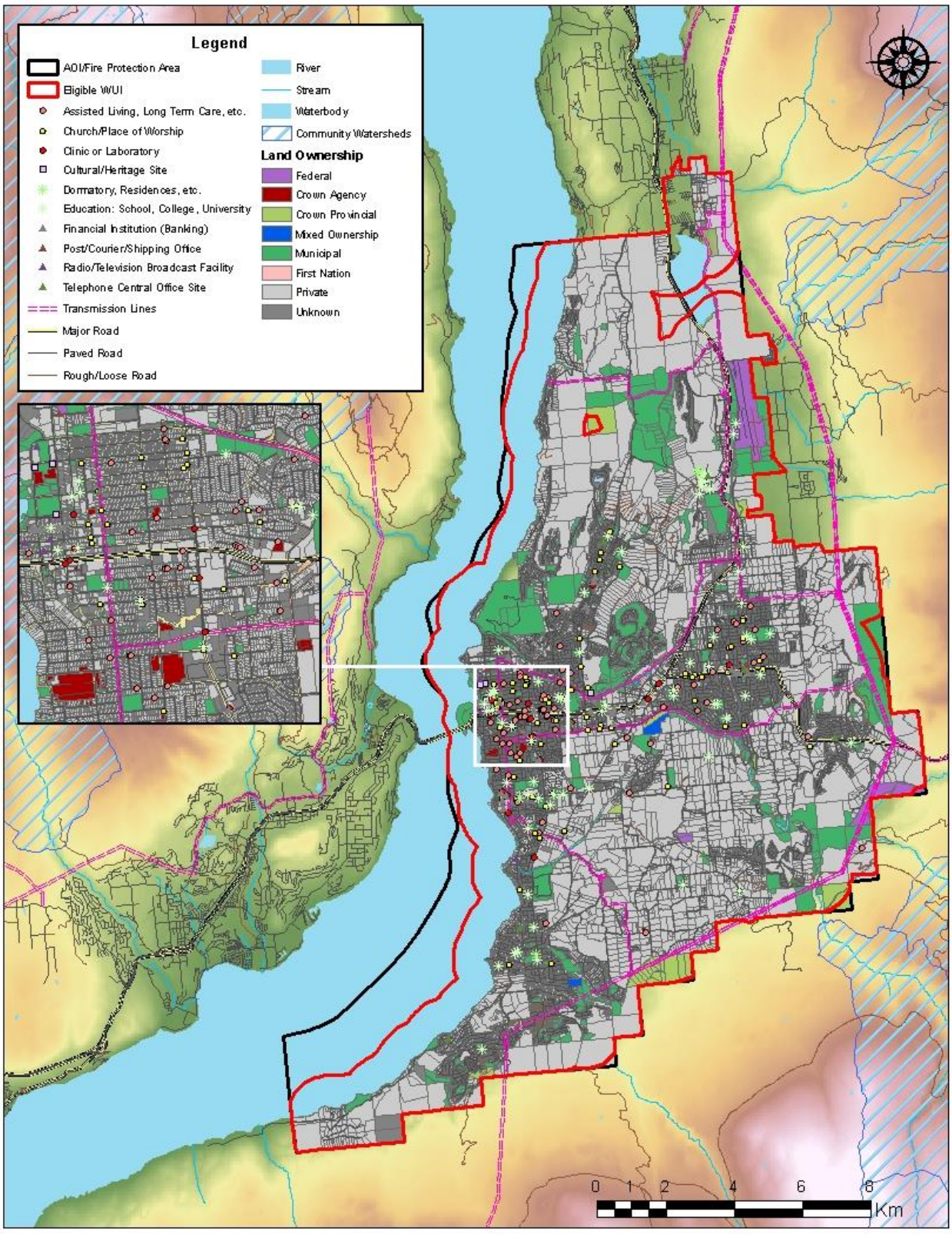
[6] Collaboration in the Okanagan is Reducing Wildfire Risk to Water Supply: https://www.fesbc.ca/collaboration-in-the-okanagan-is-reducing-wildfire-risk-to-water-supply/

GEID	**Reservoirs:** Postill, Bulman, South and McKinley. Five groundwater wells.	**Vulnerabilities:** Catastrophic wildfire in the GEID watershed. Long-term drought situations.
BMID	**Reservoirs:** Belgo, James Lake, Graystone Lake, Fishhawk Reservoir. Gravity fed through Mission Creek – distributed.	**Vulnerabilities:** Catastrophic wildfire in the BMID watershed. Affected by the 1162-hectare Derrickson Lake wildfire (2021). Long-term drought situations.
Rutland Waterworks	14 groundwater wells.	**Vulnerabilities:** Catastrophic wildfire in the source watershed. Long-term drought situations.

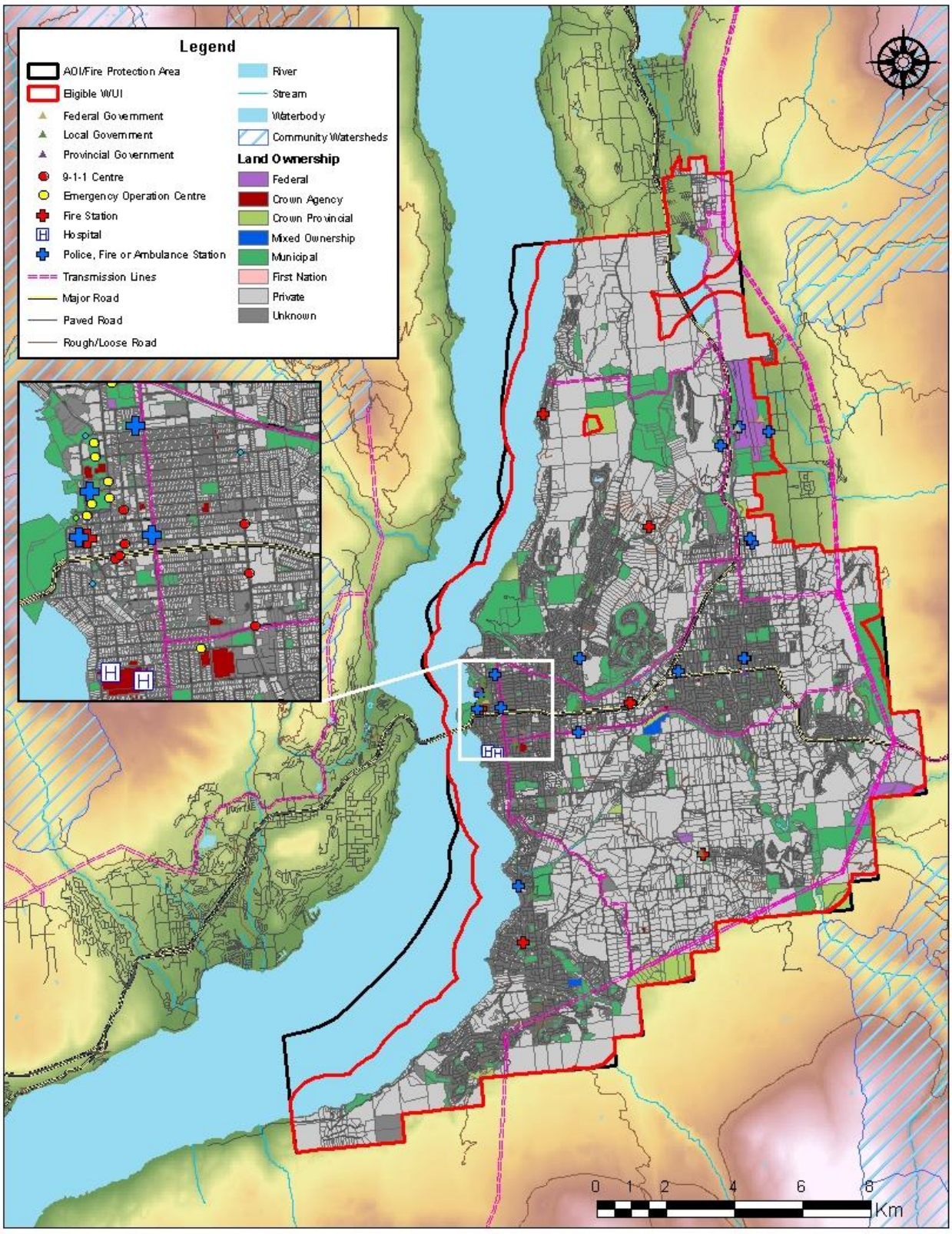
3.2.4 HAZARDOUS VALUES

Hazardous values are defined as values that pose a safety hazard to emergency responders, and protecting hazardous values from fires is important to preventing interface fire disasters. Anywhere combustible materials, explosive chemicals, gas, or oil is stored can be considered a hazardous value. These values were not specifically identified in the 2016 CWPP. Hazardous values may be considered critical infrastructure (e.g., rail yards, landfills, chlorine storage for water treatment) or they may not (e.g., large, non-essential propane facilities).

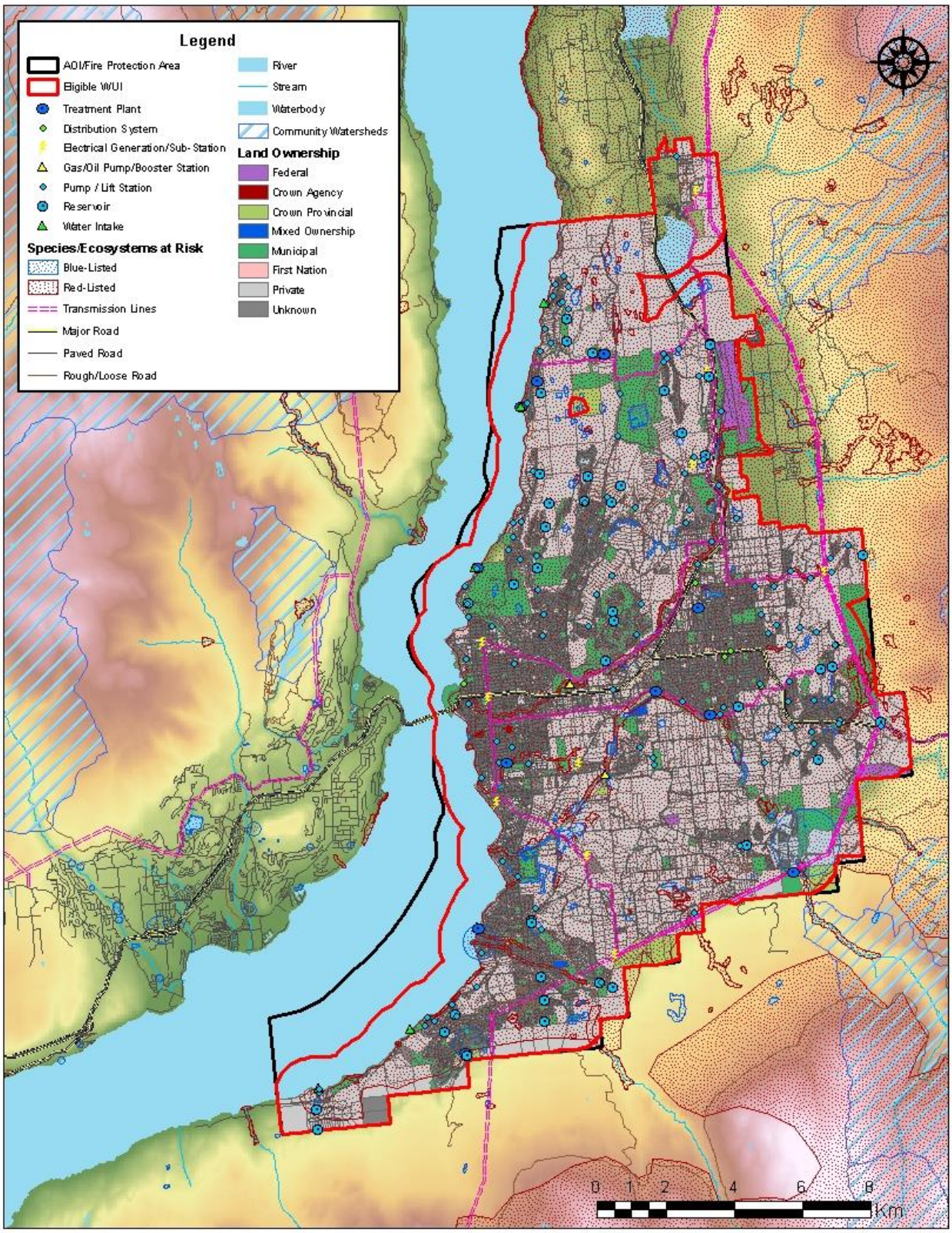
In Kelowna, important hazardous values-at-risk include: airport rescue and firefighting services at the Kelowna International Airport that are stationed to respond to incidents within or close to the airport; water treatment facilities that use chlorinators and store large quantities of chlorine; and rail yards and transmission lines that intersect the municipality as they pose a risk of ignition. In areas zoned for industrial use there are also propane storage lots, fueling stations and other commercial operations with potentially hazardous materials stored on site. In areas zoned for agricultural use within the municipality, pesticide, fuel and chemical stored on site are hazards.



Map 2. Location of critical infrastructure (private assets and cultural / heritage values) in Kelowna



Map 3. Location of critical infrastructure (emergency response and government facilities) in Kelowna.



Map 4. Location of critical infrastructure (public and private utilities) and species at risk occurrences in Kelowna.

3.2.5 CULTURAL VALUES

The City of Kelowna has recognized government buildings and galleries as cultural and heritage sites that are values at risk, including buildings that are part of the University of British Columbia's Okanagan campus. Cultural values have the potential to be impacted by wildfire through physical damage or alteration. Wildfire suppression techniques have the potential to disturb unidentified archaeological sites. If cultural values are inventoried and identified as sensitive sites, the possibility of protection and accommodation of these features in a wildfire incident is increased.

Archaeological sites in BC that pre-date 1846 are protected from disturbance, intentional and inadvertent, by the *Heritage Conservation Act* (HCA), which applies on both private and public lands. Sites that are of an unknown age that have a likely probability of dating prior to 1846 (i.e., lithic scatters) as well as Aboriginal pictographs, petroglyphs, and burials (which are likely not as old but are still considered to have historical or archaeological value) are also protected. Under the HCA, protected sites may not be damaged, altered, or moved in any way without a permit. It is a best practice that cultural heritage resources, such as culturally modified tree (CMT) sites, be inventoried and considered in both operational and strategic planning.

The provincial Archaeology Branch confirms that there are known overlaps with archeological sites within the WUI. There is also potential for previously unidentified archeological sites to exist elsewhere in the WUI. Prior to stand modification for fire hazard reduction, and depending on treatment location, preliminary reconnaissance surveys and/or archeological impact assessments may be required to ensure that cultural heritage features are not inadvertently damaged or destroyed. Fuel treatment activities must include consultation with all identified First Nations at the site level and with sufficient time for review and input regarding their rights and interests prior to prescription finalization or implementation.

3.2.6 HIGH ENVIRONMENTAL VALUES

The 2016 CWPP identified 8 occurrences of red-listed species and 12 occurrences of blue-listed species. A survey of publicly available species at risk data identified 30 occurrences of species or ecological communities at risk, shown in the table below.

Table 8. Species or Ecological Communities at Risk in Kelowna.

Scientific Name	Common Name	Category	BC List
Ardea herodias herodias	Great Blue Heron, Herodias Subspecies	Vertebrate Animal	Blue
Azolla mexicana	Mexican Mosquito Fern	Vascular Plant	Blue
Berula erecta	Cut-leaved Water-parsnip	Vascular Plant	Blue
Chrysemys picta pop. 2	Painted Turtle - Intermountain - Rocky Mountain Population	Vertebrate Animal	Blue
Coluber constrictor	North American Racer	Vertebrate Animal	Blue
Distichlis spicata - Hordeum jubatum	Alkali Saltgrass - Foxtail Barley	Ecological Community	Blue

Scientific Name	Common Name	Category	BC List
Efferia okanagana	Okanagan Efferia	Invertebrate Animal	Red
Eleocharis engelmannii	Englemann's Spike-rush	Vascular Plant	Blue
Euderma maculatum	Spotted Bat	Vertebrate Animal	Blue
Gonidea angulata	Rocky Mountain Ridged Mussel	Invertebrate Animal	Red
Juncus balticus - Carex praegracilis	Baltic Rush - Field Sedge	Ecological Community	Red
Juncus balticus - Potentilla anserina	Baltic Rush - Common Silverweed	Ecological Community	Red
Lindernia dubia var. dubia	Yellowseed False Pimpernel	Vascular Plant	Blue
Marsilea vestita	Hairy Water-clover	Vascular Plant	Blue
Megascops kennicottii macfarlanei	Western Screech-owl, Macfarlanei Subspecies	Vertebrate Animal	Blue
Melanerpes lewis	Lewis's Woodpecker	Vertebrate Animal	Blue
Pituophis catenifer deserticola	Gopher Snake, Deserticola Subspecies	Vertebrate Animal	Blue
Populus tremuloides / Symphoricarpos albus / Osmorhiza berteroi	Trembling Aspen / Common Snowberry / Mountain Sweet-cicely	Ecological Community	Red
Populus tremuloides / Symphoricarpos albus / Poa pratensis	Trembling Aspen / Common Snowberry / Kentucky Bluegrass	Ecological Community	Red
Populus trichocarpa - Pseudotsuga menziesii / Acer glabrum - Symphoricarpos albus	Black Cottonwood - Douglas fir / Douglas Maple - Common Snowberry	Ecological Community	Red
Populus trichocarpa - Pseudotsuga menziesii / Symphoricarpos albus - Cornus sericea	Black Cottonwood - Douglas-fir / Common Snowberry - Red-osier Dogwood	Ecological Community	Red
Populus trichocarpa / Symphoricarpos albus - Rosa spp.	Black Cottonwood / Common Snowberry - Roses	Ecological Community	Red
Puccinellia nuttalliana - Hordeum jubatum	Nuttall's alkaligrass - Foxtail Barley	Ecological Community	Red
Recurvirostra americana	American Avocet	Vertebrate Animal	Blue
Reithrodontomys megalotis	Western Harvest Mouse	Vertebrate Animal	Blue
Salix amygdaloides	Peach-leaf Willow	Vascular Plant	Blue
Schoenoplectus acutus - deep marsh	Hard-stemmed Bulrush Deep Marsh	Ecological Community	Blue
Spea intermontana	Great Basin Spadefoot	Vertebrate Animal	Blue
Taxidea taxus	American Badger	Vertebrate Animal	Red
Typha latifolia - marsh	Common Cattail Marsh	Ecological Community	Blue

3.2.7 OTHER RESOURCE VALUES

The AOI overlaps portions of provincial parks which extend outward into continuous tracts of forested area beyond the municipality's borders. This includes Myra Canyon Park, and Okanagan Mountain Park. These parks encompass networks of trails that see significant use by hikers, mountain bikers, dog-walkers, and other recreational traffic.

Other values in the Kelowna WUI that are at risk from the impacts of wildfire include agricultural, vineyard, and tourism operations. Each of these are affected by unstable conditions created by growing fires, as well as other adverse environmental conditions such as smoky skies that impact outdoor activities and commercial product.

SECTION 4: WILDFIRE RISK ASSESSMENT

This section summarizes the factors that contribute to local wildfire risk in the Kelowna WUI. The wildfire risk assessment provides a decision support tool to determine the most effective wildfire risk reduction actions and opportunities to increase community resilience.

The relationship between wildfire risk and wildfire threat is defined as follows:

Wildfire Risk = Consequence × Probability

Where:

Wildfire risk is the potential losses incurred to human life, property, and critical infrastructure within a community in the event of a wildfire.

Consequences are the repercussions associated with fire occurrence in an area (higher consequences are associated with densely populated areas, areas of high biodiversity, etc.).

Probability is the likelihood of fire occurring in an area and that area's ability to ignite, spread, and consume organic material in the forest – its *wildfire threat*.

Wildfire threat is driven by three major components of the wildfire environment:

- **Fuel:** quantity, size and shape, arrangement (horizontal and vertical), compactness, chemical properties, and fuel moisture.
- **Weather:** temperature, relative humidity, wind speed, and direction and rainfall.
- **Topography**: slope (increases / decreases rate of spread), and aspect (fuel dryness)

4.1 WILDFIRE ENVIRONMENT

The ecological context of wildfire and the role of fire in the local ecosystem under historical conditions, current conditions, and possible future scenarios in a changing climate, is an important basis for understanding the wildfire threat to a community.

4.1.1 TOPOGRAPHY

Slope percentage (steepness) influences a fire's trajectory and rate of spread, while slope position influences the ability of a fire to gain momentum. Other factors of topography that influence fire behaviour include aspect, elevation, and configuration of features on the landscape that can either restrict the movement of a wildfire (i.e., water bodies, rock outcrops) or drive it (i.e., valleys, exposed ridges).

As detailed in Table 9, the majority of the City of Kelowna is located on slopes less than 20%, which typically see a normal rate of wildfire spread. 9% of the municipality is likely to experience an increased rate of spread, 5% a high rate of spread, and 1% a very high rate of spread. While there are some slopes within the municipality that exceed a 60% grade, they primarily occur over small areas difficult to detect on a landscape-level mapping tool.

Table 9. Slope Percentage and Fire Behaviour Implications.

Slope	Percent of WUI	Fire Behaviour Implications
<20%	85%	Very little flame and fuel interaction caused by slope, normal rate of spread.
20-30%	9%	Flame tilt begins to preheat fuel, increase rate of spread.
30-45%	5%	Flame tilt preheats fuel and begins to bathe flames into fuel, high rate of spread.
40-60%	1%	Flame tilt preheats fuel and bathes flames into fuel, very high rate of spread.
>60%	0%	Flame tilt preheats fuel and bathes flames into fuel well upslope, extreme rate of spread.

When slope percentage is considered in context with a value's slope position, the possibility of increased fire behaviour for that value can change dramatically. For example, a value located in the upper third of a steep slope (>40%) is at high risk from a fire approaching from below due to the momentum and speed the fire can gather. Table 10 summarizes the fire behaviour implications for slope position. Residential developments in Kelowna are located at all positions due to the rolling topography of the area, however the most concerning locations are those that will see increased, fast or extreme rate of spread. These are found in the upland suburban areas.

Table 10. Slope Position of Value and Fire Behaviour Implications.

Value Position on Slope	Fire Behaviour Implications
Bottom of Slope / Valley Bottom	Impacted by normal rate of spread.
Mid-slope (bench)	Impacted by increased rate of spread. Position on a bench (broken slope) may reduce preheating near the value.
Mid-slope (continuous)	Impacted by high rate of spread; continuous slope allows for pre-heating of fuels uphill.
Upper 1/3 of slope	Impacted by extreme rate of spread. Continuous slope allows for pre-heating of fuels uphill; at risk for large continuous fire run.

4.1.2 FUEL

Private property comprises the majority of the land parcels within the municipality, and while it is beyond the scope of this report to quantitatively assess fuel loading on private land, it was anecdotally observed as a major risk factor. Fuel loading on private property includes both native (e.g., ingrown thickets of trees, mature trees with overhanging branches, some flammable conifer shrubs) and non-native vegetation (e.g. grasses, flammable conifer shrubs). Vegetation on private property is further discussed in Section 5.7 and 5.1; however, the extent and continuity of this vegetation between homes, over large areas, creates a neighborhood-level fuel loading hazard.

On City-owned medians and rights-of-way in many areas of the municipality, a primary concern is flashy grass fuels. Grass fuels may be present in treed areas, if widely spaced trees and open canopies allow for a thick grassy understory to develop (e.g. areas typed as ‘C-7’ in Map 5 and Table 11), and open spaces with no trees. In general, the fuel types considered most hazardous in terms of fire behaviour and spotting potential are high-density conifer forests (e.g. areas typed as ‘C-3’ in Map 5 and Table 11). A forest with both deciduous and coniferous trees can also be considered hazardous, depending on the proportion of conifers within the forest stand (e.g. areas typed as ‘M-1/2’ in Map 5 and Table 11). An area with no trees, purely composed of grasses and some shrubs, can often support a rapidly spreading grass or surface fire capable of damage or destruction (e.g. areas typed as ‘O1-a/b’ in Map 5 and Table 11).

Continuous tracts of forest adjacent to the municipality also present a risk. The dry forest ecosystems that comprise the outer portions of the municipality and extend into the interface area have historically been characterized by frequent, low- and mixed-severity fire regimes (see Section 4.2 Wildfire History), which periodically eradicate sapling and seedling regeneration within the stand. Due to the nature and management of much of this area (e.g., provincial park, Crown land, and private property) there has been suppression of the natural disturbance regime allowing conifer ingrowth and stand densities to increase. Recently, there have been multiple fuel management projects aimed at fuel reduction in some of these areas, particularly along the south slopes of the municipality.

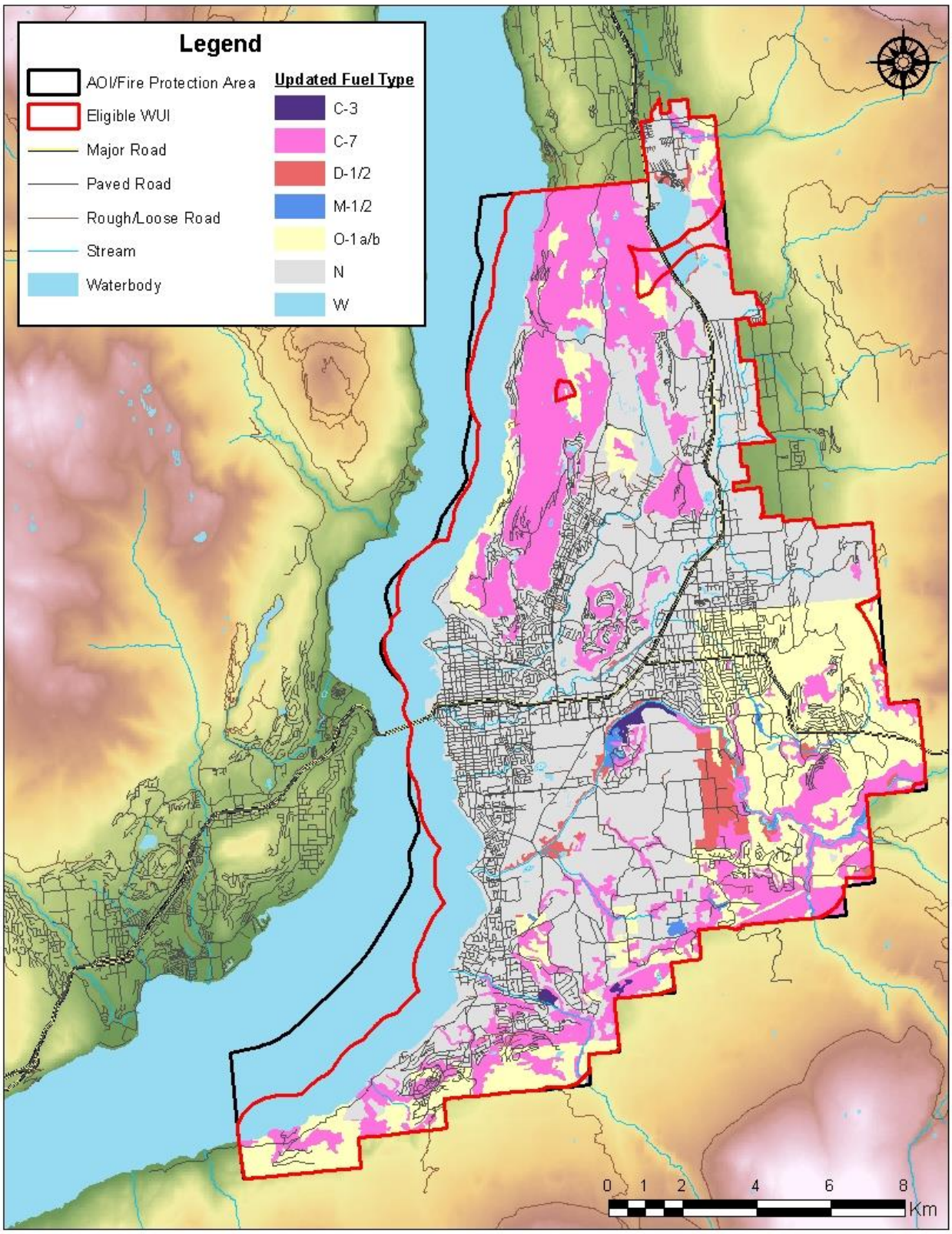
In addition to the continuous tracts of forest adjacent to the municipality, the forested areas on the east side of Okanagan Lake also presents increasing risk to Kelowna neighborhoods. Depending on conditions, a wildfire burning in forests on the east side could loft embers over Okanagan Lake to lakeshore neighborhoods in Kelowna. Lakeshore neighborhoods in Kelowna are located as close as 2.5 km from the east side. The east side of the lake is comprised of smaller communities interspersed amongst large, continuous areas of Crown Provincial land.

The area and distribution of these different forest and vegetation types has been recorded in a province-wide fuel type spatial data layer, maintained by BC Wildfire Service. This spatial data layer uses the Canadian Forest fire Behaviour Prediction System's fuel type classification, which details sixteen different forest and vegetation types and their characteristic fire behaviour under defined conditions.[7] Fuel type updates and corrections were made to the fuel type spatial data layer for this CWRP. Fuel type updates and corrections were also made to the fuel type layer for the 2016 CWPP and as a result of this recent update, few changes were required. Overall, the fuel types identified and mapped in the 2016 CWPP are similar to the fuel types identified and mapped in this CWRP. Fuel types found within the municipality are shown on Map 5, and Table 11 below.

Table 11. Fuel types present in Kelowna's WUI.

Fuel Type	Description	Area (ha)	% Of Eligible WUI
C-3	Mature forest with trees growing at moderate densities, and crowns separated from the ground	77	<1%
C-7	Open, uneven-aged forest, crowns separated from the ground except in thickets, grass & herbs in understorey	5,118	20%
D-1/2	Deciduous trees growing at moderate densities	426	2%
M-1/2	Mature forest with a mix of both deciduous and coniferous trees.	94	<1%
Non-fuel		11,228	43%
O-1a/b	Grass with sparse or scattered shrubs, long grass and woody debris	4,519	17%
Water		4,713	18%

[7] Forestry Canada Fire Danger Group. 1992. Development and Structure of the Canadian Forest Fire Behavior Prediction System: Information Report ST-X-3.



Map 5. Fuel types present in Kelowna's WUI.

4.1.3 WEATHER

The Biogeoclimatic Ecosystem Classification (BEC) system[8] is a provincial classification that divides the province into patterns of climatic envelopes, or zones. BEC zones are associated with unique climate attributes and Natural Disturbance Type regimes. The predominant disturbance agent considered in the Natural Disturbance Types is fire, although other critical disturbance agents are factored into the system.

The area overlapping the City of Kelowna is dominated by the Ponderosa Pine Very Dry Hot subzone – the driest, and in the summer the warmest, forested zone in BC (see Table 12). Similar to other communities situated in the Okanagan Valley bottom, the climate in Kelowna is dry, semi-arid, with low precipitation accumulations year-round. As a result, high and extreme danger class days are common – weather is a driving factor of wildfire in the municipality.

The area encompassing the municipality is characterized by Natural Disturbance Type 4. Natural Disturbance Type 4 represents ecosystems which normally experience frequent, low-intensity fires. Low-intensity fires occur when understory vegetation (grasses and shrubs), and woody debris is burned, but little mortality is sustained to mature plants and trees. Historically, in Natural Disturbance Type 4 ecosystems, these low-intensity fires likely occurred every 4 to 50 years. Many low-intensity fires occurred naturally, through lighting strike ignition. However, traditionally, Indigenous communities in the Okanagan area widely used controlled, low-intensity burns to manage the open forest and grassland ecosystems of their traditional territories.[9]

Table 12. BEC zones, subzones, and variants found within the WUI

Biogeoclimatic Zone	Natural Disturbance Type	Area (ha)	Percent (%)
PP xh: Ponderosa Pine, Very Dry Hot	NDT4	22,179.77	91.17%
IDF xh: Interior Douglas-fir, Very Dry Hot	NDT4	2148.31	8.83%

An important component of local weather that contributes to wildfire threat is the pattern of wind speed and timing observed throughout the fire season. High winds are common, as winds move up the lake; winds are generally weaker in the winter, and peak during the fire season. Gust speeds of 50 km / hour are not uncommon, and are generally recorded in the late afternoon or evening, overlapping with the hottest part of the day. Direction can switch diurnally during the fire season as well, with lower-speed, southerly breezes more common during the morning, switching to northwesterly gusts in the

[8] BEC Web. (2022). Ministry of Forests. https://www.for.gov.bc.ca/hre/becweb/

[9] Sylix – Okanagan Nation Alliance. 2022. *Prescribed Burns.* https://www.sylix.org/projects/prescribed-burns/

afternoon. Wind speed patterns were reviewed using data from the BC Wildfire Service, and more details are presented in Appendix A-3: Fire Spread Patterns.

Fire danger class days were analyzed in the 2016 CWPP and are presented again below. The general trends and patterns are the same and continue to support the assertion presented in the past CWPP iterations that *for about four months of the year in the summer, there is a high risk of a significant wildfire event* (June, July, August, September).

Modelling for Canada and western North America predicts that climate warming is expected to increase the frequency of fires and increase fire severity trends that have already been identified in recent years.[10,11,12] At the local level, climate projections predict trends that will increase the risk of a longer wildfire season, with a higher number of high and extreme fire danger class days throughout.[13] Key climate projections for the Okanagan include the following:

- **Considerably hotter summers**, with the number of days above 30°C expected to increase from 6 per year (historically) to 22 days per year by the 2050s.
- **Summer is expected to remain the driest season, and become drier**, with 23% less precipitation expected in the summer by the 2080s.
- **Historically rare and extreme heat events will become commonplace,** as the annual hottest daytime highs will be as warm as extreme 1-in-20 hottest day temperatures of the past.
- **Shifting seasons,** where the winter "season" is expected to shorten while the summer "season" will lengthen, with warmer annual temperatures.
- **Increased precipitation across all seasons except summer,** with an average increase during spring and autumn months of 17% by the 2080s

[10] Running, S.W. (2006). *Is global warming causing more, larger wildfires?* Science. Vol 313, Issue 5789. https://science.sciencemag.org/content/313/5789/927/tab-figures-data

[11] Westerling, A., Hidalgo, H., Cayan, D., Swetnam, T. (2006). *Warming and earlier spring increase western U.S. forest wildfire activity.* Science. Vol 313, Issue 5789. https://science.sciencemag.org/content/313/5789/940

[12] Lemmen, D., Warren, F., Bush, E., editors. (2008). *From impacts to adaptation: Canada in a changing climate.* Government of Canada.

[13] Regional District of North Okanagan, Regional District of Central Okanagan, and Regional District of Okanagan Similkameen. (2020). *Climate Projections for the Okanagan Region.*

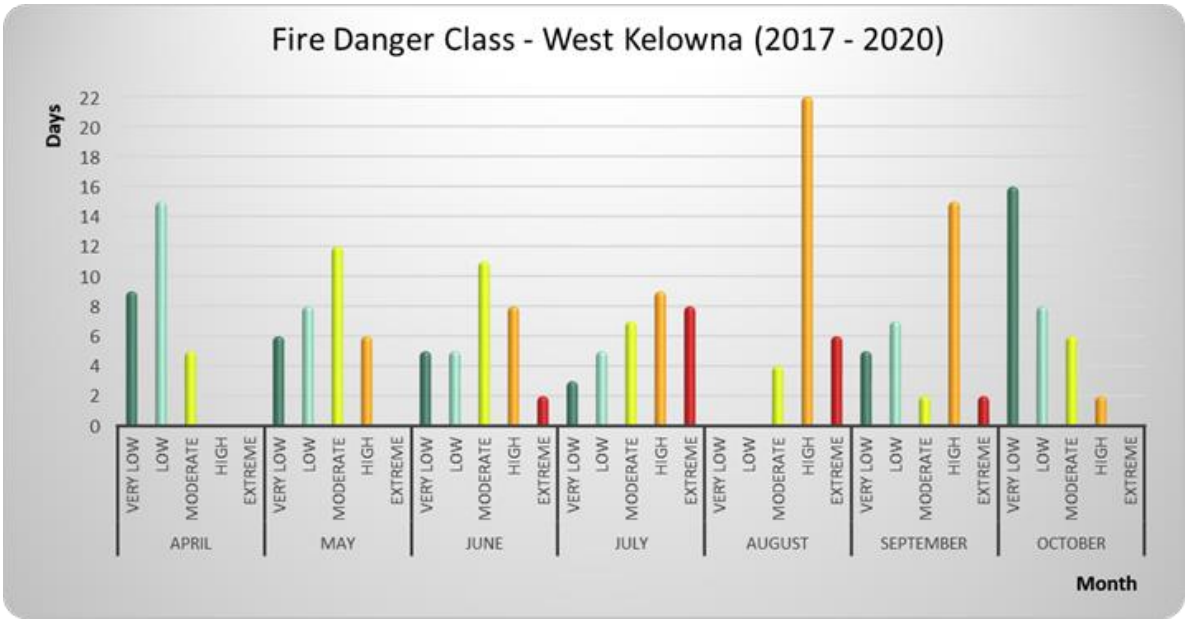
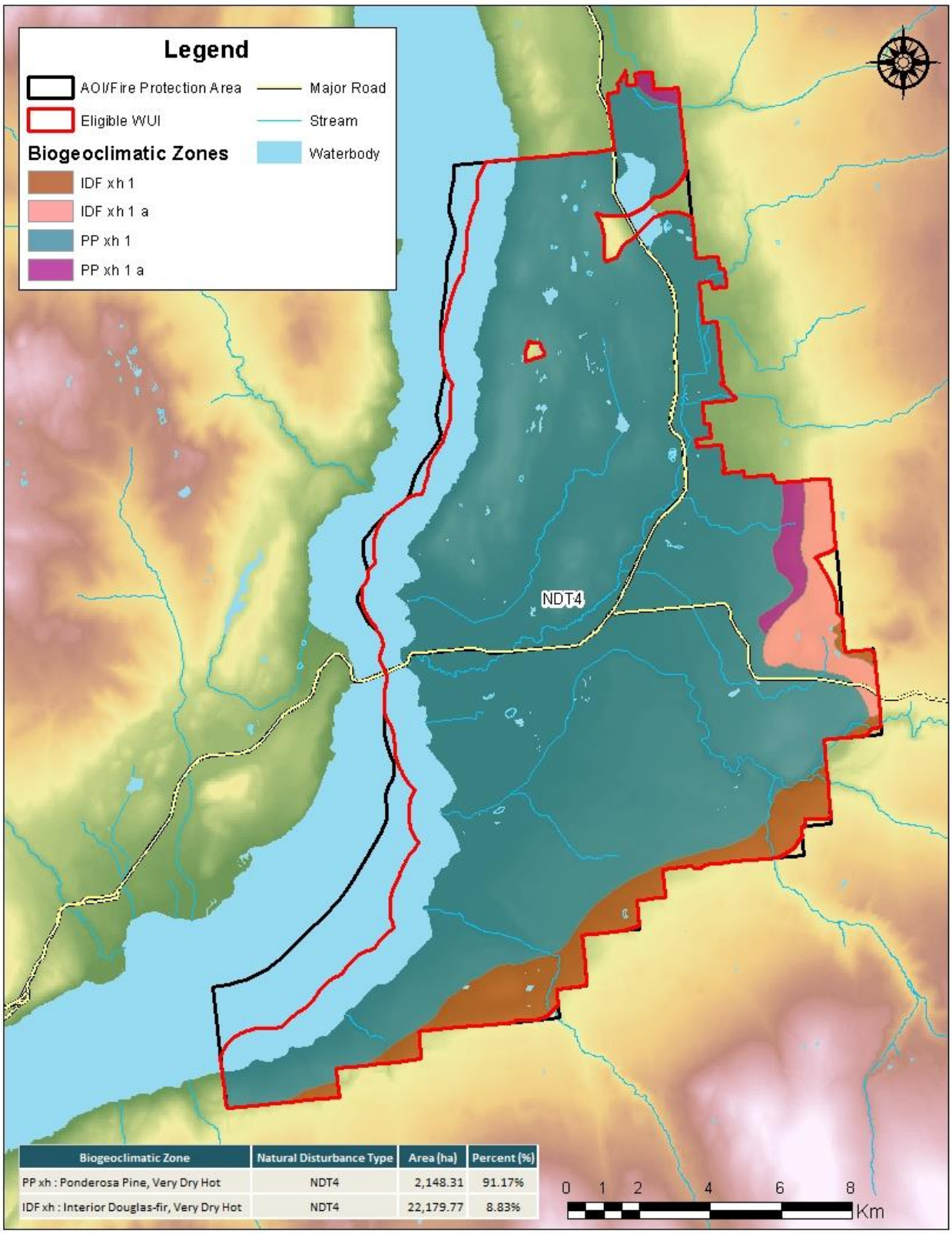


Figure 3. Average number of danger class days during the fire season for Kelowna (data obtained from the closest weather station, located in West Kelowna).



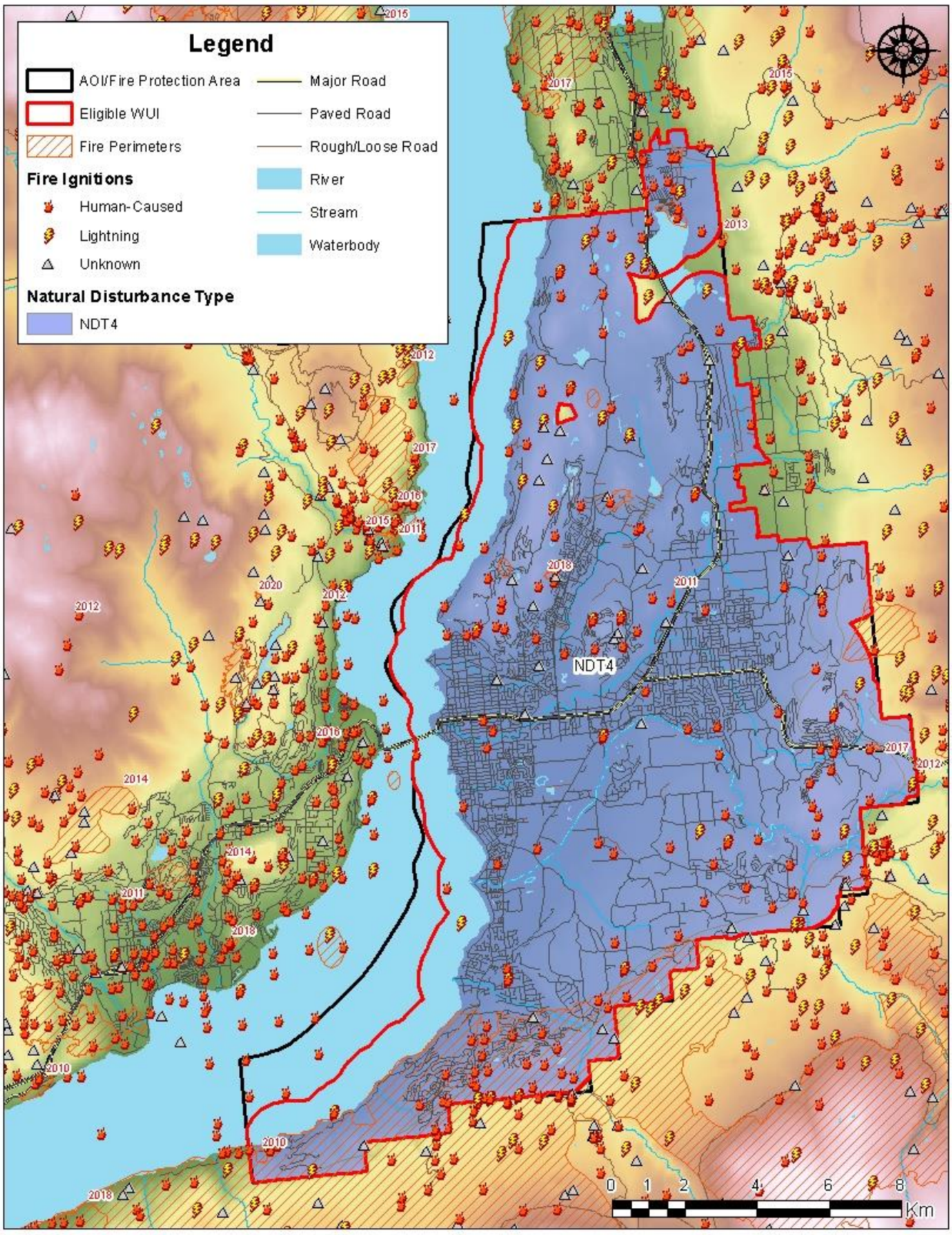
Map 6. Biogeoclimatic zones and natural disturbance types in Kelowna.

4.2 WILDFIRE HISTORY

Kelowna is situated in a semi-arid climate, in ecosystems where frequent, low- to mixed-severity, stand-maintaining fires naturally occur and are part of healthy ecosystem processes. However, as a result of widespread fire suppression throughout the 20th century and a recent series of weather and forest health disturbances linked to climate change, wildfire events have become larger and more destructive. Climate change projections for the Okanagan predict longer, hotter summers, with a higher frequency of intense heat events, factors that increase the risk of more frequent and more severe wildfires.

Multiple significant wildfire seasons have occurred impacting the province, the Okanagan and Kelowna since the last CWPP was written. The most recent wildfire season in 2021 was precipitated by an extreme heat dome event in late June, on the heels of a warm and dry spring, particularly for the Okanagan region. Over 8700 square kilometers of BC burned, which represents the third highest in BC's history. The Okanagan experienced particularly severe impacts, with several large wildfire events and wildfire complexes occurring, including: White Rock Lake (833 sq. km), Mount Law (9.8 sq. km), Brenda Creek (8.24 sq. km) and the Okanagan Complex (308 sq. km); a combination of three fires burning in close proximity). The RDCO Emergency Operations Centre, hosted in Kelowna, was activated for over two months throughout the summer to address these fires.

As well, between 2016 and 2020, two of the worst wildfire seasons in BC history occurred. Provincial fire suppression costs of the 2017 fire season exceeded $650 million, more than 65,000 people were evacuated and over 1.2 million hectares of land burned. The area burned in 2017 was unfortunately surpassed the next season in 2018, when more than 1.3 million hectares burned. Record breaking temperatures and clusters of lightning strikes were major contributors to the severity of that season.



Map 7. Natural disturbance regimes and historical fire ignitions & perimeters (1950-2021), within the WUI.

4.3 LOCAL WILDFIRE THREAT

The local wildfire threat assessment process includes several key steps as outlined in Appendix A: Local Wildfire Risk Process and summarized as follows:

- *Fuel type attribute assessment* – ground-truthing/verification and updating as required to develop a local fuel type map (Appendix A-1: Fire Risk Threat Assessment Methodology, Map 5).
- *Consideration of the proximity of fuel to the community* – recognizing that fuel closest to the community usually represents the highest hazard (Appendix A-2: Proximity of Fuel to the Community).
- *Analysis of predominant summer fire spread patterns* – using wind speed and wind direction during the peak burning period using ISI Rose(s) from BCWS weather station(s) (Appendix A-3: Fire Spread Patterns).
- *Consideration of topography concerning values* – slope percentage influences the fire's trajectory and rate of spread and slope position relates to the ability of a fire to gain momentum uphill (Section 4.1.1 - Topography).
- *Stratification of the WUI* – according to relative wildfire threat based on the above considerations, other local factors, and field assessment of priority wildfire risk areas.

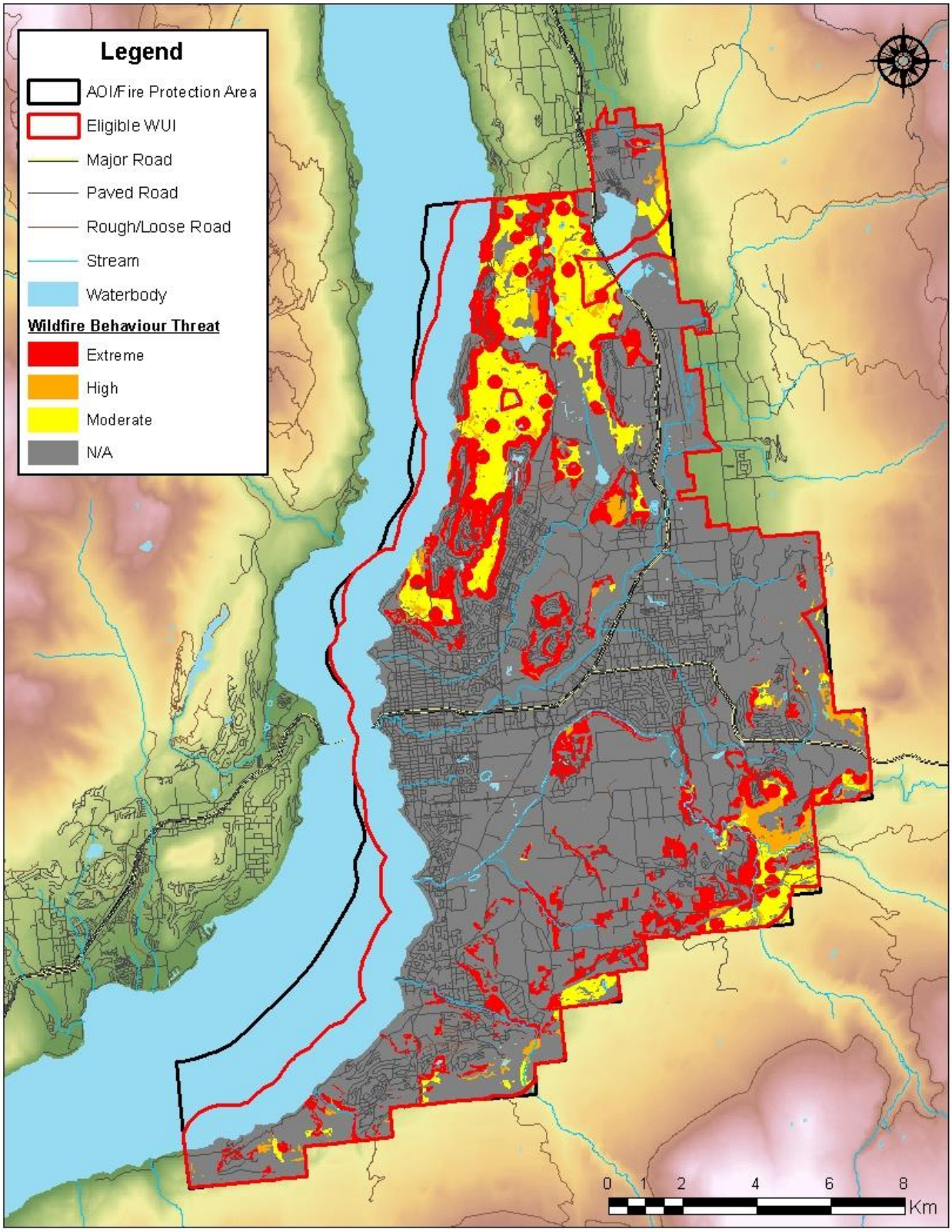
It is important to note that the Local Wildfire Threat Assessment analyses **apply only to the government-owned land base within the municipality** (i.e., Provincial Crown land and Municipal land). However, the context this information provides can support the identification of priority areas for emergency management planning and preparedness on nearby private properties.

4.3.1 WILDFIRE THREAT CLASS ANALYSIS

Classes of the wildfire behaviour threat class analysis are as follows:

- Very Low: Waterbodies with no forest or grassland fuels, posing no wildfire threat;
- Low: Developed and undeveloped land that will not support significant wildfire spread;
- Moderate: Developed and undeveloped land that will support surface fires that are unthreatening to homes and structures;
- High: Landscapes or stands that provide continuous forested fuels that will support candling, intermittent crown or continuous crown fires. These landscapes are often steeper slopes, rough or broken terrain and/or south or west aspects. High polygons may include high indices of dead and downed conifers; and
- Extreme: Continuous forested land that will support intermittent or continuous crown fires.

The results of the wildfire threat class analysis are shown on Map 7.



Map 8. Local wildfire threat in Kelowna.

4.3.2 GRASS FIRE SIMULATIONS

Both the 2016 and 2011 CWPPs identified grass fuel types as a unique component of local wildfire threat within the municipality. Grass fuels are "flashy" – they dry quickly and can promote rapidly spreading fires that challenge suppression capacity. Grass fires have the potential to trigger much larger interface events as they can ignite structures, which are more likely to produce embers as they burn, and go on to ignite additional nearby structures.

One barrier to mitigating the hazard posed by grassy fuel types is quantifying the risk posed by them. Threat assessment tools currently offered to support funding requests for fuel management focus on forest fuel types and to date, there is no widely accepted analogous method for grasslands. As such, grass fire simulations were produced through Prometheus to identify probable areas of concern and support recommendations for grass fuel mitigation. These are detailed in Section 5.7.

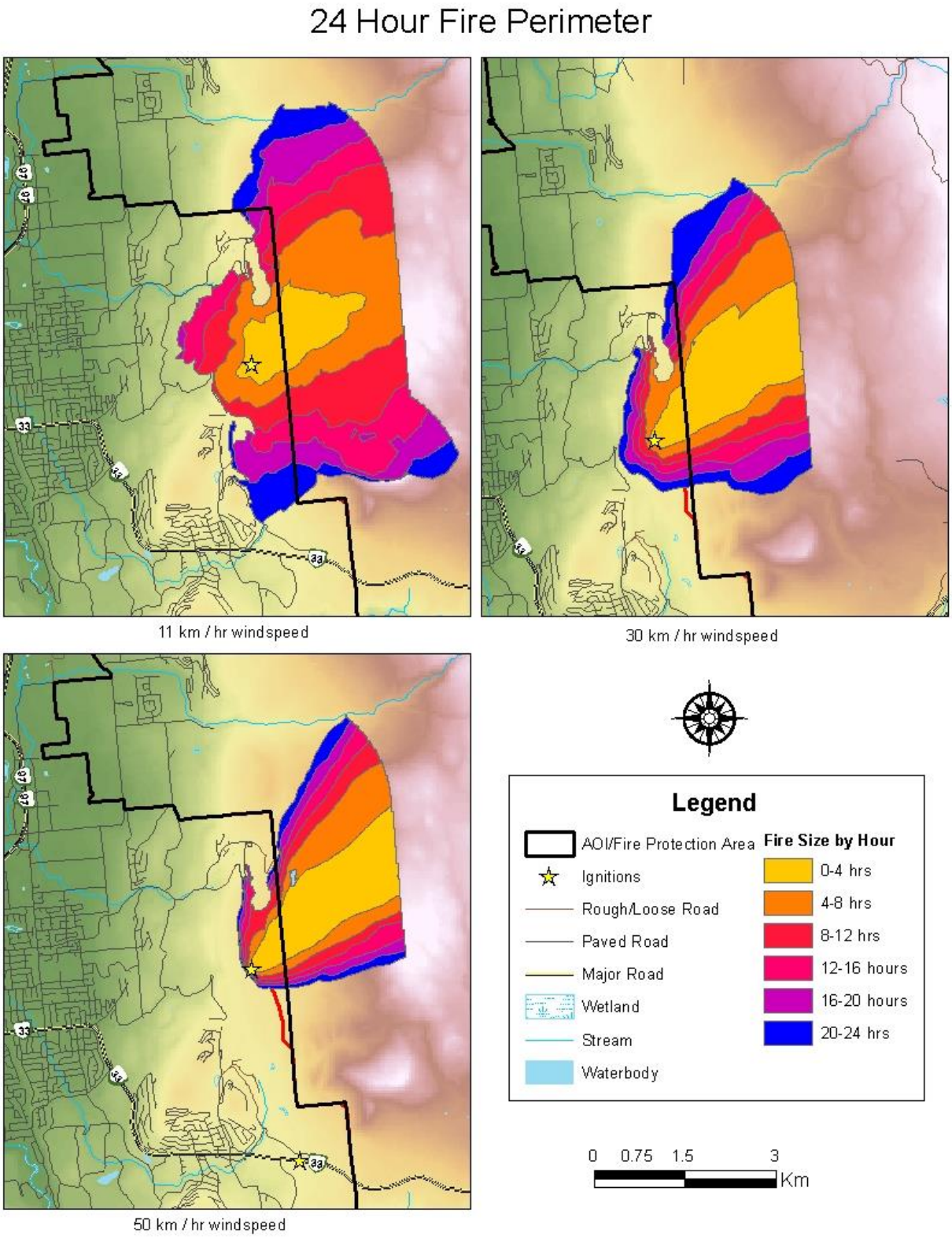
Prometheus is a wildfire growth simulation model based on the Fire Weather Index (FWI) and Fire Behaviour Prediction (FBP) sub-systems of the Canadian Forest Fire Danger Rating System (CFFDRS). The model computes spatially explicit fire behaviour and spread outputs given fuel, topography and weather conditions.[14] Weather conditions for the wildfire simulations were based on average peak fire season (90th percentile) weather conditions, and the average mid-summer (July 15th - August 15th) wind direction. Simulations were run for three wind speed scenarios: a base model, representing an average of hourly mean wind speeds across the fire season (11 km /hour); a model for sustained high winds (30 km/ hour); and a model for gust speeds, based on average maximum wind values recorded across the fire season (50 km / hour).[15]

Maps 6-10 below show the simulated growth of a wildfire over 24 hours starting from each of five ignition points. Ignition points were selected where human activity, locations of values at risk, and extensive tracts of grassy fuels made potential wildfire events of higher concern.

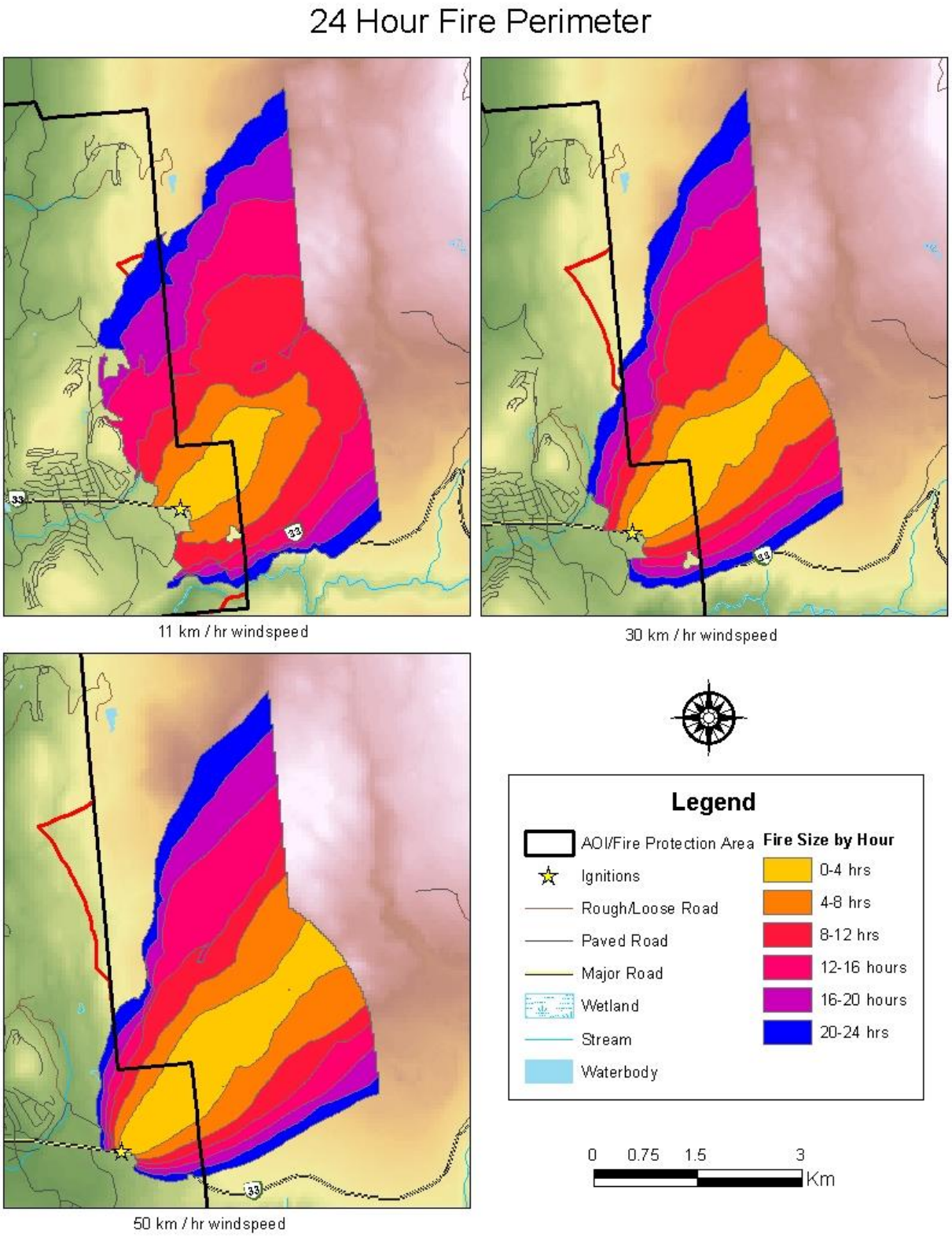
It should be noted that wildfire scenarios were generated for the area encompassing the municipal boundaries and a two-kilometer buffer around it. For all the wildfire scenarios illustrated, *more area outside this two-kilometer buffer may burn in a 24-hour period.* As a result, some wildfire scenarios simulated with higher windspeeds appear to show a smaller area burned – however, this only reflects the area burned in 24-hours within the two-kilometer buffer. Determining the full perimeter of the wildfire is outside the scope of this plan, which focuses on impacts to the City of Kelowna.

[14] http://www.firegrowthmodel.ca/prometheus/overview_e.php

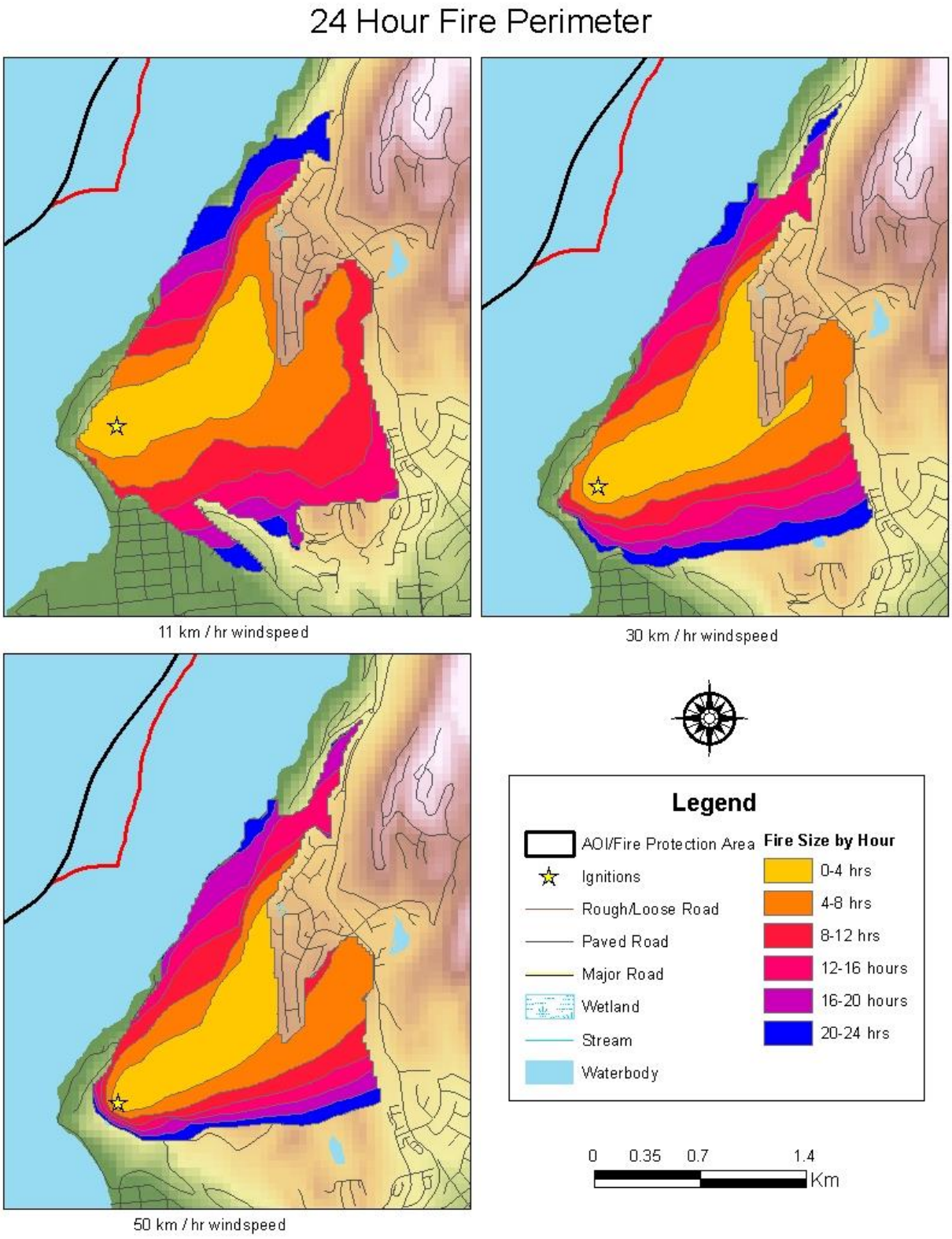
[15] *Kelowna Weather Stats.* https://kelowna.weatherstats.ca/charts/wind_speed-monthly.html



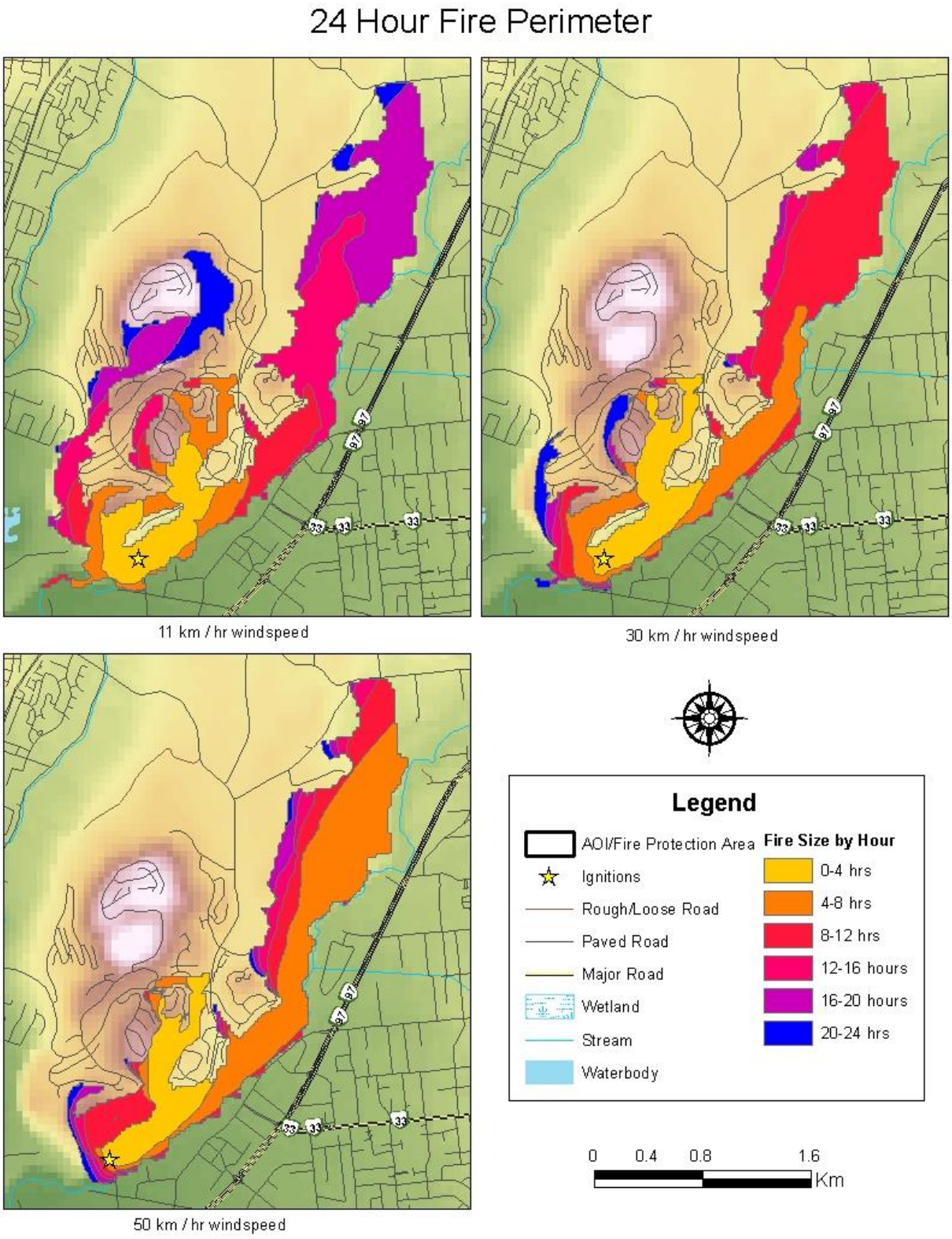
Map 9. Simulated 24-hour fire perimeter for an ignition occurring south of Tower Ranch in Kelowna.



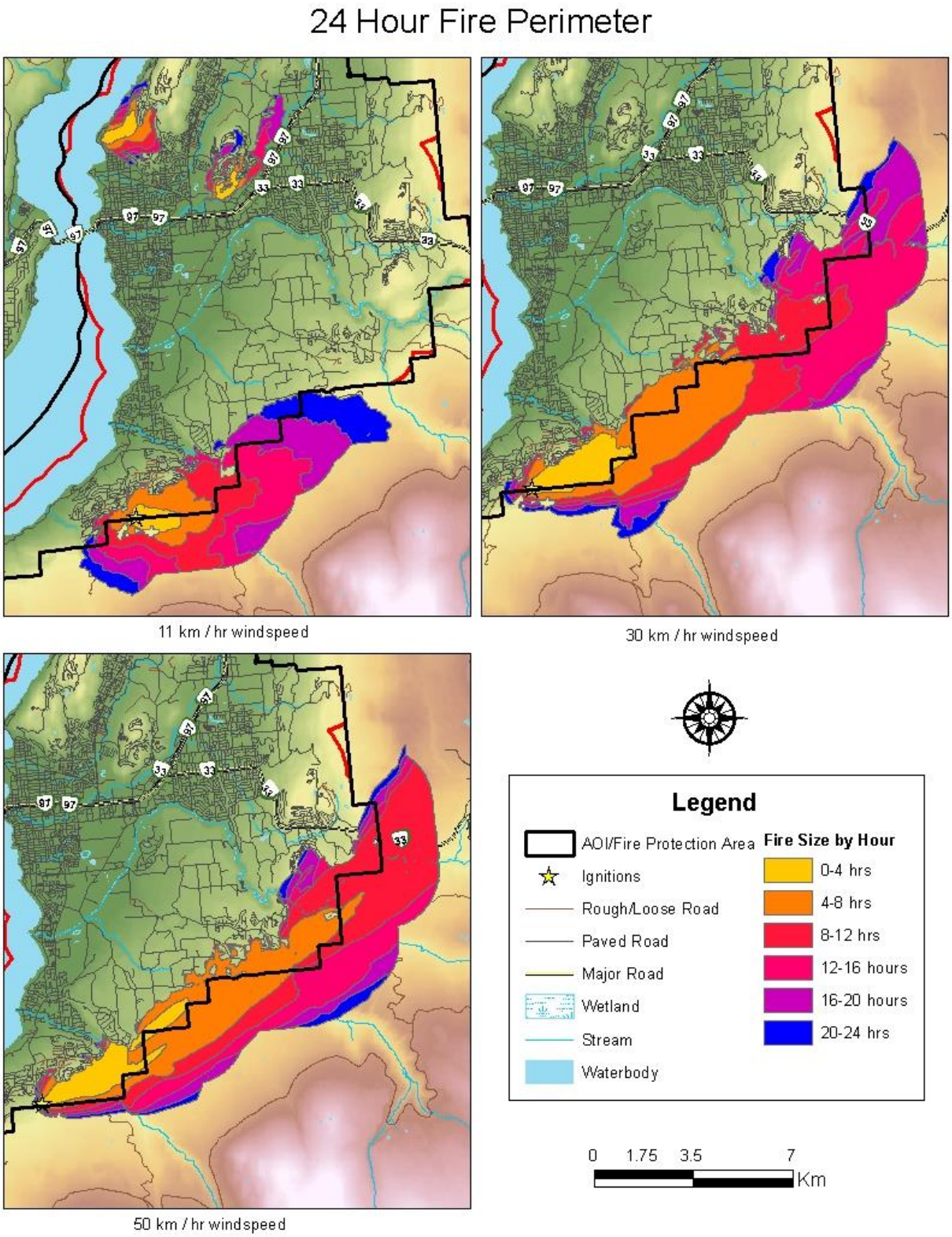
Map 10. Simulated 24-hour fire perimeter for an ignition occurring east of Black Mountain in Kelowna.



Map 11. Simulated 24-hour fire perimeter for an ignition occurring south in Knox Mountain Park in Kelowna.



Map 12. Simulated 24-hour fire perimeter for an ignition occurring on the south side of Dilworth in Kelowna.



Map 13. Simulated 24-hour fire perimeter for an ignition occurring near Lebanon Creek in Kelowna.

4.4 HAZARD, RISK AND VULNERABILITY ASSESSMENT

The Hazard, Risk and Vulnerability Analysis (HRVA) that local governments undertake as part of the legislative requirements for development of a local Emergency Management Plan provides additional information about critical infrastructure important to the community.[16]

The purpose of a HRVA is to help a community make risk-based choices to address vulnerabilities, mitigate hazards, and prepare for responding to and recovering from hazard events. The HRVA process assesses sources of potential harm, their likelihood of occurring, the severity of their possible impacts, and who or what is particularly exposed or vulnerable to these impacts.[17] One way to ensure the HRVA is based on a current understanding of wildfire threat in Kelowna, is updating it concurrently with a CWRP Update – either this document or a future iteration.

SECTION 5: FIRESMART PRINCIPLES

FireSmart® is the nationally accepted set of principles, practices, and programs for reducing losses from wildfire and is founded in standards published by the National Fire Protection Association.[18] FireSmart concepts, including recommended FireSmart guidelines,[19] have been formally adopted by almost all Canadian provinces and territories, including British Columbia in 2000.

FireSmart includes seven disciplines, which provide a sound framework for reducing wildfire risk to communities:

- Education
- Legislation and Planning
- Development Considerations
- Interagency Cooperation
- Cross-Training
- Emergency Planning
- Vegetation Management

[16] More information on the instruction guide can be found here: https://www2.gov.bc.ca/gov/content/safety/emergency-preparedness-response-recovery/local-emergency-programs/critical-infrastructure-assessment.
[17] Government of BC. 2020. *HRVA Example Report.* https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/local-government/hrva/hrva_forms-step_8-anytown_bc-sample_hrva_report.pdf.
[18] FireSmart is the registered trademark held by the Partners in Protection Association.
[19] FireSmart guidelines first published in the 1999 manual "*FireSmart: Protecting Your Community from Wildfire*", with a second edition published in 2003. The most recent "*FireSmart Begins at Home Manual*" is available at https://firesmartcanada.ca/resources/. The "*British Columbia FireSmart Begins at Home Manual"* provides detailed guidance and is available at BC FireSmart: https://www2.gov.bc.ca/gov/content/safety/wildfire-status/prevention/firesmart

The overarching goal of FireSmart is to encourage communities and citizens to adopt practices that help mitigate risk and impact of wildfire to assets on public and private property.

The vulnerability of structures and homes to ignition, in particular their vulnerability to embers, is one of the most important wildfire hazards to address to reduce the potential of damage to neighborhoods and critical infrastructure as a result of a wildfire event. As a result, while residents, industry, businesses, and governments all share responsibility for effectively mitigating wildfire hazard in communities, risk mitigation actions on private properties are emphasized.

Priority Neighborhoods for FireSmart Initiatives

Variation of neighborhood characteristics (including age, topography, adjacency to vegetation, and others) in Kelowna translates to variation of both requirement for FireSmart and uptake of FireSmart principles.

The 2016 CWPP noted that overall, newer neighborhoods are more likely to be FireSmart in comparison with older ones, an observation that remains current. Newer neighborhoods have fewer occurrences of homes with wood roofing material, and a higher proportion of homes with fire-resistant exterior siding. Newer buildings are less likely to see the gaps in doorways, soffits, and under-eaves that may appear in older buildings. Throughout both new and old neighborhoods, non-FireSmart landscaping was a leading contributor to high levels of wildfire hazard to homes. Flammable conifer shrubs such as cedar and juniper were common. The placement of shrubs (close to windows, wooden fencing, below overhanging eaves) at many residences results in an extreme risk for home ignition should they ignite in a wildfire event. These hazards were identified in the 2011 CWPP, and also in a 2015 report from the Institute of Catastrophic Loss Reduction[20] which evaluated the FireSmart status of homes in the south and southeast outskirts of Kelowna. While the landscaping characteristics of many neighborhoods has significantly increased wildfire risk for residents, it is notable that this is a more approachable FireSmart principle for many homeowners to adopt than, for example, a more costly building renovation. There is an opportunity for homeowners to substantially reduce wildfire risk in their neighborhoods through landscaping work such as replacing shrubs, pruning up trees, raking needles and mowing grasses annually, and swapping bark mulch for gravel in rockeries.

For various reasons (funding amounts, available effort, etc.) FireSmart activities may not be able to address all neighborhoods, or all at one time. Based on general field observations (local wildfire threat assessment, current level of FireSmart, proximity to the WUI edge, restrictions to access/egress, adjacent fuel types and hazards, etc.), neighbourhoods within the WUI have been prioritized below, with those that would benefit the most from FireSmart planning and activities ranked first. As development in interface neighborhoods continue, and neighborhood characteristics change, prioritization may also

[20] Westhaver, A. (2015) *Risk reduction status of homes reconstructed following wildfire disasters in Canada.* Institute of Catastrophic Loss Reduction.

change. It is recommended that this CWRP is scheduled for regular updates concurrent with development progress, to capture the shift in wildfire risk and hazard mitigation priorities.

Table 13 below reviews neighborhoods within Kelowna which should be prioritized for outreach and engagement, to increase residents' adoption of FireSmart principles. FireSmart 'attributes' are discussed in this table. In the context of this document, a FireSmart attribute refers to a single component or feature of the structure or the landscaping within 30 meters of it that increases resiliency to wildfire. For example, non-wood roofing materials, non-combustible siding, closed exterior stairs, non-combustible deck materials, deciduous vegetation in the yard, or vegetation removed in a meter radius around the home are examples of FireSmart attributes.

Table 13. Priority Neighbourhoods to improve FireSmart practices within the WUI

Priority	Location	Commentary
1	Barnaby Road	Older homes with generally few FireSmart attributes, and some homes with very hazardous landscaping features. Located mid and top of slope above Bellevue Creek and below Kuipers Mountain Park.
2	Clifton	Most homes likely not FireSmart; some older homes with very few FireSmart attributes and high vulnerability to ignition. Some homes with very hazardous landscaping features. Some larger rural lots with grass, shrub and tree cover - this intermixed vegetation increases wildfire risk for residents. Possible exposure to ember showers from wildfire events on the west side of Okanagan Lake.
3	McKinley Landing	Single access into neighborhood on narrow road with vegetation encroaching to the roadsides poses significant challenges for safe and rapid evacuation. Many homes likely not FireSmart; some older homes with very few FireSmart attributes and high vulnerability to ignition. Some homes with very hazardous landscaping features. Some larger rural lots with grass, shrub and tree cover - this intermixed vegetation increases wildfire risk for residents. At the southern end of this neighborhood new development is beginning. Possible exposure to ember showers from wildfire events on the west side of Okanagan Lake.
4	Finch Road	On the fringe of Kelowna Fire Protection Area, requiring extended travel time to access this neighborhood. Single road access. Some older homes with very few FireSmart attributes and high vulnerability to ignition, and some homes with very hazardous landscaping features. Some larger rural lots with grass, shrub and tree cover - this intermixed vegetation increases wildfire risk for residents. Possible exposure to ember showers from wildfire events on the west side of Okanagan Lake.
5	Dilworth	Winding, complex access. Homes are located at bottom-, mid- and top-of-slope locations, with the steep slopes between rows of homes covered with thick grass and tree cover. Most homes with very hazardous landscaping features.

Priority	Location	Commentary
6	Timberline Road	Single access into neighborhood on narrow road with vegetation encroaching to the roadsides. Neighborhood is comprised of large rural lots, backing onto Okanagan Mountain Park - the 2003 fire burned into this neighborhood. Grass and shrub cover is abundant throughout - this intermixed vegetation increases wildfire risk for residents.
7	Gallaghers Canyon	This neighborhood previously achieved FireSmart recognition, but it is not currently maintained. Access is one main throughfare with vegetation encroachment to the roadsides. Mixture of detached homes on conventional lot sizes and larger rural properties with continuous shrub, grass, and tree cover, as well as agricultural operations.
8	Lower Cedar Creek (Okaview, Quilchena streets)	Older homes with few FireSmart attributes and high vulnerability to ignition on average, and some homes with very hazardous landscaping features. Homes are located mid-slope, with the steep slopes between rows of homes covered with thick grass. Lebanon Creek Greenway creates a link of uninterrupted fuel loading between Okanagan Mountain Park and this neighborhood. Some homes are located at the top of Lebanon Creek ravine.
9	Kirschner / Black Mountain	Homes are located at bottom-, mid- and top-of-slope locations, with the steep slopes between rows of homes covered with thick grass cover. Older homes located at bottom of slope have few FireSmart attributes on average. Complex access into neighborhoods with winding roads that switchback up slopes. Golf course is located on the east side of Kirschner - irrigated lawns are a less hazardous fuel.
10	Kuipers	Homes are located at bottom-, mid- and top-of-slope locations, with the steep slopes between rows of homes covered with thick grass cover. Complex access into neighborhoods with winding roads that switchback up slopes. Critical infrastructure (Frost Reservoir) located in Kuipers Mountain Park at the top of slope. South end of neighborhood backs onto undeveloped private land then Okanagan Mountain Park. The 2003 fire burned into this neighborhood.
11	Tower Ranch	Newer neighbourhood with steep slopes between rows of homes covered with thick grass. Homes in this neighborhood have more FireSmart attributes on average.

5.1 EDUCATION

The City of Kelowna has undertaken several FireSmart education initiatives over recent years, including: establishment of a FireSmart-approved house on Knox Mountain, FireSmart information packages for distribution to citizens and developers seeking major retrofits or new single family builds (current wildfire DP requirements only extend to subdivision development, or multi-family, commercial, institutional and industrial development, but do not include single family homes), and a FireSmart demonstration garden (located at the intersection of Dilworth Drive & Summit Drive) showcasing alternatives to traditional flammable vegetation. Direct engagement with residents also occurs annually as Fire Department members (Fire Prevention Branch) attend neighborhood association meetings and make door-to-door visits as possible. Some Parks Services staff also have capacity to complete assessments and do so where needed.

Despite various initiatives, there are challenges in achieving a high level of public awareness and personal responsibility among citizens. A high seasonal resident population and significant tourist activity means there are many people entering Kelowna during the most critical months for wildfire risk. Tourists can be harder to reach with FireSmart education initiatives, especially if they primarily target homeowners, and temporary visitors or residents may have a less fulsome understanding of wildfire risk. Among full-time residents, awareness and engagement may be lacking due to entrenched attitudes that wildfire won't impact urban city neighborhoods, that so far change has not been required, and that relatively few people have been affected.

Accordingly, establishing a comprehensive FireSmart education program is a major theme of the recommendations for this section. There is opportunity to facilitate these recommendations through the temporary or permanent hiring of a FireSmart Coordinator. Hiring a coordinator is a strategy becoming increasingly common for municipalities around BC who are looking to increase wildfire preparedness. A sample job summary and suggested skills and qualifications are included in Appendix C: Sample Job Profile - FireSmart Coordinator. Alternatively, the following recommendations could be achieved by staff members holding existing positions with the City should they have the capacity to take them on.

Figure 4. Home located in interface neighborhood in Kelowna with a FireSmart gravel strip at the property line

Table 14. Education recommendation and action items

Item #	Priority	Recommendation	Rationale	Lead Agency	Timeframe	Funding Source	Metric for Success
Objective: provide information to communities and citizens empowering them to adopt and conduct FireSmart practices to mitigate the negative impacts of wildfire to their homes/businesses, properties, and neighbourhoods.							
E1	High	**Create a FireSmart Coordinator position to oversee the delivery of a comprehensive FireSmart program.**	There is significant opportunity to expand education initiatives to improve resident awareness of wildfire risk. A barrier to expanding education initiatives thus far has been limited staffing resources. Accordingly, it is recommended that a new staff member be contracted to complete some of the recommended actions below. This position could fall under the Fire Prevention Branch of the KFD, or alternately fall under the Parks Services Department. Additional information (roles and requirements) for a FireSmart Coordinator position can be found in Appendix A: Sample Job Profile - FireSmart Coordinator.	City of Kelowna (Parks Services, and / or Kelowna Fire Department)	1 year	CRI funding	Position filled
E2	Moderate	**Promote FireSmart information and wildfire preparedness through social media.**	City social media streams occasionally make mention of wildfire hazard or FireSmart. FireSmart BC posts content frequently throughout the year - the City can simply re-post content that provides general information for residents about the FireSmart program. Posts could also focus on promoting before-and-after images of fuel treatment work as it is completed annually, or information on FireSmart education initiatives taking place, such as the planned community chipping program.	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	Ongoing	Local government funding	Posts per year increase; positive engagement with social media posts increases
E3	High	**Promote FireSmart information and wildfire preparedness through television or radio advertisements.**	Television or radio advertisements may reach a different audience not currently engaged with the municipality's social media channels. Consider engaging with the City of West Kelowna, who recently put out similar television advertisements, for suggestions in implementing this. A regional or partnered approach to obtaining funding and coordinating this effort may be appropriate for this recommendation, such as through the regional Emergency Management Organization. Also consider engaging with local radio stations to see if interviews could be scheduled during regular programming.	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department), regional agency as necessary	Ongoing	CRI funding	Number of media installments made each year
E4	Moderate	**Host FireSmart workshop(s) for residents.**	There is significant opportunity to increase the quantity of direct resident engagement to provide FireSmart education and resources. Consider hosting these periodically (e.g. every 2-3 years), with a goal of hosting at least two before the CWRP is updated, in a scheduled rotation with other education initiatives.	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	Ongoing (two workshops could be hosted in a 5-year timeline).	CRI funding	Workshops are hosted

Item #	Priority	Recommendation	Rationale	Lead Agency	Timeframe	Funding Source	Metric for Success
E5	Moderate	**Give FireSmart presentations in local schools.**	FireSmart programming is infrequently presented in public schools. There is an opportunity to increase FireSmart and wildfire resiliency education across all demographics in the City, including youth. Education packages for different ages and presentation supplies are available through FireSmart BC.	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department), School District 23	Ongoing	CRI funding	Presentations are held
E6	High	**Engage directly with residents in priority neighborhoods to offer Home Ignition Zone assessments and deliver wildfire preparedness information.**	See Section 5: FireSmart Principles for a list of priority neighborhoods. In addition, prioritize engaging with residents adjacent to areas where fuel treatments are being completed. Consider a joint application (which might allow for a larger grant funding total, or pooling of resources) for funding with syilx / Okanagan Nation to complete Home Ignition Zone assessments on structures within Duck Lake IR. When conducting Home Ignition Zone assessments, consider bringing video material to illustrate ember ignition and flammable vegetation hazards, as well as additional resources such as FireSmart Factsheets to provide more information about best choices for building material upgrades. Outreach staff should also promote the installation of gravel fuel breaks at slope tops on private property, as bylaws allow, as well as the purchase of rooftop sprinkler systems such as WASP sprinklers.	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	Ongoing	CRI funding	Number of residents engaged with
E7	High	**As emergency evacuation plan(s) are completed, engage with residents to provide relevant emergency preparedness information.**	This could involve publishing information on the City wildfire preparedness or FireSmart webpage, holding neighborhood workshops for residents, or developing and distributing evacuation guides to residents in vulnerable neighborhoods.	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	1-3 years (pending completion of evacuation planning)	CRI funding	Increased awareness of evacuation planning processes
E8	Low	**Engage with Kelowna Chamber of Commerce, Tourism Kelowna, and/or Destination BC to assess the potential feasibility of hosting a collaborative**	Other public engagement efforts directed at homeowners, may not be effective in reaching seasonal tourist populations.	City of Kelowna (Potential FireSmart coordinator, Parks Services, and / or Kelowna Fire Department),	1-3 years	CRI funding or local government funding	Increased awareness of wildfire ignition risks

Item #	Priority	Recommendation	Rationale	Lead Agency	Timeframe	Funding Source	Metric for Success
		FireSmart campaign aimed at tourist audiences.		Destination BC, Tourism Kelowna			
E9	Moderate	**Host FireSmart / wildfire preparedness booths at public events and/or festivals during the summer.**	Promoting wildfire preparedness at these venues could help share information with a broader array of public demographics than targeted resident engagement. This can also serve to increase the general visibility and familiarity of the FireSmart brand and wildfire preparedness concepts.	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	Ongoing (suggest participation in 2-3 events per season)	CRI funding	Increased participation in number of events
E10	Moderate	**Promote uptake into the FireSmart Neighbourhood Recognition Program.**	Increasing uptake in the FireSmart Neighborhood Recognition program can help facilitate the reduction of hazardous fuels accumulations on private property. Several neighbourhoods in Kelowna have achieved FireSmart Neighbourhood Recognition in previous years, but the FireSmart website suggests this is no longer maintained. Neighborhood leaders should be engaged to maintain the previously achieved Neighborhood Recognition status. Existing resident associations could be engaged to identify potential leaders in other areas.	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	3-5 years	CRI funding	Increased number of certifications in the FireSmart Neighbourhood Recognition Program
E11	Moderate	**Install signage at locations of recent fuel treatments**	The purpose of signage should be to draw attention to work being undertaken by the City to increase community wildfire resiliency, through before-and-after photos, and notes about the date and method of treatment.	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	Ongoing	CRI funding or local government funding	Signs installed

5.2 LEGISLATION AND PLANNING

A review of relevant policy documents was undertaken to identify where existing bylaws, policies, guidelines, and standards of practice had potential influence on wildfire risk, planning, and management. Where current legislation is in direct or indirect conflict with proactive wildfire planning recommendations have been made to better align with community safety, particularly in the area of current and future subdivision development. A review of updates to Kelowna's bylaws, policies, and plans relevant to wildfire risk and emergency planning was provided earlier in Section 2: Relationship to Other Plans and Legislation.

The 2011 and 2016 CWPPs recommended the review and update of the City's Wildfire Development Permit (DP) policy. In 2020, a Wildfire Policy & Development Planning review was completed, with updates approved by select departments within the City of Kelowna. Policy changes generated from the Wildfire Policy & Development Planning review were incorporated into the 2040 OCP, which was endorsed by Council in January 2022. Updates were focused on Chapter 15: Natural Hazard Areas and Chapter 20: Hazardous Conditions – Wildfire Development Permits.

Where applied, the revised Wildfire DP guidelines comply with best practices to mitigate fire risk in the following aspects of home and neighborhood development:

- Building materials standards,
- Landscaping standards,
- Building setbacks, road width, and access routes; and
- Mitigation of wildfire hazards on future park lands prior to turnover to Kelowna.

A key vulnerability of the 2040 Wildfire DP guidelines is the exemption for construction of a single-family dwelling on an existing lot. This exemption was also present in the 2030 OCP. The 2016 CWPP recommended that wildfire development permits be triggered for new builds and major retrofits or renovations (i.e., a complete re-build on a previously existing foundation) as well as for land subdivisions. Through consultation with the planning department, the 2016 CWPP identified that expanding the scope of the Wildfire DP guidelines, to include single-family dwellings on existing lots, would require additional resources from the City of Kelowna in order to process the permits. It was estimated that an additional 2 full-time equivalent staff to process the files would be needed. This capacity assessment remains current. Expansion of the Wildfire DP guidelines to include single-family dwellings on existing lots is recommended again in this CWRP as it would align the Wildfire DP requirements with the requirements of the other Hazardous Condition DPs, which include single-family dwellings on existing lots, Expansion of the Wildfire DP guidelines would also accelerate the rate at which housing stock within Kelowna adopts FireSmart principles, increasing the efficiency and completeness of the policy overall.

Another opportunity for strengthening policy and planning includes the development of the city wide Sustainable Urban Forest Strategy. There is a significant opportunity in the development of this Strategy

to implement policies that will manage municipal green space at a landscape level. Managing forest ecosystems in Kelowna to support their continued health and resilience will support wildfire risk reduction goals.

Table 15. Legislation and planning recommendation and action items

Item #	Priority	Recommendation	Rationale	Lead Agency	Timeframe	Funding Source	Metric for Success
Objective: Provide the means for Kelowna to implement wildfire risk reduction actions through bylaws and legislation by outlining local government responsibilities regarding wildfire							
L1	High	**Update the Urban Forest Management Strategy.**	The Sustainable Urban Forest Strategy includes goals and objectives to achieve an ecosystem-based management vision of the urban forest landscape in Kelowna. Because the scope of planning for this strategy is at the landscape level, it is appropriate to include interface wildfire considerations within it. Additionally, the planning timeframe for the current Sustainable Urban Forest Strategy is 2011-2021, so it is appropriate to schedule the completion of an updated document. When the Sustainable Urban Forest Strategy is updated, the proposed goals and objectives should consider the wildfire risks and hazards identified and align with the recommendations made in this plan.	City of Kelowna (Parks Services), consultant support	0-1 years	Grant (e.g. 2BT) and/or Local government funding	Plan completed and adopted
L2	Moderate	**Adopt a standard for fuel management in parks and green spaces.**	A similar recommendation (#29) was made in the 2016 CWPP. Implementation of this recommendation was begun during the 2020 Wildfire DP and policy review process, but not completed. Review options for adopting a standard for fuel management outside of a Wildfire DP update process.	City of Kelowna (Parks Services), consultant support	1-3 years	CRI funding	Standard adopted.
L3	High	**In 2026, initiate an update of this CWRP.**	A current (i.e., no more than 5 years old) CWRP is a requirement for further funding under the CRI program.	City of Kelowna (Parks Services), consultant support	5 years	CRI funding	CWRP update initiated.
L4	High	**Adopt the Wildfire DP Terms of Reference.**	The Terms of Reference was developed during the 2020 Wildfire Policy & Development Planning review, and states criteria by which Wildfire Hazard Reports must be prepared. The preparation of Wildfire Hazard Reports is a condition that must be met prior to development permit application approval. This recommendation builds on a similar one made in the 2016 CWPP (#20)	City of Kelowna (Planning & Development)	0-1 years	CRI funding	Terms of Reference adopted.
L5	High	**The Wildfire DP should Include/incorporate the construction and major renovation of new single-family**	The Wildfire DP should be triggered for this type of development and construction as part of the building permit. This recommendation was made in the 2016 CWPP (#17) and the rationale remains current: expanding the Wildfire DP to include construction and major renovation of single-family homes on existing lots will align the	City of Kelowna (Planning & Development)	3 years	CRI funding	Wildfire DP amended.

Item #	Priority	Recommendation	Rationale	Lead Agency	Timeframe	Funding Source	Metric for Success
		homes on existing lots into the Wildfire DP process'.	Wildfire DP with other hazardous conditions development permit and expand the number of FireSmart compliant homes gradually. It will ensure the completeness, efficiency, and efficacy of this policy.				
L6	Low	**Implement the recommendations of the Non-Structural Flood Mitigation Resource Guide.**	The Non-Structural Flood Mitigation Resource Guide[21] identifies wildfire as a cumulative pressure with the potential to worsen the effects of flooding in the Central Okanagan.	City of Kelowna	Ongoing	Local government funding	Recommendations implemented.
L7	Low	**Amend the Subdivision, Development & Servicing Bylaw (Bylaw #7900) to include a requirement for the installation of fire hydrants outside linear parks and natural area parks.**	The 2016 CWPP recommended that the proximity of hydrant locations to access points for forested parks should be a consideration during the design process for new subdivisions (Recommendation #27). A guideline related to this topic was reviewed but not included during the 2020 Wildfire Policy & Development Planning process. Alternately, include this requirement within the Wildfire DP Terms of Reference.	City of Kelowna (Planning & Development)	3 years	CRI funding	Bylaw amended.

[21] Regional District of Central Okanagan. (2021). *Non-Structural Flood Mitigation Resource Guide.* https://www.rdco.com/RDCO-Flood-Resource-Guide_20211216.pdf

5.3 DEVELOPMENT CONSIDERATIONS

Important factors that can be planned for (and regulated through the land use planning and development process) which affect public safety during a wildfire include:[1]

- Location of development, including hazardous or vulnerable land uses, in relation to high hazard forested vegetation, steep slopes, and other geographical features that contribute to extreme fire behavior.
- Access and circulation patterns.
- Availability and adequacy of water supply.
- Type of construction materials on structures and attachments (privately and publicly owned).
- Lot size and structure density.
- Design guidelines and architectural standards.

Ensuring adequate access and circulation is important to facilitate entry of first responders to neighborhoods in the event of an interface wildfire incident, and the exit or evacuation of residents as necessary. Neighborhood design that relies on a single road in and out greatly restricts the flow of traffic and can significantly increase the risk of safe ingress/egress in emergency situations. Design that includes alternative routes, wide roads, sufficient vegetation clearance from roads, and surge capacity for arterial roads are important factors in ensuring community safety.

Figure 5. Example of a perimeter trail - houses located upslope, left side of photo.

An additional important development consideration includes access to natural and wildland areas adjacent to homes. Recommendations have been made regarding the installation of *perimeter trails* – paths which run along the boundary of private property where it interfaces with wildland areas – to reduce fuel loading adjacent to the boundaries of residences, and to increase safe access for first responders. In some areas these are already installed or have been incorporated into neighborhood design at the discretion of the Parks Services department. However, a more formalized process should be considered. And, in key locations where no perimeters or ring roads have been created, the City should consider purchasing easements to install these.

The location and condition of lands turned over to Kelowna during development has been identified as a challenge to overall wildfire resiliency in neighborhoods. As the 2016 CWPP noted, park lands have often

encompassed the steepest slopes in the development area, and are often in close proximity to, or are intermixed with, new neighborhoods. It is recommended that a process be developed that would allow for early review of prospective parks locations by Kelowna city staff, in order to reduce the likelihood that park design and location increases wildfire hazard to the closest homes. The 2016 CWPP also recommended such a review process, and identified wildfire threat, location of the park relative to slope and values at risk, access and associated liability to the City as key factors that the review process should analyze. These considerations remain relevant and important.

Table 16. Development considerations recommendation and action items

Item #	Priority	Recommendation	Comments	Lead	Timeframe	Metric for Success	Funding Source
Objective: To embed FireSmart practices and considerations into all development within Kelowna.							
D1	High	**Engage a qualified professional (such as a Local FireSmart Representative) to update or complete formal FireSmart assessments of critical infrastructure within the Wildfire DP area.**	Assessments should be planned and implemented in order of critical infrastructure importance.	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	3-5 years	Critical infrastructure assessments completed	CRI grant
D2	Moderate	**Use fire-resistant construction materials, building design and landscaping for all critical infrastructure when completing upgrades or establishing new structures**	The City of Kelowna should work towards increasing the resilience of critical infrastructure to wildfire.	City of Kelowna (Engineering, Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	Ongoing	Infrastructure upgrades adopt FireSmart principles	Local government funding
D3	Moderate	**Develop a standard for early review of prospective parks locations at the neighborhood planning stage, by Kelowna Parks Services staff.**	Early review of prospective parks locations will decrease the chance of park design increasing wildfire hazard for neighboring residences. The 2016 CWPP included a similar recommendation (#32), and proposed that review by the Parks department be accomplished by a 'preliminary' development permit report, with proposed park lands submitted early in the process. Consider developing this review process alongside the upcoming Parks Master Plan.	City of Kelowna (Potential FireSmart Coordinator, Planning & Development, Parks Services, and / or Kelowna Fire Department)	1-3 years	Standard adopted	Local government funding
D4	Moderate	**Assess the feasibility of purchasing easements around subdivision boundaries in order to install perimeter trails.**	Numerous subdivisions have been constructed in interface neighborhoods with no formalized access to the natural areas which they abut. Installing perimeter trails to appropriate specifications can reduce fuel loading adjacent to homes (within Priority Zones 2 and 3) and allow first responders to access natural areas more quickly and safely in the event of an interface fire.	City of Kelowna (Potential FireSmart Coordinator, Planning & Development, Parks Services, and / or Kelowna Fire Department)	3-5 years	Evaluation completed	Local government funding

5.4 INTERAGENCY COOPERATION

Identifying and linking staff members from different municipal government departments, local Indigenous communities, and stakeholders such as emergency service providers from other government agencies, private critical infrastructure operators, and parks managers (both from the City of Kelowna and elsewhere) is critical in ensuring a coordinated effort in reducing wildfire risk, as well as increasing opportunity for accessing various funding opportunities, sharing knowledge and data, and strengthening response efforts in the event of a wildfire.

Community FireSmart Resiliency Committee (CFRC)

Agency	Title	Role in CWRP Development	Future Opportunities
City of Kelowna Parks Services	Urban Forestry Supervisor Urban Forester	Provided data, information, and other relevant plan content, including local level fire response knowledge and wildfire risk reduction initiatives; coordination of CFRC activities; provided review and input.	Coordinate with other municipal departments to achieve the implementation of CWRP recommendations. Coordinate with Corporate Communications to provide outreach to applicable stakeholders and audiences.
City of Kelowna Fire Department	Fire Chief Deputy Fire Chief Fire & Life Safety Educator	Provided data, information, and other relevant plan content; provided advisory support to determine CWRP actions; provided review and input.	Support implementation of CWRP recommendations as applicable to department role by providing technical expertise, background knowledge and information.
City of Kelowna Planning & Development	Community Planning & Development Manager		
City of Kelowna Policy & Planning	Policy & Planning Department Manager		
City of Kelowna Communications	Community Communications Manager		
City of Kelowna Infrastructure Operations	Infrastructure Operations Manager		

Kelowna's Community FireSmart Resiliency Committee (CFRC) is comprised of local government members. In addition to this formalized CFRC, information sharing and consultation occurred with other First Nations and third-party agencies. Key contributions came from Okanagan Indian Band, BC Parks, and the Regional District of Central Okanagan (Parks Department).

Other cooperative initiatives currently underway include the formation of an evacuation planning roundtable, spearheaded by the RDCO. The RDCO was granted funds in 2021 through UBCM to support evacuation planning for residents. Funds will be allocated to a planning process, involving member municipalities of the RDCO, that will result in an evacuation planning template for communities to apply at a smaller scale.

In the review and information gathering process for this plan, it was found that good working relationships exist between many individual local government agencies, but a formalized strategy for intentional, regular information sharing is lacking. This is contributing to knowledge gaps amongst different departments and organizations.

Engagement and cooperation with different agencies can support wildfire risk mitigation efforts throughout the municipality, including on these areas of land that are either privately owned, or not managed by the municipality. Recommendation and action items below identify opportunities for the City of Kelowna to continue growing interagency relationships and increase interagency cooperation.

Table 17. Interagency cooperation recommendation and action items

Item #	Priority	Recommendation	Comments	Lead	Timeframe	Metric for Success	Funding Source
Objective: To broaden from a department or agency single jurisdiction-based approach to a risk driven, multi-agency and multi-scalable approach.							
I1	Moderate	**Collaborate with the MoF, BC Parks and BCWS to promote knowledge sharing about completed and ongoing wildfire risk reduction projects near Kelowna, and to strategize mid- to long-range planning for future adjacent treatment areas.**	As a result of a re-organization of funding allocations for fuel treatment work, MoF has taken on responsibility for much of the fuel treatment work that occurs on Crown Provincial land, while municipalities are able to complete fuel treatment work on municipally-held land. The City should share information about fuel treatments completed outside municipal boundaries on Provincial Crown land with MoF, as well as with BC Parks and BCWS in order to support the prioritization of surrounding areas for maintenance and re-treatment. Consider sharing information such as the spatial location, year of treatment, method of treatment, and estimated time for re-assessment and maintenance work.	City of Kelowna (Parks Services), MoF, BC Parks, BCWS	1 year	Information shared	Local government funding
I2	Moderate	**Schedule regular meetings of members of the CFRC (6 months to 1 year).**	Increasing the frequency of communication between different municipal departments responsible for wildfire risk reduction work is important to increase cooperation and efficiency in achieving community wildfire resiliency objectives.	City of Kelowna (all parties involved in CFRC)	Ongoing (at least one meeting annually)	Meetings held	Local government funding
I3	Moderate	**Through the CFRC meetings or another planning table, initiate and maintain regular information sharing meetings with RDCO staff, and other municipalities in the Central Okanagan.**	The evacuation planning working group scheduled for winter of 2021 is an example of an alternate planning table which could be leveraged to initiate this schedule of information sharing. Topics around which regular communication should take place include: FireSmart initiatives, fuel treatment work, community wildfire resiliency initiatives, and emergency planning work being conducted by different agencies, as well as concerns, priorities, and lessons learned from recent fire events.	City of Kelowna, RDCO or other municipality staff as applicable	Ongoing (at least one meeting annually)	Meetings held	CRI funding or local government funding
I4	Moderate	**Engage with operators (e.g., BC Hydro, Fortis BC, Kelowna Airport Authority) to encourage completion of FireSmart assessments for privately owned critical or hazardous infrastructure.**	Not all critical infrastructure is operated by the municipality, so wildfire resiliency issues must be addressed cooperatively.	City of Kelowna, private operators	3 years	Critical infrastructure assessments completed	CRI funding or local government funding

Item #	Priority	Recommendation	Comments	Lead	Timeframe	Metric for Success	Funding Source
I5	Moderate	**Engage with Indigenous communities to identify opportunities for collaboration related to community wildfire resilience initiatives.**	Engagement with Indigenous communities related to community wildfire resilience initiatives aligns with direction from the 2040 OCP to strengthen the relationship with the syilx / Okanagan people through initiatives and processes to support reconciliation in Kelowna (Objective 9.2). Consider the following actions to strengthen engagement: • Meet with appropriate representative from syilx/Okanagan Nation or other Indigenous communities prior to application for CRI grant funding, or otherwise share information at this time about FireSmart and wildfire resiliency initiatives Kelowna is planning to pursue, to identify possible opportunities for collaboration. • Before the fire season each year, ensure emergency contact information is up-to-date, and share information regarding emergency management planning concerns and priorities, as appropriate. • Share updates regarding plans to complete grass management treatments per the recommendations of this CWRP, especially any plans to pursue prescribed burning, to identify possible opportunities for collaboration. • Share information regarding the availability of grant funding to support syilx/Okanagan Nation or other Indigenous communities' participation.	City of Kelowna (Potential FireSmart Coordinator, Parks Services, and / or Kelowna Fire Department)	Ongoing (at least one meeting annually)	Number of meetings or information sharing exchanges	CRI funding or local government funding

5.5 CROSS-TRAINING

The Kelowna Fire Department provides training to its members for interface specific wildfire events and to gain experience in interface wildfire incidents. As reported in the 2016 CWPP, the KFD focuses training on structural firefighting but also includes annual wildland interface training in the spring. It is recommended this program be maintained or expanded.

The 2016 CWPP also identified a lack of cross-training with BCWS, which currently remains the case. Although both the KFD and BCWS identified a positive working relationship with each other, there are benefits to be gained from scheduling regular training sessions. Training sessions for crews can focus on re-introducing suppression equipment for each agency, and identifying and sourcing solutions where incompatibilities may exist. Hosting training exercises do not imply taking on responsibilities outside of roles for each agency. Rather, the focus of these training exercises should be to enhance understanding of the capacity and capabilities of agencies with which KFD might cooperate with in the event of an interface wildfire event. This will allow KFD to focus their training and professional development within the role of their agency.

Similarly, few formal training events have been held between Kelowna and other municipalities, although positive rapport between local government agencies is reported. Consistent, scheduled, and purposeful engagement is a benefit for engagement across municipal fire departments for similar reasons.

Table 18. Cross-training recommendation and action items.

Item #	Priority	Recommendation	Comments	Lead	Timeframe	Metric for Success	Funding Source
Objective: To support the development of comprehensive and effective wildfire risk reduction planning and activities, as well as a safe and effective response.							
C1	High	**Hold periodic multi-agency training exercises focused on interface wildfire incident response with BCWS and / or other mutual aid partners.**	Training exercises are currently not held between the Kelowna Fire Department and BCWS or other municipalities in the Central Okanagan. While working on wildfire incidents has helped foster a positive working relationship between the Kelowna Fire Department and BCWS, there are additional benefits to be gained from regularly hosting training exercises. A rotating schedule of in-person and table-top training exercises should be established between the Kelowna Fire Department and BCWS as well as other municipalities with which the City holds mutual aid agreements. For example, in-person exercises could be held every 2-4 years and table-top exercises more frequently (e.g., annually).	Kelowna Fire Department	Ongoing (two in-person exercises could be held in a five-year timeframe)	In-person and / or tabletop exercises held	CRI funding
C2	Moderate	**The Kelowna Fire Department should maintain or expand the interface wildfire training programs offered to its members.**	WFF-1 and S-231 (Engine Boss) is required for BCWS deployment; continued deployment with BCWS contributes valuable experience to the department about response to interface wildfire incidents. Consider training a percentage of members in these courses. Attending the yearly Wildfire Training Symposium in Penticton could be a component of interface wildfire training and education.	Kelowna Fire Department	3-5 years	Percentage of members certified in WFF-1 maintained; additional course or interface wildfire training options offered	CRI funding
C3	Low	**Attend the annual FireSmart conference.**	The annual FireSmart conference is an avenue to increase exposure to new FireSmart education tools, and community wildfire resiliency initiatives being undertaken around the Province.	Kelowna Fire Department, Parks Services	Ongoing	Conference attended by Kelowna Fire Department and/ or Parks Services staff members	Local government funding

5.6 EMERGENCY PLANNING

As evidenced in recent years, when multiple wildfire emergencies are taking place throughout the province, BCWS resource availability may become scarce. Deployment of provincial resources occurs based on the Provincial Coordination Plan for Wildland Urban Interface Fires.[22] Therefore, government wildfire preparedness and resource availability are critical components of community wildfire resilience – individuals and agencies need to be ready to act.

Pre-Incident & Evacuation Planning

Two complementary planning processes involving City of Kelowna staff are scheduled for the winter of 2022: wildfire pre-incident planning and preliminary evacuation planning. Wildfire pre-incident planning will be undertaken by the Kelowna Fire Department. Preliminary evacuation planning is an initiative of the Regional District of the Central Okanagan, that will involve participation from Kelowna city staff, including Parks Services staff.

The preliminary evacuation planning process will involve creating a "template" evacuation plan with funds obtained by the Regional District that communities can then refine and complete at a smaller scale, with site-specific details. Emergency access and evacuation planning is of particular importance in the event of a wildfire, and the completion of this preliminary planning process, and follow up afterwards to create community specific evacuation plan(s) is therefore a high priority recommendation.

An evacuation plan could:

- Map and identify safe zones, marshalling points and aerial evacuation locations
- Plan traffic control and accident management
- Identify volunteers that can assist during and/or after evacuation

Creating an effective evacuation plan with community specific strategies for emergency response includes the careful examination of unique community and neighborhood attributes:

- Demographics, geography, and available emergency response resources
- Access and egress routes and potential traffic flows and pinch points (one option to gather related information is through traffic flow modelling)
- Other local hazards and constraints that may pose unique challenges to evacuation

[22] Provincial Coordination Plan for Wildland Urban Interface Fires. 2016. Retrieved from: https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/provincial-emergency-planning/bc-provincial-coord-plan-for-wuifire_revised_july_2016.pdf

The completion of a wildfire pre-incident plan is also recommended as an important emergency preparedness measure for the City of Kelowna. A pre-incident plan is a compilation of essential fire management information needed to save valuable time during fire suppression operations. To optimize preparedness a wildfire response plan would be reviewed annually and tested and practiced periodically.

Table 19. Sample components of a wildfire pre-incident plan.

Command	Escape Fire Situation Analysis Pre-positioning needs (e.g., water delivery systems, crews and / or aircraft on standby) Draft delegation of authority Management constraints Review interagency agreements Assess structure protection needs Closure procedures
Operations	Identify helipad locations, flight routes, restrictions, water sources Control line locations Natural barriers Options for safety zones Staging areas Fuel caches
Logistics	Identify possible base camp locations Roads and trails Vehicle limitations Utilities Communities (radio frequencies, phone)
Planning	Base and topographic maps Vegetation / fuel maps Hazard locations Infrared imagery Archaeological, cultural, ecological value maps Water sources Land status Priority zoning

The development of a Total Access Plan is recommended, and it may be useful to complete this at the same time as the wildfire pre-incident plan. A Total Access Plan should include the following pieces of information, in written documentation and on maps and spatial layers:

- All maintained trails and roads within the municipality
- Type of access available for each access route (foot, ATV, etc.)

- Trails which are gated and / or have barriers
- Information for unlocking / removing barriers (e.g., key location or ownership)
- Natural areas where access is insufficient
- Sensitive environmental areas where the lowest-impact access options should be prioritized

As part of pre-incident planning, the City may consider developing local daily action guidelines based on expected wildfire conditions. Table 20 below provides a template that can be tailored specifically to the City, outlining actions that staff, fire department members, and other emergency staff can take as fire danger levels change throughout the year.[23] Some of these actions are already undertaken annually, (e.g. during Extreme fire danger, EOC staffing availability information is updated, and natural area closures occur), while other actions have not yet been initiated. Year-round, fire danger signs posted throughout municipality should be updated to reflect the current fire danger.

Table 20. Example of a Wildfire Response Preparedness Condition Guide

FIRE DANGER LEVEL	ACTION GUIDELINES
LOW	• All Community staff on normal shifts.
MODERATE	• All Community staff on normal shifts • Information gathering and dissemination through Kelowna's CFRC
HIGH	• All Community staff on normal shifts. • Daily detection patrols by staff. • Regional fire situation evaluated. • Daily fire behavior advisory issued. • Wildland fire-trained Community staff and EOC staff notified of Fire Danger Level. • Establish weekly communications with CFRC • Hourly rain profile for all weather stations after lightning storms.
EXTREME	• Rain profile (see III). • Daily detection patrols by Staff. • Daily fire behavior advisory issued. • Regional fire situation evaluated. • EOC staff considered for stand-by. • Wildfire Incident Command Team members considered for stand-by/extended shifts. • Designated Community staff: water tender and heavy machinery operators, arborists may be considered for stand-by/extended shifts. • Consider initiating Natural Area closures to align with regional situation. • Provide regular updates to media Services members/Community staff on fire situation. • Update public website as new information changes.
FIRE(S) ONGOING	• All conditions apply as for Level IV (regardless of actual fire danger rating). • Provide regular updates to media/structural fire departments/staff on fire situation.

[23] CRI FCSF 2021 CWRP supplemental instruction guide

	• Mobilize EOC support if evacuation is possible, or fire event requires additional support. • Mobilize Wildfire Incident Command Team under the direction of the Fire Chief. • Implement Evacuation Alerts and Orders based on fire behavior prediction and under the direction of the Fire Chief.

Mutual Aid Partners

The 2016 CWPP identified that the Kelowna Fire Department has mutual aid agreements in place with other municipalities and RDCO Fire Departments in the central Okanagan that the Kelowna Fire Department may respond to areas outside the municipal boundary on both RDCO and Crown land to engage in wildfire suppression until BCWS arrives. There have been no changes to this arrangement since then.

Firefighting Resources

The 2016 CWPP identified the Kelowna Fire Department as a well-resourced highly organized department which is able to provide high quality emergency and public safety services to the City and surrounding area. No significant changes to this assessment have occurred since that time. Call-outs have not trended upwards significantly or disproportionately to population growth. The fire department has hired an additional 38 members, also in line with the growing size of the municipality.

The 2016-2030 Kelowna Fire Department Strategic Plan noted the possible need to plan to open an additional fire station in the municipality – this action item was completed with the opening of Station 5 in 2019. The Strategic Plan recommends potentially obtaining additional smaller apparatus with the opening of this station. Smaller bush trucks equipped with pump and water capabilities have been phased in as a response vehicle of choice to an interface wildfire event, and remain a priority for resource allocation.[24]

The 2016 CWPP did not identify any significant gaps in capacity with relation to equipment inventory. However, Kelowna currently does not keep a Structural Protection Unit. Historically, the fire department has relied on the ability to request these units from neighboring jurisdictions or from UBCM as necessary. However, the 2016 CWPP recommended that the City stays up to date on the location of, and request process for, an SPU in neighboring jurisdictions; that the KFD consider an SPU training session to gain experience with the SPUs available; and that the City assess whether a SPU may be a good investment.

These recommendations have been renewed for this CWRP. While SPUs have the potential to require additional training and maintenance duties for the KFD, the KFD should also consider lessons learned

[24] City of Kelowna. (2016). *2016-2030 Kelowna Fire Department Strategic Plan.*

from recent wildfire seasons, in which multiple, severe, interface wildfire incidents have occurred simultaneously across the province. In the future, increasingly severe wildfire seasons may result in suppression resource scarcity that makes relying on mutual aid resources an inappropriate emergency planning strategy.

Table 21. Emergency planning recommendation and action items

Item #	Priority	Recommendation	Comments	Lead	Timeframe	Metric for Success	Funding Source
To create specific wildfire response pre-incident plans so those responding to a wildfire emergency know who is available to help with what and when, and to improve Kelowna's ability to respond to (during and after) a wildfire emergency.							
EP1	High	Review back up power source options for all critical infrastructure.	Back-up power source availability for critical infrastructure is crucial for its continued functioning in the event that a wildfire results in power outages.	City of Kelowna (Kelowna Fire Department, Utilities)	1-3 years	Review completed	Local government funding
EP2	High	Complete, and participate in regular testing of, a wildfire incident pre-plan.	Testing the pre-plan could overlap with the multi-agency training exercises (table-top and in-person) recommended in Section 5.5: Cross-Training. In addition, consider engaging with other municipalities in the Okanagan that have completed a wildfire incident pre-plan (e.g., Penticton) to obtain information about relevant regional concerns.	City of Kelowna (Kelowna Fire Department, Parks Services)	1-3 years	Pre-plan completed	CRI funding
EP3	Moderate	Evaluate the utility of adopting a City-wide emergency alert app, or adopting an emergency alert feature into a City of Kelowna app if it is developed.	Municipal or regional emergency alert apps have been adopted by communities around the province and are one tool local governments can use to better communicate with residents in an emergency (e.g., severe weather, power outages, flooding, and road closures, as well as wildfire events). Promoting an emergency alert app indicates that the City is taking seriously the need to prepare for emergency events, and may prompt residents to also take this possibility seriously.	RDCO, consultant support	1 year	Evaluation completed	Local government funding
EP4	High	Complete a community water delivery assessment for suppression requirements across all five water purveyors.	Areas of the municipality are outside of hydrant coverage, and there are several natural areas and green spaces that may have insufficient or unreliable water supply.	City of Kelowna (Kelowna Fire Department, Utilities), other utility providers, consultant support	1-3 years	Assessment completed	CRI funding
EP5	Moderate	Based on the results of the fire flow and water availability assessment, evaluate the utility of installing dry hydrants in natural areas and acquiring lake water compatible pumps to support suppression response in more isolated areas of the municipality.	Areas of the municipality are outside of hydrant coverage, and there are several natural areas and green spaces that may have insufficient or unreliable water supply. The potential benefits of investment in new technologies to address these gaps should be evaluated. This evaluation should take place after the fire flow / community water availability assessment is complete, in order to identify target areas.	City of Kelowna (Kelowna Fire Department, Utilities), consultant support	1-3 years	Assessment completed	CRI funding

Item #	Priority	Recommendation	Comments	Lead	Timeframe	Metric for Success	Funding Source
EP6	Moderate	Identify municipal buildings such as community centers or libraries as clean air shelters and promote their use during occurrences of poor air quality.	Exposure to smoke can affect residents' health.	City of Kelowna, RDCO	1-3 years	Number of social media posts or press releases	Local government funding
EP7	High	Evaluate the feasibility of obtaining a structural protection unit (SPU) for the City.	Kelowna Fire Department does not have a structural protection unit. In the event of a wildfire approaching an interface neighborhood the City could request a unit through the Province or potentially have a mutual aid partner supply one. However, as wildfire seasons are projected to increase in severity and intensity, it is increasingly probable for complex events to occur in which multiple neighborhoods or municipalities are affected simultaneously, in which case resources may become scarce and this strategy may no longer be appropriate. A cost benefit analysis should be conducted to re-evaluate this strategy considering the cost to obtain and maintain the SPU, maintain training requirements for fire department members, in comparison with the potentially increased frequency of use.	City of Kelowna (Kelowna Fire Department), consultant support	1 year	Evaluation completed	CRI funding, local government funding
EP8	High	Review, update, and regularly revise a Total Access Plan.	A Total Access Plan is an inventory of the trail and road network in interface and natural areas. The objective of this plan is to pre-plan access to natural areas for the purposes of fire suppression and identify areas with insufficient access. This plan should have a spatial data and/ or mapping component as well, for internal use as well as to share with BCWS or other fire suppression personnel. Some access planning information was previously compiled but not formalized. The Total Access Plan could be developed in the process of completing the wildfire incident pre-plan. Information regarding new developments completed in the past few years should be incorporated into this update.	City of Kelowna (Kelowna Fire Department, Parks Services), BCWS, consultant support	1-3 years	Total Access Plan completed	CRI funding, local government funding
EP10	High	Complete a City evacuation plan, drawing on the outcomes of the RCDO evacuation planning process (slated to occur 2021-2022).	There are several neighborhood locations within Kelowna with access and egress challenges (see SectionSECTION 5: FireSmart Principles - FireSmart Priority Neighborhoods), and these should be prioritized for evacuation planning completion.	City of Kelowna (Kelowna Fire Department, Parks Services), consultant support	1-3 years	Evacuation plan(s) completed	CRI funding

5.7 VEGETATION MANAGEMENT

The City has established a robust fuel treatment program to manage hazardous fuels within municipal parks by applying annually for UBCM grant funding to thin, prune and removal woody surface fuels in priority areas. Many forested areas of the city have received initial fuel mitigation treatments and will require ongoing maintenance over the coming years. A challenge going forward for the City of Kelowna is to track historical treatments, and ensure that the areas are revisited and re-treated on an appropriate timeline.

Figure 6. Forest Fuel Reduction Project in Myra Bellevue Provincial Park

Grassland areas remain a hazard throughout the municipality. As noted in the 2016 CWPP, grass fires, though not as spectacular as crown fires, when wind-driven can have very rapid rates of spread and considerable flame height (up to 4 m) and are capable of igniting structures. Grass fires are capable of igniting structures in the interface, which subsequently release embers as they burn. Embers then can alight onto other structures further away, triggering a full interface fire event in which suppression resources are overwhelmed. Grass fires challenge the notion of rapid initial attack, as they have the capability to spread faster than the ability of crews to respond to the site, particularly when wind-driven.

The following observations made in the 2016 CWPP remain current:

- *Grassy fuels in open canopy stands pose a serious fire hazard in the study area and the hazard is generally underestimated;* ***thick, continuous flashy fuels (grasses) are one of the biggest fire hazards and operational challenges facing the City.***
- *Sites on northern and eastern aspects, and with higher site productivity, such as the Upper Canyon Open Space by the Wilden neighbourhood and parts of Dilworth Mountain, have thick, continuous, tall standing grasses which pose considerable hazard and could support a rapidly spreading surface fire capable of destroying nearby structures.*
- *Areas that were disturbed during development and subsequently re-seeded represent considerably higher grass hazard; these areas are generally 100% grass cover of thick, matted, non-native grass species often more than 1 m in height. A dryland, native grass mix should be used to stabilize and re-generate disturbed areas.*

While the hazard has been well-documented and is understood by City staff, several barriers have prevented effective mitigation up to this point:

- Many of the hazardous areas are located on private land (e.g., hillslopes disturbed during development), and often any alteration of vegetation cover is prohibited by bylaw.
- Prescribed burning is scientifically accepted as an ecologically beneficial and cost-effective method to reduce grassland hazard but there is little public acceptance for this – and some areas where grass hazard is may be unsuitable regardless (e.g., located on private land, on very steep slopes, or in very close proximity to structures).
- Other management options also have costs and benefits. Targeted grazing, for example, may not be socially acceptable in all areas or be less preferable for conservation areas.

The 2016 CWPP describes the primary management options for grass fuels: prescribed burning, targeted grazing, herbicides / chemical treatment, or mechanical treatment. That summary remains current, and is briefly summarized again below:

Table 22. Summary of Grass Fuel Management Recommendations from the 2016 CWRP.

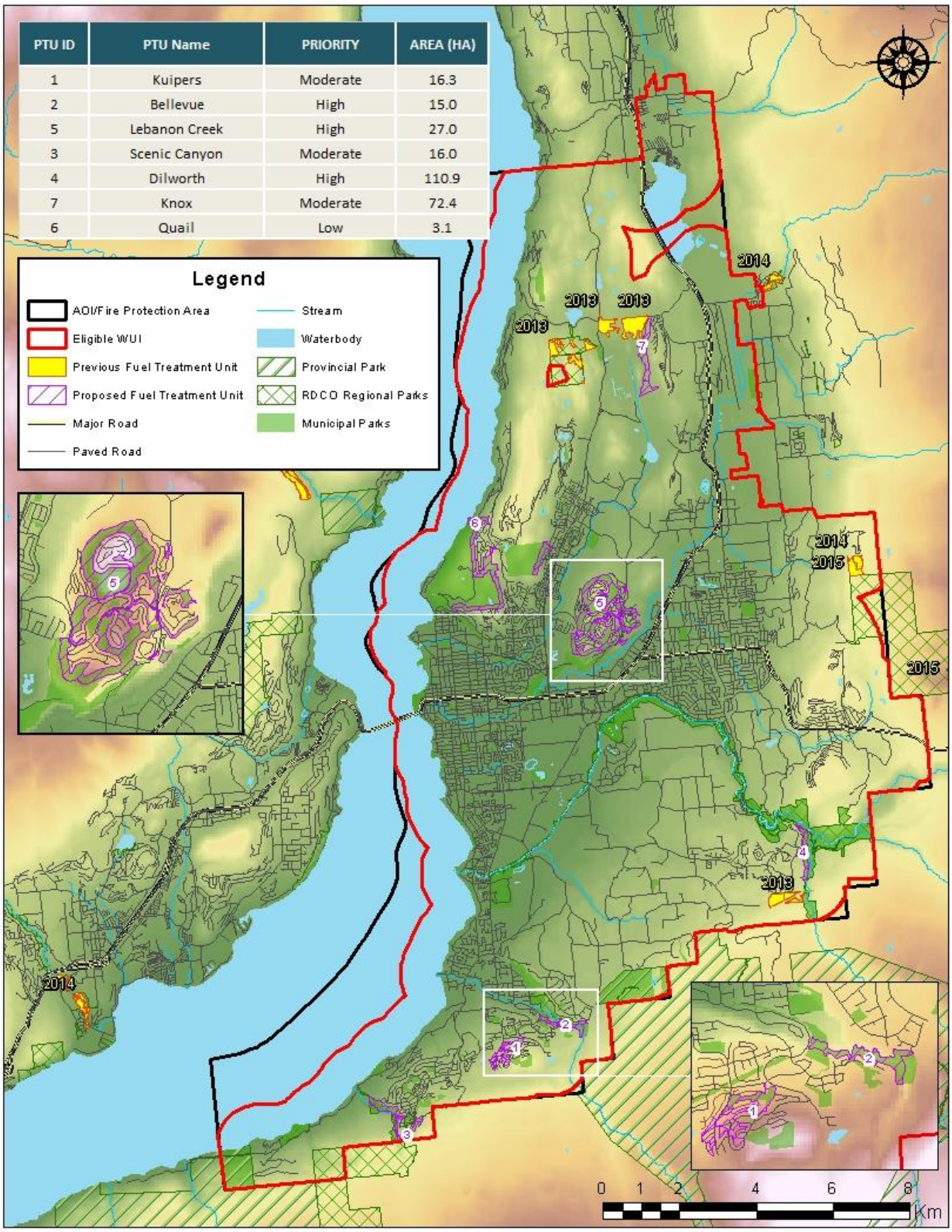
Targeted grazing	• May be effective surface fuels control under some conditions
	• Success of a grazing treatment depends on many variables, including, but not limited to:
	  ○ availability of livestock species appropriate for the target vegetation
	  ○ availability of qualified personnel to herd and manage the livestock to achieve desired results
	  ○ livestock and personnel availability with the appropriate timing for surface fuel control for the target vegetation.
	• Site and weather conditions affect the vegetative response to grazing and can make the results of grazing difficult to anticipate
	• Site-specific grazing management plans should be developed and include:
	  ○ detailed stocking levels
	  ○ length of grazing periods
	  ○ number of seasons required to achieve objectives
	  ○ quantifiable criteria to measure effectiveness
	  ○ invasive species management strategy

Herbicides / chemical treatment	• May be an effective and acceptable treatment option for aggressively invasive species or fast-growing vegetation which requires frequent re-treatment
	• Success of implementation depends on:
	  ○ accessibility to the treatment area
	  ○ treatment area size
	  ○ soil types
	  ○ ecosystem sensitivity
	  ○ proximity to water and other values at risk
	  ○ effectiveness of herbicide on the target vegetation
	• Water quality concerns and other environmental and societal impacts that may occur with widespread or prolonged use of herbicides as a treatment option to reduce surface fuel continuity makes chemical treatment an unfeasible option for most circumstances in the study area.
	• Herbicides do not reduce the fuel load, so in the short and medium term, fire hazard may not be reduced or may actually increase.

Mechanical treatment	• Most effective at roadways or other linear corridors accessible by mowers. • Paired burns, comparing standing to mowed grass, shows significant decrease in fire behaviour (flame length and rate of spread).

Prescribed / cultural burning	• Most effective method to control fine and small fuels, help to maintain lower fuel loads, and to restore or maintain an ecosystem closer to its historically natural conditions
	• Limitations and risks include the following:
	  ○ has little effect on larger diameter fuels
	  ○ risk of fire escape
	  ○ does not allow for discriminatory fuel reduction (fire burns biomass available)
	  ○ smoke can be a health hazard, particularly as fire prescriptions tend toward high relative humidity and low wind speed conditions often associated with stagnant air masses
	  ○ due to the risk of fire escape, fire managers often tend towards substantial fire personnel and equipment, which can result in higher implementation costs
	• However, in comparison with the costs and impacts of an uncontrolled wildfire:
	  ○ proper prescribed burning methods and timing can minimize emissions
	  ○ the timing of smoke emission is known, which allows for accommodation for those most seriously affected by smoke
	  ○ in contrast, smoke emissions from uncontrolled wildfires are considerable, uncontrollable, and untimed.

Despite the known challenges, areas where grass management should be targeted are detailed in the following table and map.



Map 14. Grass management proposed treatment units.

Table 23. Summary of Proposed Fuel Treatment Units (PTUs)

PTU ID	PTU Name	Total Area (ha)	Priority	Treatment Rationale
1	Kuipers	16.3	Moderate	This PTU is comprised of open forest with grassy understory (C-7) and grassland (O1-a/b) fuel types. It encompasses the open grassy areas located between clusters of residences in the Barnaby Road neighborhood, which is identified as a FireSmart Priority Neighborhood in Section 5: FireSmart Principles. Grass fuels are continuous from the bottom to the top of the slope on which this neighborhood is located through a network of natural areas. Homes are located at bottom-, mid-, and top-of-slope sites. This PTU is adjacent to private land that is currently undeveloped or in initial construction stages. As a result, in the short to medium term it extends from the continuous tracts of forest and wildlands in Okanagan Mountain Park.
2	Bellevue	15.04	High	This PTU is comprised predominantly of an open forest with grassy understory (C-7) fuel type. It is located to close to an area proposed for treatment under the 2020 RCDO Parks CWPP. The area proposed for treatment under the RCDO Parks CWPP, but not this CWRP, is comprised of dense, juvenile stands with continuous ladder fuels, and a less continuous grassy understory and are less suitable for grass-specific fuel management. This PTU is adjacent to private land that is currently undeveloped or in initial neighborhood construction stages. As a result, in the short to medium term it extends from the continuous tracts of forest and wildlands in Okanagan Mountain Park, into neighborhoods closer to the downtown and waterfront areas of the city. This heightens the risk of fire entering the neighborhood from, or igniting in the interface and spreading to, the more volatile forested fuel types within the park. This PTU encompass the ravine leading into Bellevue Creek. Homes are located on the top of slopes on either side, which increases the risk of adverse wildfire impacts to residents (steep slopes accelerate the rate of spread - see Section 4.1.1 Topography). This area is identified in Section 5: FireSmart Principles as a priority FireSmart neighborhood.
3	Lebanon Creek	27.02	High	This PTU is comprised of grassland (O1-a/b) and open forest with grassy understory (C-7) fuel types. It encompasses a network of ravines with steep slopes that are intermixed between clusters of homes in the adjacent neighborhood (identified as a FireSmart Priority Neighborhood in Section 5: FireSmart Principles). Homes in these neighborhoods are situated at the top of slopes, which increases the risk of adverse wildfire impacts to residents (steep slopes accelerate the rate of spread - see Section 4.1.1 Topography). The proposed treatment area extends outwards into continuous tracts of forest and wildlands in Okanagan Mountain Park. This heightens the risk of fire entering the neighborhood from, or igniting in the interface and spreading to, the more volatile forested fuel types within the park. This proposed treatment unit overlaps with an area proposed for treatment under the 2020 RCDO Parks CWPP.[25]
4	Scenic Canyon	16.0	High	This PTU is comprised of open forest with grassy understory (C-7) and grassland (O1-a/b) fuel types. It encompasses the steep ravine slopes or "canyon" for which the park is named. This PTU is located adjacent to Gallagher's Canyon (identified as a FireSmart Priority Neighborhood in Section 5: FireSmart Principles) on slopes below these residences. The proposed treatment area extends outwards into continuous tracts of forest and wildlands in adjacent Crown Land and the nearby Myra Bellevue Park. This heightens the risk of fire entering the neighborhood from, or igniting in the interface and spreading to, the more volatile forested fuel types within the park. This PTU also abuts and overlaps an area proposed for treatment under the 2020 RCDO Parks CWPP.[25]
5	Dilworth	110.9	High	This PTU is comprised predominantly of an open forest with grassy understory (C-7) fuel type. It encompasses the open grassy areas located between clusters of residences in the Dilworth neighborhood, (identified as a FireSmart Priority Neighborhood in Section 5: FireSmart Principles). Grass fuels are continuous from the bottom to the top of the hill on which this neighborhood is located through a network of natural areas. Homes are located both above and below

[25]The same area is proposed twice, because the treatment and rationale for grassy fuels reduction will be distinct from the conventional thinning, pruning, and surface fuel removal proposed in the 2020 RCDO Parks CWPP.

PTU ID	PTU Name	Total Area (ha)	Priority	Treatment Rationale
				the slopes on which this PTU is located. A rapidly spreading grass fire occurred in this neighborhood in 2021. Treatment of grass fuels in this location would aim to reduce the rate of spread in the event of a similar occurrence.
6	Knox	72.4	High	This PTU is comprised predominantly of an open forest with grassy understory (C-7) fuel type. It encompasses a 100-metre buffer against neighborhoods on the edge of Knox and Knox East parks. It overlaps previous and planned treatments by the City of Kelowna reduce wildfire risk within forested areas. Past treatments, however, did not specifically target grass fuel hazards. This PTU is located on slopes below residences in the Magic Estates neighborhood. While accumulations of hazardous fuels may exist throughout Knox Mountain Park (identified in the Local Fire Threat map in Section 4.3 Local Wildfire Threat) this PTU is strategically located to increase the defensible space closest to homes, which in combination with neighborhood-level FireSmart efforts, will support wildfire resiliency for residents.
7	Quail	3.1	Low	This PTU is comprised of an open forest with grassy understory (C-7) fuel type. It is located adjacent to the Quail Ridge neighborhood (identified as a FireSmart Priority Neighborhood in Section 5: FireSmart Principles). This PTU abuts continuous tracts of forested and wildland areas, which are located on private land. This heightens the risk of fire entering the neighborhood from, or igniting in the interface and spreading to, these areas for which the degree of wildfire risk is unknown.

Table 24. Vegetation management action items

Item #	Priority	Recommendation	Comments	Lead	Timeframe	Metric for Success	Funding Source
Objective: reduce the potential wildfire intensity and ember exposure to people, infrastructure, structures, and other values through manipulation of both the natural and cultivated vegetation that is within or adjacent to a community.							
V1	High	Maintain or expand the current fuel treatment program, for both forest and grass fuels.	The Parks Services department currently has sufficient in-house expertise to prioritize areas of municipal land for treatment, effectively reducing patches of hazardous fuels. Allocating a percentage of the City's operating budget towards fuel management would allow this program to expand and enable the City to leverage grant funding for novel community wildfire resiliency projects (e.g. hiring a FireSmart Coordinator and expanding FireSmart education programs). Additional support could be achieved by obtaining funding to hire student crews (e.g. through Canada Summer Jobs grants) to complete light-duty fuel treatment work in interface neighborhoods or municipal parks. A detailed description of the different methods available for treating grass hazard is found in the 2016 CWPP and remains current. It is briefly re-summarized in this document.	City of Kelowna (Parks Services)	Ongoing	Number of sites treated per year maintained or expanded	CRI funding and / or local government funding
V2	Moderate	Offer support for residents to dispose of flammable debris and vegetation from FireSmart landscaping initiatives on private property.	This could occur through maintaining or expanding the community chipping program (planned for 2022). In other municipalities, temporarily installing large bins on request from residents who want to complete landscaping work has also been an effective way of facilitating FireSmart landscaping.	City of Kelowna (Parks Services, potential FireSmart Coordinator)	1-3 years	Community chipping program offered periodically and bin installation program offered annually	CRI funding and / or local government funding
V3	Low	Continue to track information on completed fuel treatments within the City of Kelowna.	Information on fuel treatments should be tracked through a spatial layer. Projects carried out by the City, as well as on private land by developers should be included in this dataset. Consider tracking the following attributes of fuel treatments: agency who supervised work, date of treatment, method of treatment and debris disposal, and date for re-assessment.	City of Kelowna (Parks Services, potential FireSmart Coordinator)	Ongoing	Spatial and databases updated frequently	CRI funding and / or local government funding
V4	Low	Monitor treatment effects from the surface fuel reduction grazing	Gathering information about the outcome of this treatment will help support a cost-benefit analysis of replicating it at other sites.	City of Kelowna, VOSS, BCWS	1-3 years	Assessment completed	Local government funding

Item #	Priority	Recommendation	Comments	Lead	Timeframe	Metric for Success	Funding Source
		trial in south Kelowna (scheduled for 2022).					

SECTION 6: APPENDICES

6.1 APPENDIX A: LOCAL WILDFIRE RISK PROCESS

6.1.1 APPENDIX A-1: FIRE RISK THREAT ASSESSMENT METHODOLOGY

The Canadian Forest Fire Behaviour Prediction (FBP) System outlines five major fuel groups and sixteen fuel types based on characteristic fire behaviour under defined conditions.[26] Fuel typing is recognized as a blend of art and science. Although a subjective process, the most appropriate fuel type was assigned based on research, experience, and practical knowledge; this system has been used within BC, with continual improvement and refinement, for 20 years.[27] It should be noted that there are significant limitations with the fuel typing system which should be recognized. Major limitations include: a fuel typing system designed to describe fuels which sometimes do not occur within the AOI, fuel types which cannot accurately capture the natural variability within a polygon, and limitations in the data used to create initial fuel types.[27] There are several implications of the aforementioned limitations, which include: fuel typing further from the developed areas of the study has a lower confidence, generally; and, fuel typing should be used as a starting point for more detailed assessments and as an indicator of overall wildfire risk, not as an operational, or site-level, assessment. Forested ecosystems are dynamic and change over time: fuels accumulate, stands fill in with regeneration, and forest health outbreaks occur. Regular monitoring of fuel types and wildfire risk assessment should occur every 5 – 10 years to determine the need for threat assessment updates and the timing for their implementation.

Table 25 summarizes the fuel types by general fire behaviour (crown fire and spotting potential). These fuel types were used to guide the threat assessment

Table 25. Fuel Type Categories and Crown Fire Spot Potential. Only summaries of fuel types encountered within the WUI are provided (as such, other fuel types, i.e., C-1, C-2, C-4, S-2, and S-3 are not summarized below).

Fuel Type	FBP / CFDDRS Description	AOI Description	Wildfire Behaviour Under High Wildfire Danger Level	Fuel Type – Crown Fire / Spotting Potential
C-3	Mature jack or lodgepole pine	Fully stocked, late young forest (Douglas fir, hemlock, cedar), with crowns separated from the ground	Surface and crown fire, low to very high fire intensity and rate of spread	High*

[26] Forestry Canada Fire Danger Group. 1992. Development and Structure of the Canadian Forest Fire Behavior Prediction System: Information Report ST-X-3.

[27] Perrakis, D.B., Eade G., and Hicks, D. 2018. Natural Resources Canada. Canadian Forest Service. *British Columbia Wildfire Fuel Typing and Fuel Type Layer Description* 2018 Version.

Fuel Type	FBP / CFDDRS Description	AOI Description	Wildfire Behaviour Under High Wildfire Danger Level	Fuel Type – Crown Fire / Spotting Potential
C-7	Ponderosa pine and Douglas-fir	Low-density, uneven-aged forest, crowns separated from the ground, understory of discontinuous grasses and shrubs. Exposed bed rock and low surface fuel loading.	Surface fire spread, torching of individual trees, rarely crowning (usually limited to slopes > 30%), moderate to high intensity and rate of spread	Moderate
O-1a/b	Grass	Matted and standing grass communities; sparse or scattered shrubs, trees and down woody debris. Seasonal wetlands that have the potential to cure.	Rapidly spreading, high-intensity surface fire when cured	Low
M-1/2	Boreal mixedwood (leafless and green)	Moderately well-stocked mixed stand of conifers and deciduous species, low to moderate dead, down woody fuels; areas harvested 10-20 years ago	Surface fire spread, torching of individual trees and intermittent crowning, (depending on slope and percent conifer)	<26% conifer (Very Low); 26-49% Conifer (Low); >50% Conifer (Moderate)
D-1/2	Aspen (leafless and green)	Deciduous stands	Always a surface fire, low to moderate rate of spread and fire intensity	Low
S-1	Slash (jack / lodgepole pine, white spruce)	Any conifer slash	Moderate to high rate of spread and high to very high intensity surface fire	Low
W	N/A	Water	N/A	N/A
N	N/A	Non-fuel: irrigated agricultural fields, golf courses, alpine areas void or nearly void of vegetation, urban or developed areas void or nearly void of forested vegetation	N/A	N/A

**C-3 fuel type is considered to have a high crown fire and spotting potential within the WUI due to the presence of moderate to high fuel loading (dead standing and partially or fully down woody material), and continuous conifer ladder fuels.*

6.1.2 APPENDIX A-2: PROXIMITY OF FUEL TO THE COMMUNITY

Table 26. Proximity to the Interface.

Proximity to the Interface	Descriptor*	Explanation
WUI 100 *HIZ/CIIZ and Community Zones*	(0-100 m)	This Zone is always located adjacent to the value at risk. Treatment would modify the wildfire behaviour near or adjacent to the value. Treatment effectiveness would be increased when the value is FireSmart.
WUI 500 *Community and Landscape Zones*	(100-500m)	Treatment would affect wildfire behaviour approaching a value, as well as the wildfire's ability to impact the value with short- to medium- range spotting; should also provide suppression opportunities near a value.
WUI 1000	(500-1000 m)	Treatment would be effective in limiting long - range spotting but short- range spotting may fall short of the value and cause a new ignition that could affect a value.

Proximity to the Interface	Descriptor*	Explanation
Landscape Zone		
Landscape Zone	>1000 m	This should form part of a landscape assessment and is generally not part of the zoning process. Treatment is relatively ineffective for threat mitigation to a value, unless used to form a part of a larger fuel break / treatment.

**Distances are based on spotting distances of high and moderate fuel type spotting potential and threshold to break crown fire potential (100m). These distances can be varied with appropriate rationale, to address areas with low or extreme fuel hazards.*

6.1.3 APPENDIX A-3: FIRE SPREAD PATTERNS

ISI roses can help plan the location of fuel treatments on the landscape to protect values at risk based on the predominant wind direction and frequency of higher ISI values. Potential treatment areas were identified and prioritized with the predominant wind direction in mind. Figure 7**Error! Reference source not found.** below displays the daily average ISI values for the Fintry fire weather station, which is located about 15 kilometers southeast of Vernon, on the east side of Okanagan Lake. During the fire season (April – October) winds originate predominantly from the south and southeast, becoming more dominant in August and September. High windspeeds are more likely to be recorded in July and August.

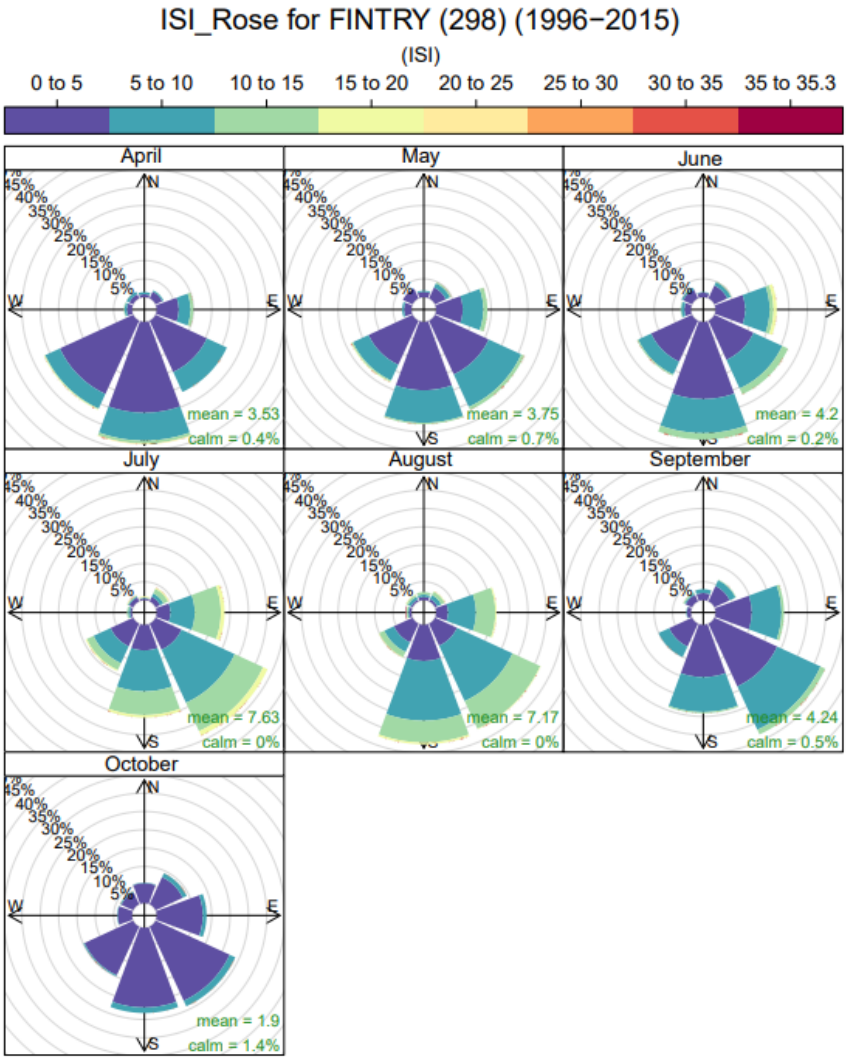


Figure 7. Initial Spread Index (ISI) roses depicting average daily wind speed and direction for each month during the fire season (April – October). Data taken from Fintry fire weather station, 1996 – 2015.

6.2 APPENDIX B: MAPS

Provided separately as PDF package.

6.3 APPENDIX C: SAMPLE JOB PROFILE - FIRESMART COORDINATOR

6.3.1 JOB SUMMARY

The [City of Kelowna/Kelowna Fire Department (KFD)] is looking to recruit a full-time FireSmart Coordinator. This position will liaise between various City departments and the KFD, in order to provide the residents of Kelowna with a comprehensive and effective FireSmart program. This position will aim to create a more educated and motivated public with regard to wildfire prevention principles, design community-driven programs to perform risk mitigation works, and will capitalize on available local, provincial and national funding programs to ensure the continued delivery of the program.

6.3.2 JOB RESPONSIBILITIES

The role of a FireSmart coordinator allows for flexibility and creativity in deciding how the program is best delivered, but may include the following roles:

- Providing continued education to residents regarding FireSmart principles, mitigation efforts within the City of Kelowna, and steps that homeowners can take to reduce the risk of wildfire on their properties.
- Designing neighbourhood programs to assist with fuel management efforts at the home and neighbourhood level. Ideas include providing temporary debris disposal bins, scheduling chipper days with neighbourhoods to collect and remove debris, and/or scheduling neighbourhood work days to oversee and coordinate risk reduction efforts.
- Overseeing and expanding the FireSmart Home Assessment program and creating a database to better organize the assessment efforts within the City.
- Designing and implementing incentive programs to assist homeowners with wildfire mitigation efforts, including, but not limited to: FireSmart Rebate Program and sprinkler program.
- Working with educators to ensure that material from the FireSmart Education Box is being presented through all grade levels in Kelowna schools.

6.3.3 JOB SKILLS & QUALIFICATIONS

The responsibilities of a FireSmart Coordinator involve aspects of wildfire prevention due to either structure fires or wildfire, and may involve recommendations on large parcels of natural land. Therefore, it is preferred that a successful candidate demonstrate the following:

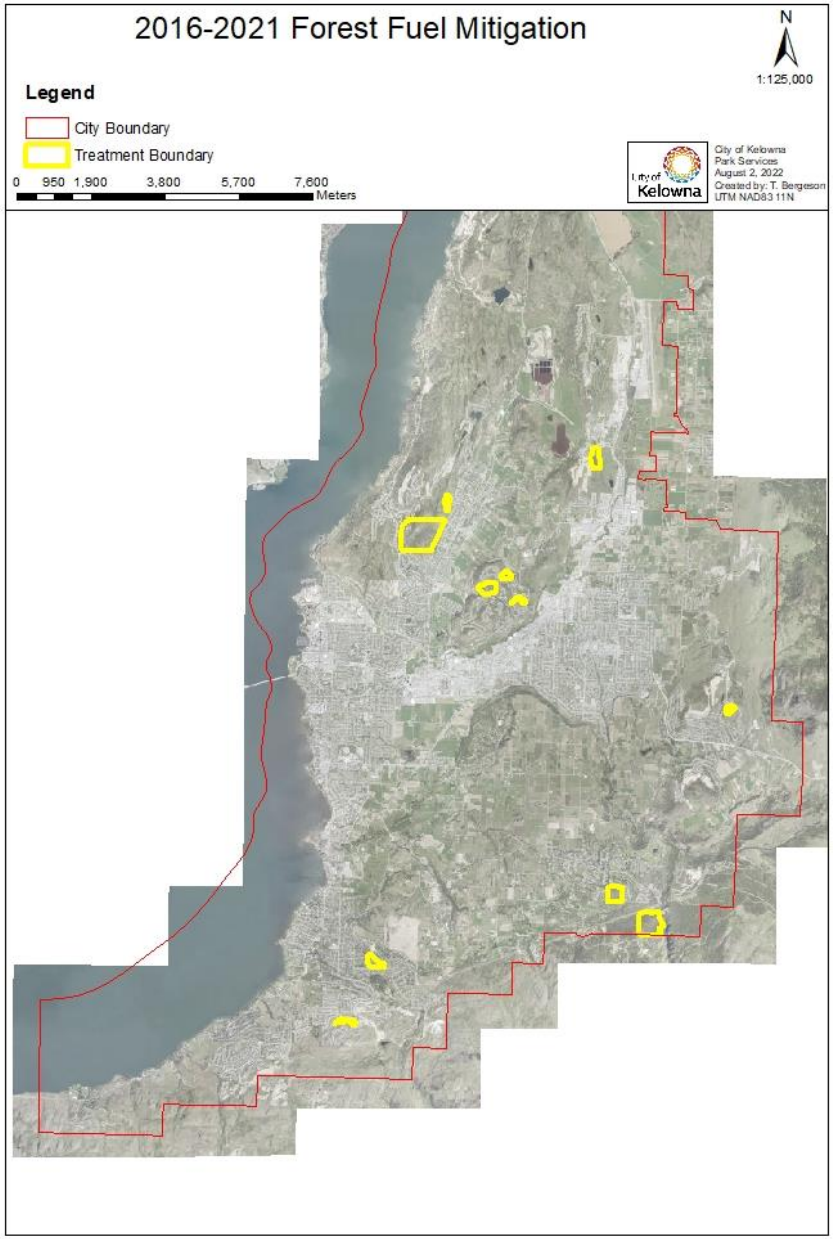
- Knowledge of the seven FireSmart disciplines and certification as a Local FireSmart Representative (LFR) and/or a Qualified Assessor under the Home Partners Program;
- Experience in wildfire mitigation programs at the home and forest level;
- Experience in wildfire suppression and/or structure protection;
- Registration or eligibility for registration with the Association of BC Forest Professionals (ABCFP) and/or certification with the International Society of Arboriculture (ISA);
- Experience with funding applications, budget estimation and budget administration;
- A motivated and creative attitude, with a genuine desire to protect the residents of Kelowna from an ever-increasing risk of wildfire.

2022 Community Wildfire Resiliency Plan Update

City of Kelowna

Background

- Fourth iteration of strategic Community Wildfire Plan for City of Kelowna
- Significant focus on forest fuel mitigation from 2004-2016
- Key accomplishments from 2016-2021 include:
  - Review of Wildfire Development Permit process
  - Completion of 125 hectares of forest fuel mitigation
  - Total Access Plan developed for strategic suppression
  - Implemented targeted grazing pilot project


2016-2021 Forest Fuel Mitigation
N
1:125,000
Legend
City Boundary
Treatment Boundary
0 950 1,900 3,800 5,700 7,600
Meters
City of Kelowna
City of Kelowna
Park Services
August 2, 2022
Created by: T. Bergeson
UTM NAD83 11N

Current Issues

- History of fire suppression in fire-dependent ecosystem
- Fire behaviour and climate change
- Fuels management around interface and intermix areas
- Grassland fuel management options
- FireSmart™ awareness and participation

Key 2022 Recommendations

- High priority:
  - Complete a Municipal Evacuation Plan
  - Assess policy and legislation options to support wildfire risk reduction
  - Complete critical infrastructure FireSmart™ assessments and back up power source options
  - Complete a community water delivery assessment for suppression requirements
  - Maintain or expand current fuel treatment programs

Thank you. Questions?

Item #	Priority	Recommendation	Timeframe
E1	High	Create a FireSmart Coordinator position to oversee the delivery of a comprehensive FireSmart program.	1 year
E3	Moderate	Promote FireSmart information and wildfire preparedness through social media and other outreach opportunities.	Ongoing
E4	High	Promote FireSmart information and wildfire preparedness through television or radio advertisements.	Ongoing
E5	Moderate	Host FireSmart workshop(s) for residents.	Ongoing
E6	Moderate	Give FireSmart presentations in local schools.	Ongoing
E7	High	Engage directly with residents in priority neighborhoods to offer Home Ignition Zone assessments and deliver wildfire preparedness information.	Ongoing
E8	High	As emergency evacuation plan(s) are completed, engage with residents to provide relevant emergency preparedness information.	1-3 years
E9	Low	Engage with Kelowna Chamber of Commerce, Tourism Kelowna, and/or Destination BC to assess the potential feasibility of hosting a collaborative FireSmart campaign aimed at tourist audiences.	1-3 years
E10	Moderate	Host FireSmart / wildfire preparedness booths at public events and/or festivals during the summer.	Ongoing
E11	Moderate	Promote uptake into the FireSmart Neighbourhood Recognition Program.	3-5 years
E12	Moderate	Install signage at locations of recent fuel treatments	Ongoing
L1	Moderate	Update the Urban Forest Management Strategy	1-2 years
L2	Moderate	Adopt a standard for fuel management in parks and green spaces.	1-3 years
L3	Low	In 2026, initiate an update of this CWRP.	5 years
L4	High	Adopt the Wildfire DP Terms of Reference.	1-3 years
L5	High	The Wildfire DP should Include/incorporate the construction and major renovation of new single-family homes on existing lots into the Wildfire DP process'.	3-5 years
L6	Low	Implement the recommendations of the Non-Structural Flood Mitigation Resource Guide	Ongoing
L7	Low	Amend the Subdivision, Development & Servicing Bylaw (Bylaw #7900) to include a requirement for the installation of fire hydrants outside linear parks and natural area parks.	1 year
D1	High	Engage a qualified professional (such as a Local FireSmart Representative) to update or complete formal FireSmart assessments of critical infrastructure.	3-5 years
D2	Moderate	Use fire-resistant construction materials, building design and landscaping for all critical infrastructure when completing upgrades or establishing new structures	Ongoing
D3	Moderate	Develop a standard for early review of prospective parks locations at the neighborhood planning stage, by Kelowna Parks Services staff.	3-5 years
D4	Moderate	Assess the feasibility of purchasing easements around subdivision boundaries in order to install perimeter trails.	3-5 years

Item #	Priority	Recommendation	Timeframe
I1	Moderate	Collaborate with the MoF, BC Parks and BCWS to promote knowledge sharing about completed and ongoing wildfire risk reduction projects near Kelowna, and to strategize mid- to long-range planning for future adjacent treatment areas.	1-3 years
I2	Moderate	Schedule regular meetings of members of the Community FireSmart Resiliency Committee (CFRC).	Ongoing
I3	Moderate	Through the CFRC meetings or another planning table, initiate and maintain regular information sharing meetings with RDCO staff, and other municipalities in the Central Okanagan.	Ongoing
I4	Moderate	Engage with operators (e.g., BC Hydro, Fortis BC) to encourage completion of FireSmart assessments for privately owned critical or hazardous infrastructure.	1-3 years
I5	Moderate	Engage with Indigenous communities to identify opportunities for collaboration related to community wildfire resilience initiatives.	Ongoing
C1	High	Hold periodic multi-agency training exercises focused on interface wildfire incident response with BCWS and / or other mutual aid partners.	Ongoing
C2	Moderate	The Kelowna Fire Department should maintain and expand the annual interface wildfire training programs offered to its members, as well as continuing to support workshops and training days.	3-5 years
C3	Low	Attend the annual FireSmart conference.	Ongoing
EP1	High	Review back up power source options for all critical infrastructure.	1-3 years
EP2	High	Complete and participate in regular testing of a wildfire incident pre-plan.	1-3 years
EP3	High	Evaluate the utility of adopting an electronic emergency alert system for City of Kelowna residents that is deployable by City staff.	1 year
EP4	High	Complete a community water delivery assessment for suppression requirements across all four water purveyors.	1-3 years
EP5	Moderate	Based on the results of the fire flow/water availability assessment, evaluate the utility of installing dry hydrants in natural areas and acquiring lake water compatible pumps to support suppression response in more isolated areas of the municipality.	1-3 years
EP6	Moderate	Identify municipal buildings, such as community centers or libraries, as clean air spaces and promote their use during occurrences of poor air quality.	1-3 years
EP7	High	Evaluate the feasibility of obtaining a structural protection unit (SPU) for the City.	1 year
EP8	High	Review, update, and regularly revise a Total Access Plan.	1-3 years
EP9	High	Complete a municipal evacuation plan, drawing on the outcomes of the RDCO evacuation planning process (in progress, to be completed 2022).	1-3 years

Item #	Priority	Recommendation	Timeframe
V1	High	**Maintain or expand the current fuel treatment program, for both forest and grass fuels.**	3-5 years
V2	Moderate	**Offer support for residents to dispose of flammable debris and vegetation from FireSmart landscaping initiatives on private property.**	Ongoing
V3	Low	**Continue to track information on completed fuel treatments within the City of Kelowna.**	Ongoing
V4	Low	**Monitor treatment effects from the surface fuel reduction grazing trial in south Kelowna (scheduled for 2022).**	1-3 years

www.kelowna.ca/firesmart