

FOOTHILLS OKOTOKS REGIONAL WATER PROJECT UPDATE

Issue

The Foothills Okotoks Regional Water Project design work is ongoing. This report serves as an update on the project work.

Motion Proposed by Administration

That the Intermunicipal Committee receives this update as information.

Report, Analysis and Financial Implications

The following provides an update of project activities and considerations.

Intake

Design for the intake is ongoing and in collaboration with the technology provider.

Reservoir

The Town purchase of land for construction of the raw water storage reservoir shall be finalized by the end of April.

Raw Water Main

Refinements to detailed pipeline alignments are ongoing.

Communications

Administration will initiate joint communications for the project starting in May and ending June 30, 2021.

Attachment(s)

1. N/A

Prepared by: Angela Alambets PM
Reviewed by: Jeremy Huet, Jeff Edgington

FOOTHILLS OKOTOKS REGIONAL WATER PROJECT VISION - DRAFT

Issue

The Foothills Okotoks Regional Water Project (FORWP) requires funding and environmental approvals to proceed with project implementation. Draft communication materials have been developed to enhance understanding of the FORWP drivers and objectives and to gain support of the Province. The intent is to clarify with administration and political level individuals that the FORWP will meet the immediate water supply needs of the Partners while opening future opportunities for water supply to the region.

Recommendations for revisions to the document were received at the March 2021 Intermunicipal Committee (IMC) meeting.

The updated final draft regional vision document is presented for review with IMC.

Motion Proposed by Administration

That the Draft Foothills Okotoks Regional Water Project Vision document is received as information.

Report, Analysis and Financial Implications

The regional vision document is attached for review with the IMC committee.

Attachment(s)

1. Final Draft Foothills Okotoks Regional Water Project Vision – Communication Materials

Prepared by: Angela Alambets PM
Reviewed by: Jeremy Huet, Jeff Edgington

FOOTHILLS OKOTOKS REGIONAL WATER PROJECT (FORWP)

FINAL DRAFT





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PROJECT DRIVER: WATER RESOURCE CONSTRAINTS¹⁶

Moratoriums

- **1985:** Sheep River moratorium on new licenses
- **2006:** South Saskatchewan river basin moratorium on new licenses
- **2008:** Highwood Diversion Plan adopted to improve instream flow conditions, with special operating requirements

Water Conservation and Instream Objective Constraints

- Rivers are challenged to meet IOs and WCOs
- Small rivers with significant seasonal variability and no upstream storage

IOs/WCOs are set to limit the amount of water that is taken from the river to protect aquatic health and meet interprovincial agreements.

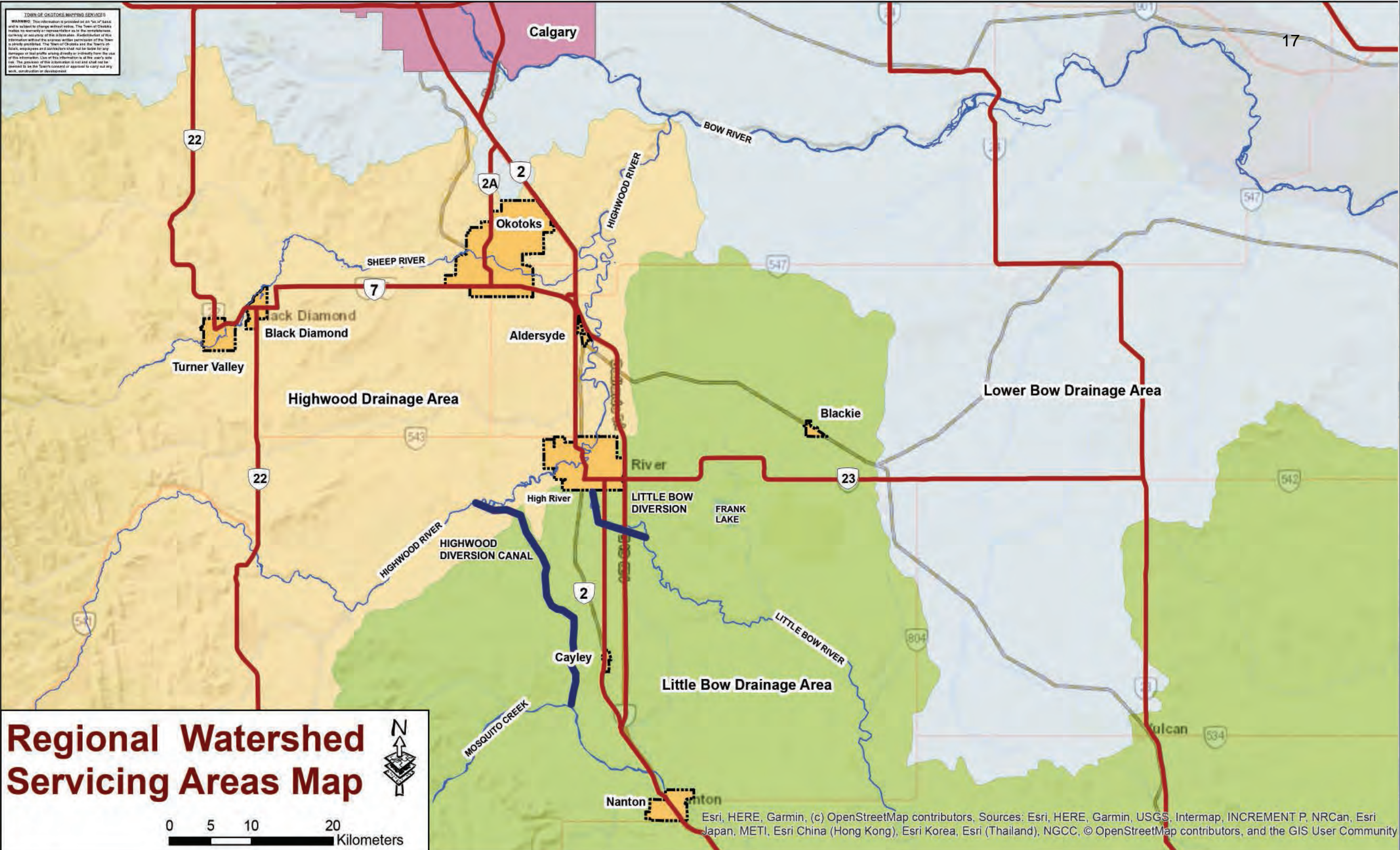
License Challenges

- New transfers generally not supported, as significant storage is required
- Limited quantities can be transferred upstream; only 5% of licensed volume of Bow licenses can be transferred upstream to the Sheep
- The quantity and demand for license transfers results in increased administrative effort and operational complexity
- Transferred licenses may have significant withdrawal restrictions

	Town of Okotoks	Foothills County
Current licenses administered on Sheep, Highwood Rivers, and their tributaries	23 ¹	16
Licenses in process of transfer, abandoned, or denied	11	2
Potential number of transfers nullified by regional intake	10	0

¹ Includes 13 transfers since 2010

TOWN OF OKOTOKS MAPPING SERVICES
WARNING: This information is provided on an "as is" basis and is subject to change without notice. The Town of Okotoks makes no warranty or representation as to the completeness, accuracy or assurance of the information. Redistribution of this information without the express written permission of the Town is strictly prohibited. The Town of Okotoks and the Town's officials, employees and contractors shall not be liable for any damages or loss arising directly or indirectly from the use of this information. Use of this information is at the user's sole risk. The provision of this information is not and shall not be deemed to be the Town's consent or approval to carry out any work, construction or development.



Regional Watershed Servicing Areas Map



0 5 10 20 Kilometers

PROJECT DRIVER: GROWTH PRESSURES & ECONOMIC DEVELOPMENT¹⁸

- Okotoks and Foothills County are not able to support the growing water needs of development in the region

Forecast Population - Persons

Municipality	2018	2048	2053
Okotoks	29,002	58,653	62,658
Foothills	24,683	39,082	41,103

Forecast of Regional Growth - Jobs

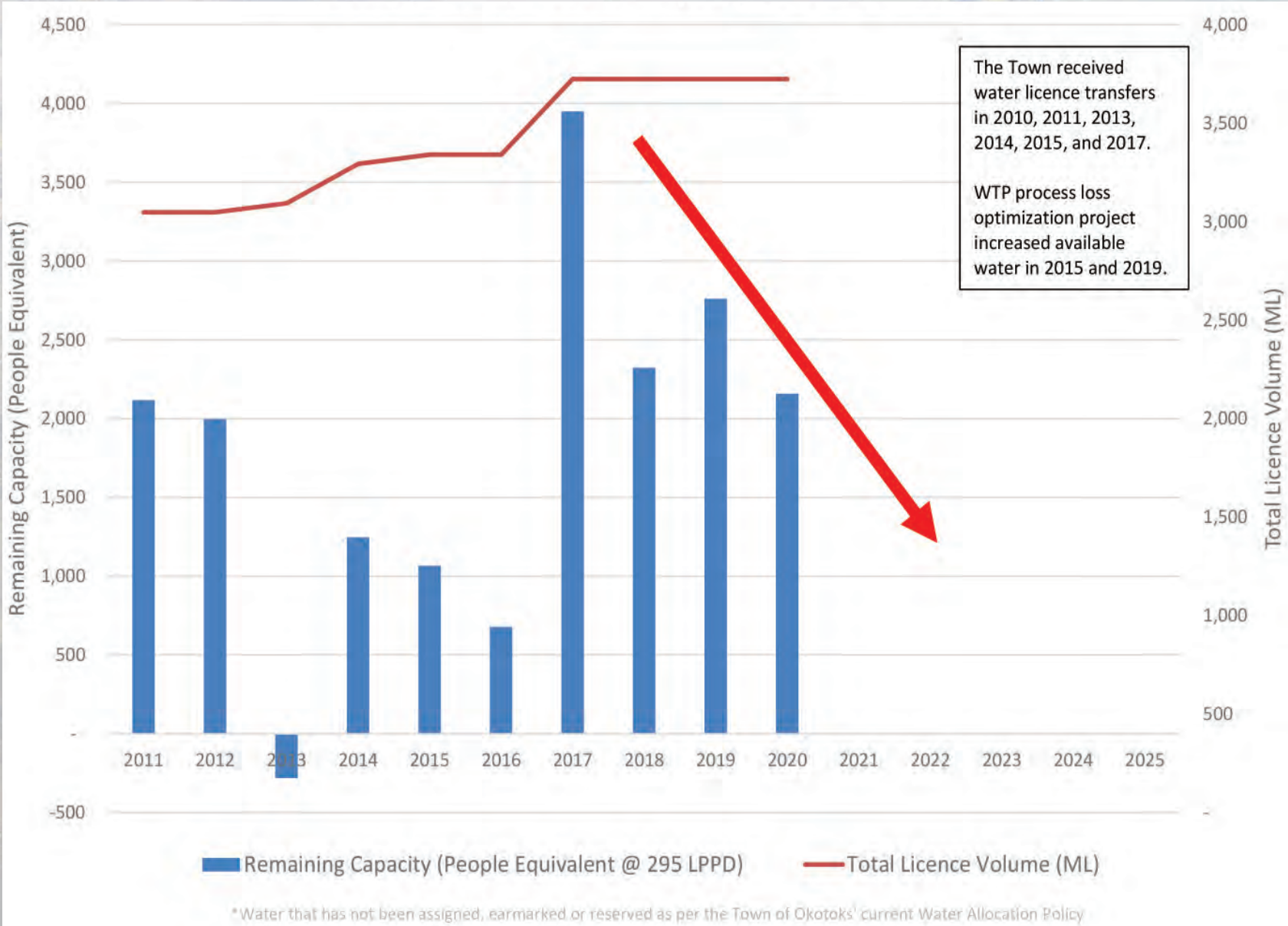
Municipality	Incremental Employment Growth (2018-2048)
Okotoks	9,840
Foothills	22,230

PROJECT DRIVER: GROWTH PRESSURES & ECONOMIC DEVELOPMENT

OKOTOKS

- Insufficient water supply is impacting current growth; water supply is urgently needed to address growth pressure
- Okotoks has moved from one of the highest growth rates in Canada to one of the lowest in the CMRB region
- Growth is placing additional pressure on challenged rivers
- Okotoks is nearly out of water to support new development

Water Capacity Declining Over Time



PROJECT DRIVER: GROWTH PRESSURES & ECONOMIC DEVELOPMENT²⁰

FOOTHILLS COUNTY



- Foothills County has targeted growth in the Central District in accordance with their Growth Management Strategy
- Additional treatment systems, complexities, and risks are created with additional growth
- Growth in Foothills County is typically supported by drilling additional wells and is not sustainable

Calgary Metropolitan Region Existing Water and Wastewater Servicing and Regional Potential

WATER TREATMENT

Water Licence Comparison:
Treatment Infrastructure
Annual Water Licence vs.
2076/Buildout Population

Legend

- 2076/Buildout Population Equivalent
- Annual Water Licence Volume Population Equivalent

Surplus/Deficit as Percentage
of Licence Annual Diversion Volume

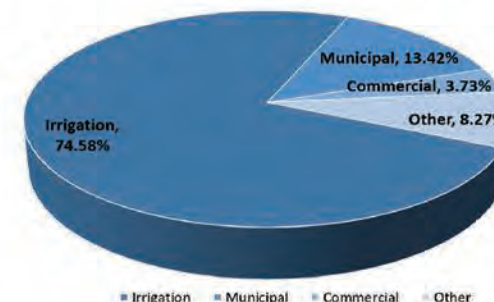
- 100% (Surplus)
- 0% (Meets Demands)
- 100% (Deficit)

IMPORTANT

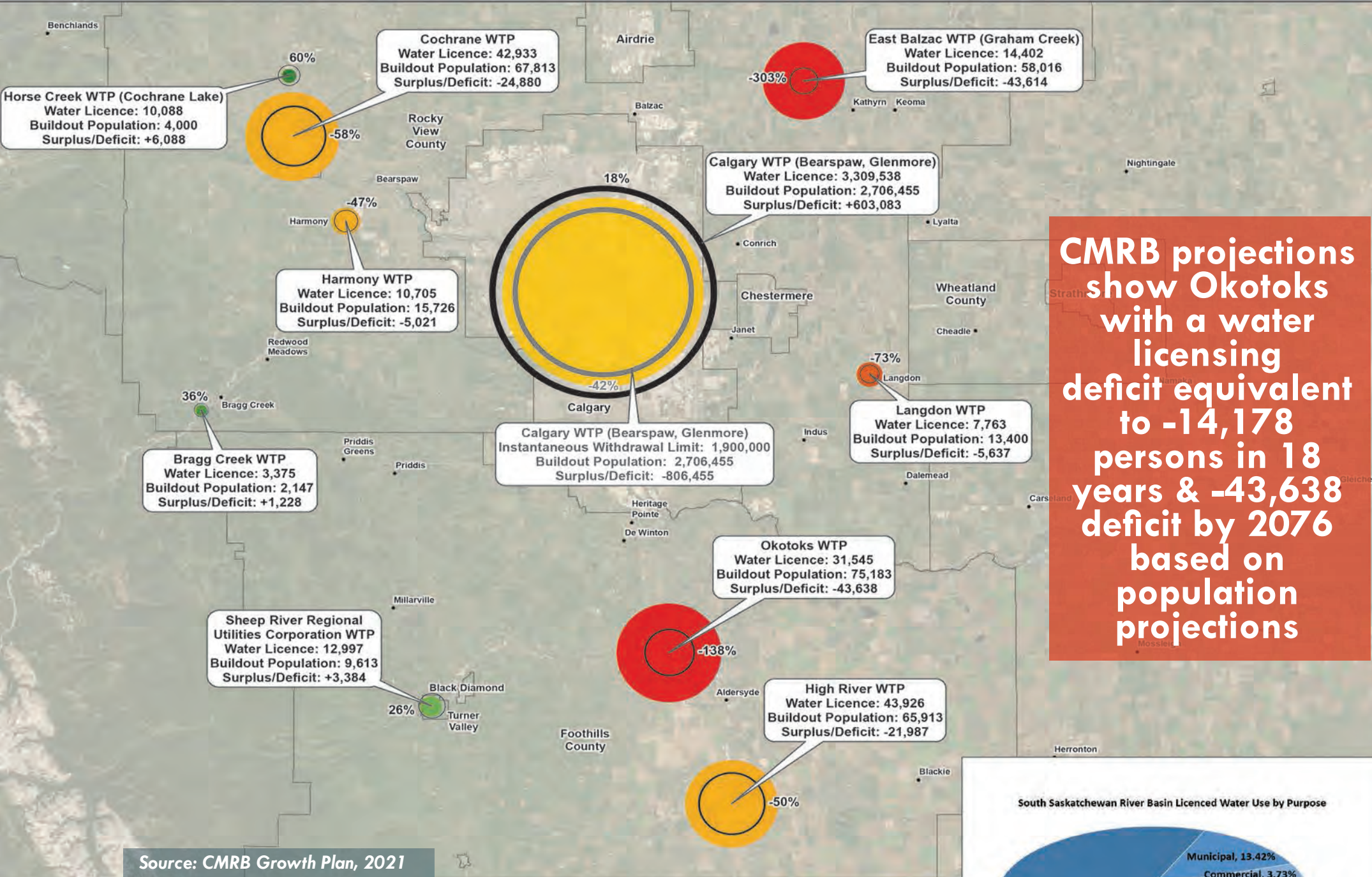
Except for Calgary which represents a comparison of the licence instantaneous withdrawal rate the other comparisons represent the licence annual diversion volume only. The ability to divert water may be limited by instantaneous diversion rate, climate variability, in-stream river objectives, seasonal variability of river levels, infrastructure capacity and licence regulatory requirements which are not evaluated within the scope of this study.

The licences shown on this figure represent only a portion of the 13.42% of the total licences allocated from the South Saskatchewan River Basin.

South Saskatchewan River Basin Licensed Water Use by Purpose



Adapted for simplicity from the South Saskatchewan River Basin Water Allocation Report (Figure 3), Alberta Environment, May 2003.



Source: CMRB Growth Plan, 2021

Water Treatment Plant	Existing Service Area Population Equivalent	Service Area 20-Year Population Equivalent	Service Area Buildout Population Equivalent	Existing Capacity Population Equivalent	Water Licence Population Equivalent
Calgary WTP (Bears paw, Glenmore)	1,470,043	2,026,810	2,706,455	1,624,000	3,309,538
Bragg Creek WTP	459	1,303	2,147	719	3,375
Harmony WTP	254	7,863	15,726	4,198	10,705
Langdon WTP	5,370	7,979	13,400	6,554	7,763
East Balzac WTP (Graham Creek)	2,343	24,354	58,016	10,260	14,402
Horse Creek WTP (Cochrane Lakes)	769	1,260	4,000	3,640	10,088
Cochrane WTP	29,277	42,512	67,813	47,114	42,933
Heritage Pointe WTP	2,075	2,500	2,500	3,750	Unknown
SRRUC WTP	4,990	7,310	9,613	13,096	12,997
Okotoks WTP	29,798	45,723	75,183	40,678	31,545
High River WTP	31,689	43,874	65,913	46,669	43,926

PROJECT DRIVER: CLIMATE CHANGE & RESILIENCY²²

- Climate change models predict increased frequency of multi-year droughts
- Historical water supply studies in the Bow River Basin show long periods of low flow as part of natural variability
- Regardless of climate change projections, water management strategies need to be designed around significant, multi-year droughts
- Regionally, province-funded studies indicate water treatment plants show vulnerability to reduced raw water quality created by low flows
- Increasing risk of natural droughts requires increased water supply system resiliency



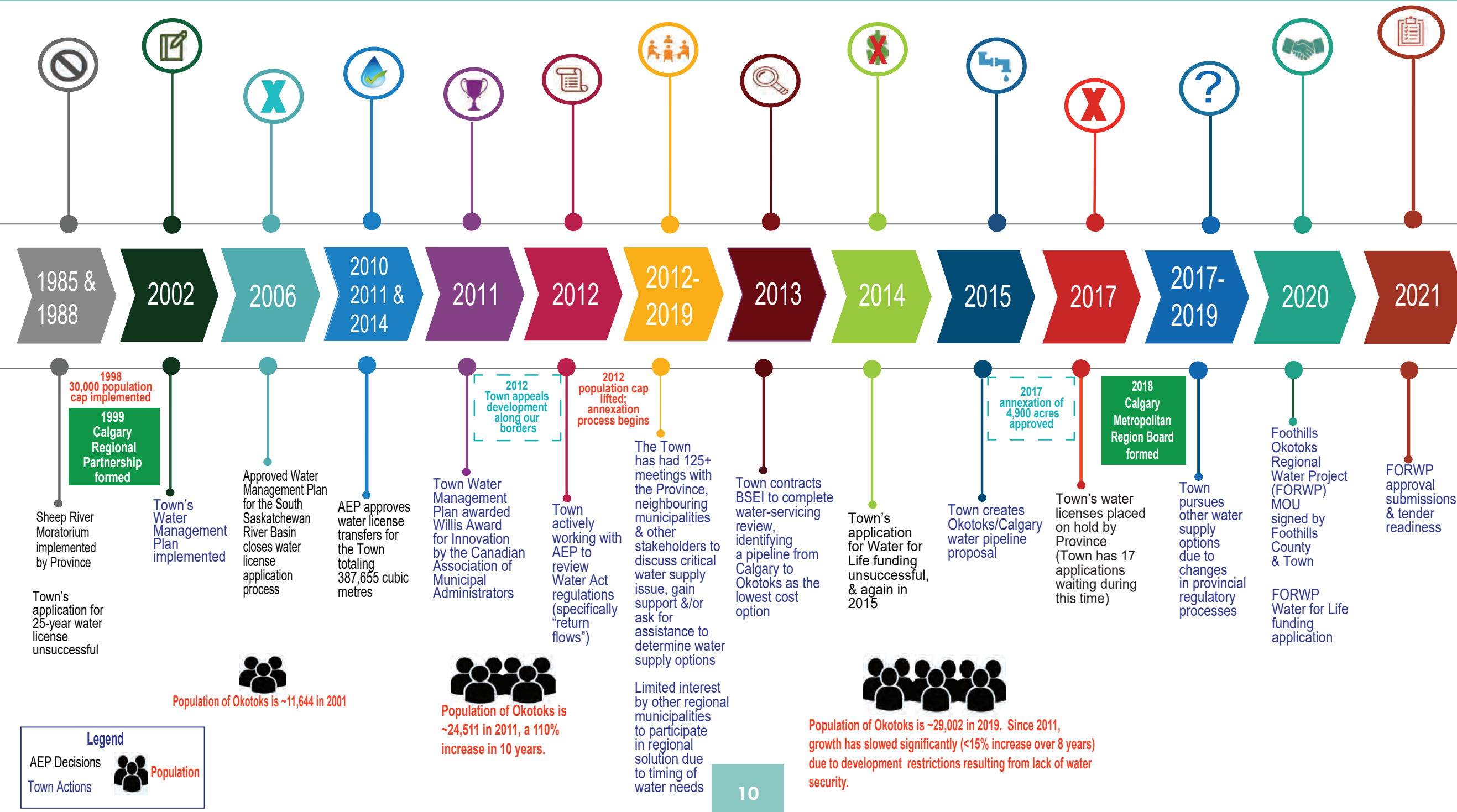
PROJECT DRIVER: SAFE & SECURE DRINKING WATER

23

- There are challenges at municipal and regional levels to adequately maintain water quality and operations of multiple systems
- An estimated 124 water systems fall under AHS guidelines (non-residential: schools, restaurants, agribusiness, campgrounds)
- The Town of Nanton experiences continuous water quality challenges
- There are 4 small independent systems in Foothills County in the FORWP area that could be serviced (Cottonwood, Heritage Heights, Greenhaven, Ravencrest)
- Foothills County has overtaken Hawks landing, Priddis Greens, Cottonwood and is in the process of taking Greenhaven
- Many homeowners rely on pump/haul of potable water to cisterns. Water challenges may lead to closure of bulk water stations
- Okotoks' 13 well raw water supply system has limited emergency power backup



HISTORY TIMELINE



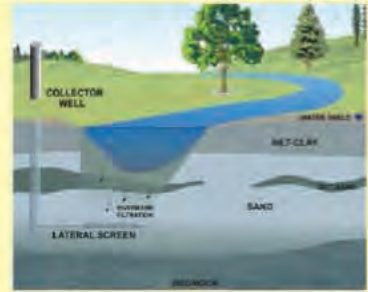
Water Main

- 25+km raw water main from intake to Okotoks WTP & (future) Aldersyde WTP
- Upsized for Nanton demands
- Water main rights of way accommodate future twinning

***Two treatment facilities with cross connections provides increased system resiliency**

Okotoks WTP

Major flood protection/access improvements completed in 2018

Intake

- Designed for Town, County, Nanton demands
- Expandable in the future at limited cost/impact
- Limited footprint and environmental impact
- Riverbank infiltration

Storage

- 3 months Town storage, additional land available for potential regional storage needs
- Pump Station phased for Town, County, Nanton demands
- Land available for future WTP

Future Highwood Regional Waterworks System Aldersyde WTP
Approved in 2018

Okotoks

Aldersyde

Legend**Water Treatment Plant****Waste Water Treatment Plant****Intake**

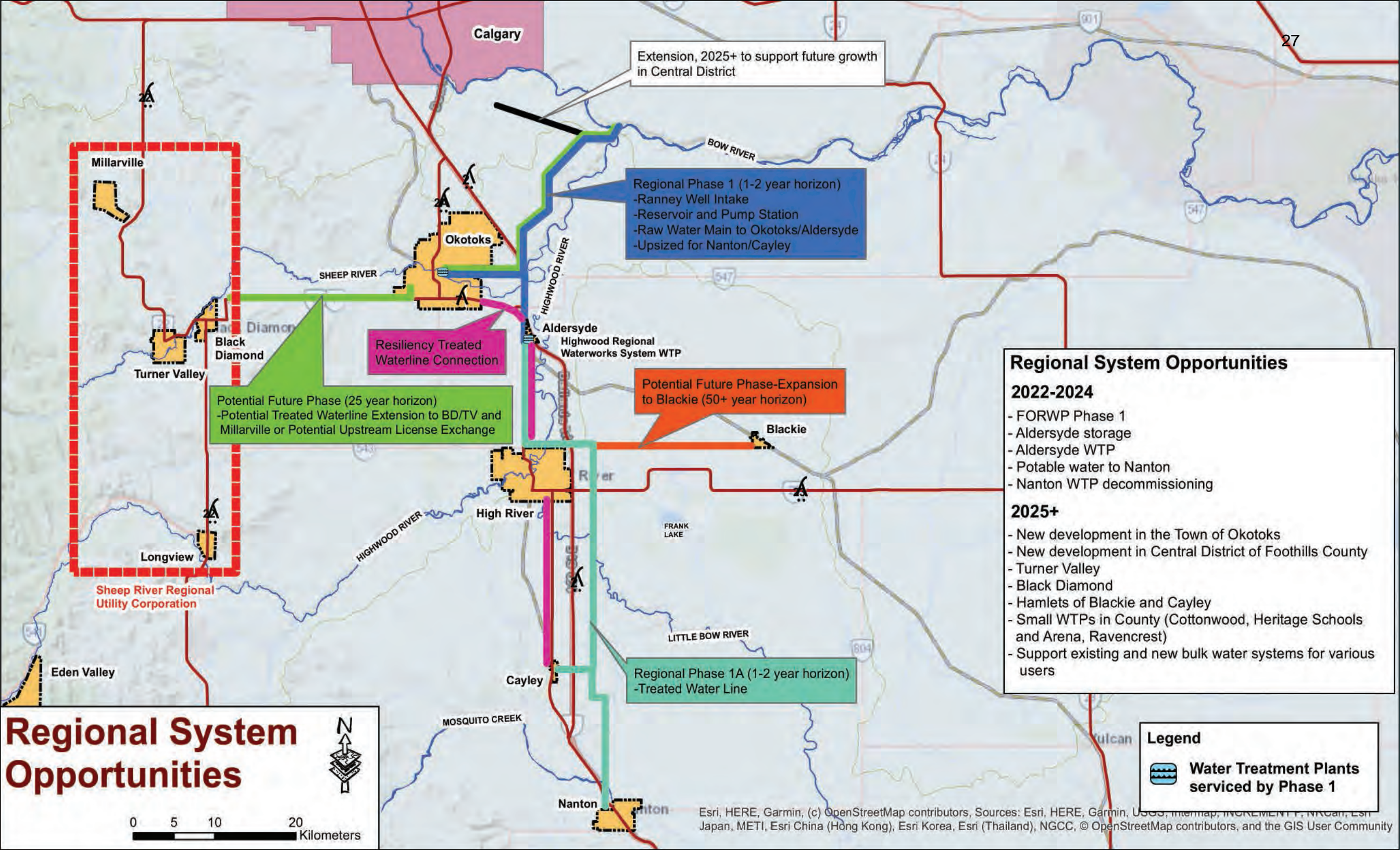
Phase 1 FORWP



0 2.5 5 10
Kilometers

WATER FOR LIFE GOALS & FORWP ALIGNMENT ²⁶

WFL GOAL	FORWP ALIGNMENT
SAFE, SECURE DRINKING WATER	Increased resilience <ul style="list-style-type: none"> • Withdrawal from Bow River, reduces supply risk from Highwood & Sheep Rivers • Storage allows for decreased withdrawals from the Sheep River when IOs are at risk
HEALTHY AQUATIC ECOSYSTEMS	Withdrawal from the Bow & Highwood Rivers at their confluence allows return flows returned to point of withdraw <ul style="list-style-type: none"> • Minimal water quantity impacts to the Bow River • River quantity aquatic benefit to the Highwood & Sheep Rivers
RELIABLE, QUALITY WATER SUPPLY FOR A SUSTAINABLE ECONOMY	<div> Regional Long-Term Water Supply Opportunities <ul style="list-style-type: none"> • Addresses historical operational challenges for numerous communities • Extends water supply for neighbouring communities • Reduces provincial capital investments & oversight for new water systems & existing facility upgrades • Supports new residential growth and business development in Foothills County within the Central District of the Growth Management Strategy </div> <div> Town utility rate structure for revenue & financial sustainability <ul style="list-style-type: none"> • In 2020, The Town adopted a utility rate structure/policy that will: <ul style="list-style-type: none"> • Contribute to stabilization & capital reserves • Provide a stable revenue stream that considers cash flows & seasonal demands • Eliminate the need for external funding for capital lifecycle renewal • Promote conservation & contribute to reductions in peak demands </div>



Calgary

Extension, 2025+ to support future growth in Central District

Regional Phase 1 (1-2 year horizon)
-Ranney Well Intake
-Reservoir and Pump Station
-Raw Water Main to Okotoks/Aldersyde
-Upsized for Nanton/Cayley

Resiliency Treated Waterline Connection

Potential Future Phase (25 year horizon)
-Potential Treated Waterline Extension to BD/TV and Millarville or Potential Upstream License Exchange

Potential Future Phase-Expansion to Blackie (50+ year horizon)

Regional Phase 1A (1-2 year horizon)
-Treated Water Line

Regional System Opportunities


2022-2024

- FORWP Phase 1
- Aldersyde storage
- Aldersyde WTP
- Potable water to Nanton
- Nanton WTP decommissioning

2025+

- New development in the Town of Okotoks
- New development in Central District of Foothills County
- Turner Valley
- Black Diamond
- Hamlets of Blackie and Cayley
- Small WTPs in County (Cottonwood, Heritage Schools and Arena, Ravenscrest)
- Support existing and new bulk water systems for various users

Legend

 Water Treatment Plants serviced by Phase 1

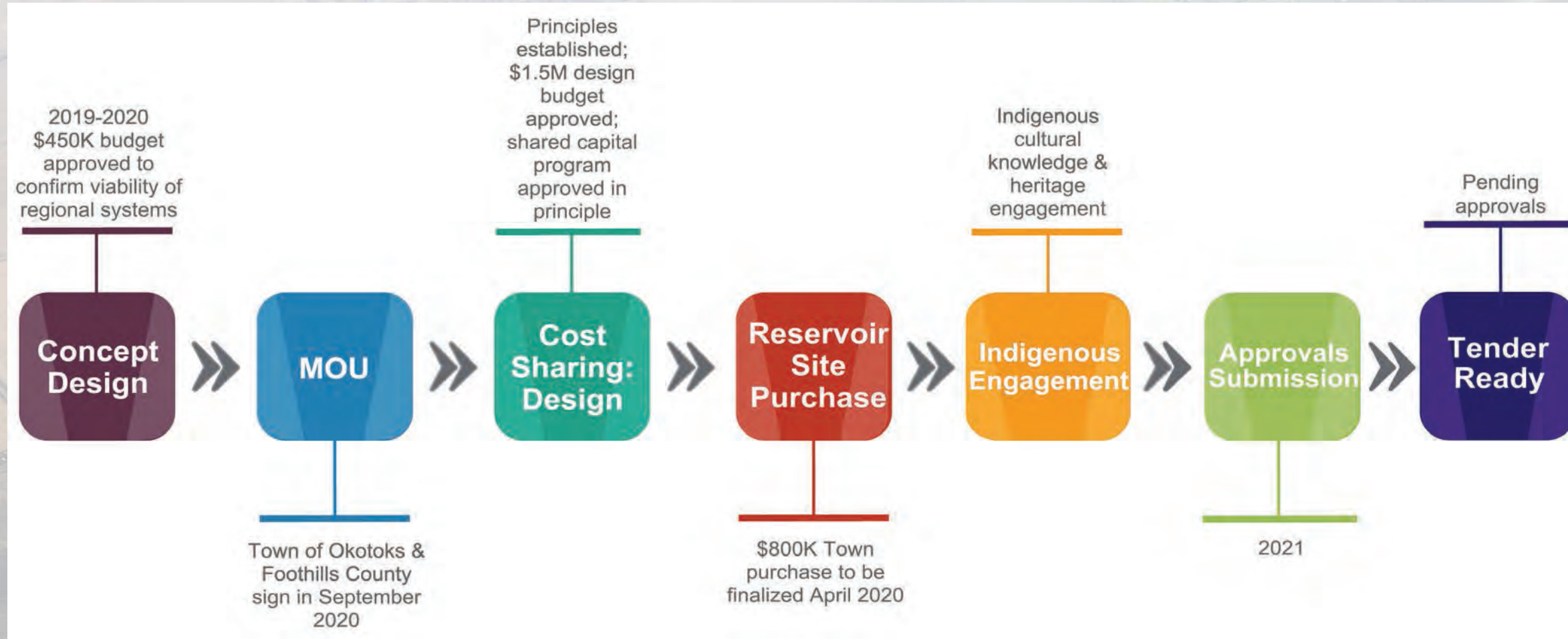
Regional System Opportunities



0 5 10 20 Kilometers

WORKING TOGETHER ON A REGIONAL SOLUTION ²⁸

What Have We Done?



What is Next?

- Approval of Phase 1 Foothills Okotoks Regional Water Project as the initial phase of a regional servicing project
- Extension of the regional system according to future growth patterns and regional servicing needs

