



Biosolids Feasibility Study

Presentation to Council: September 14, 2020

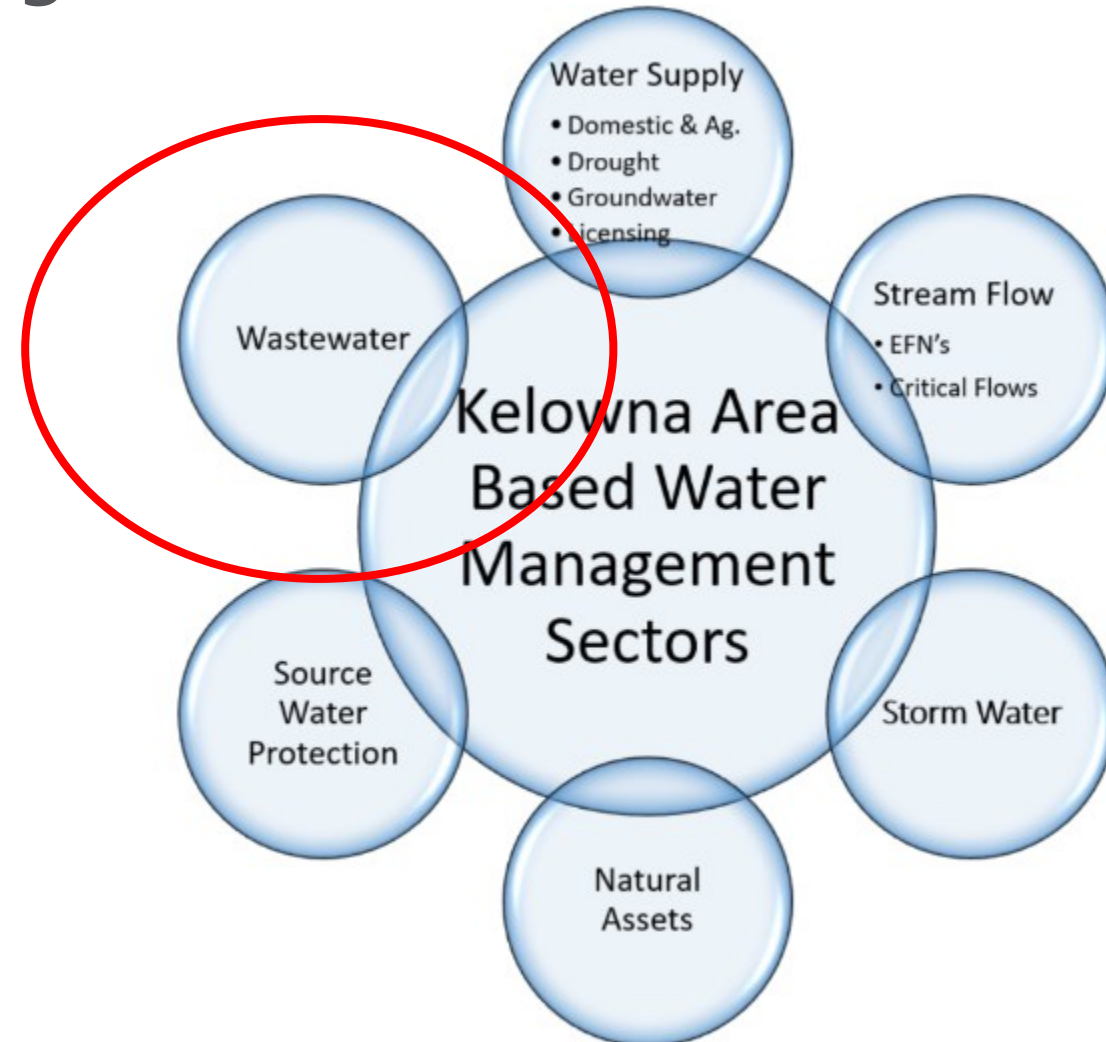
Infrastructure Engineering

Objective

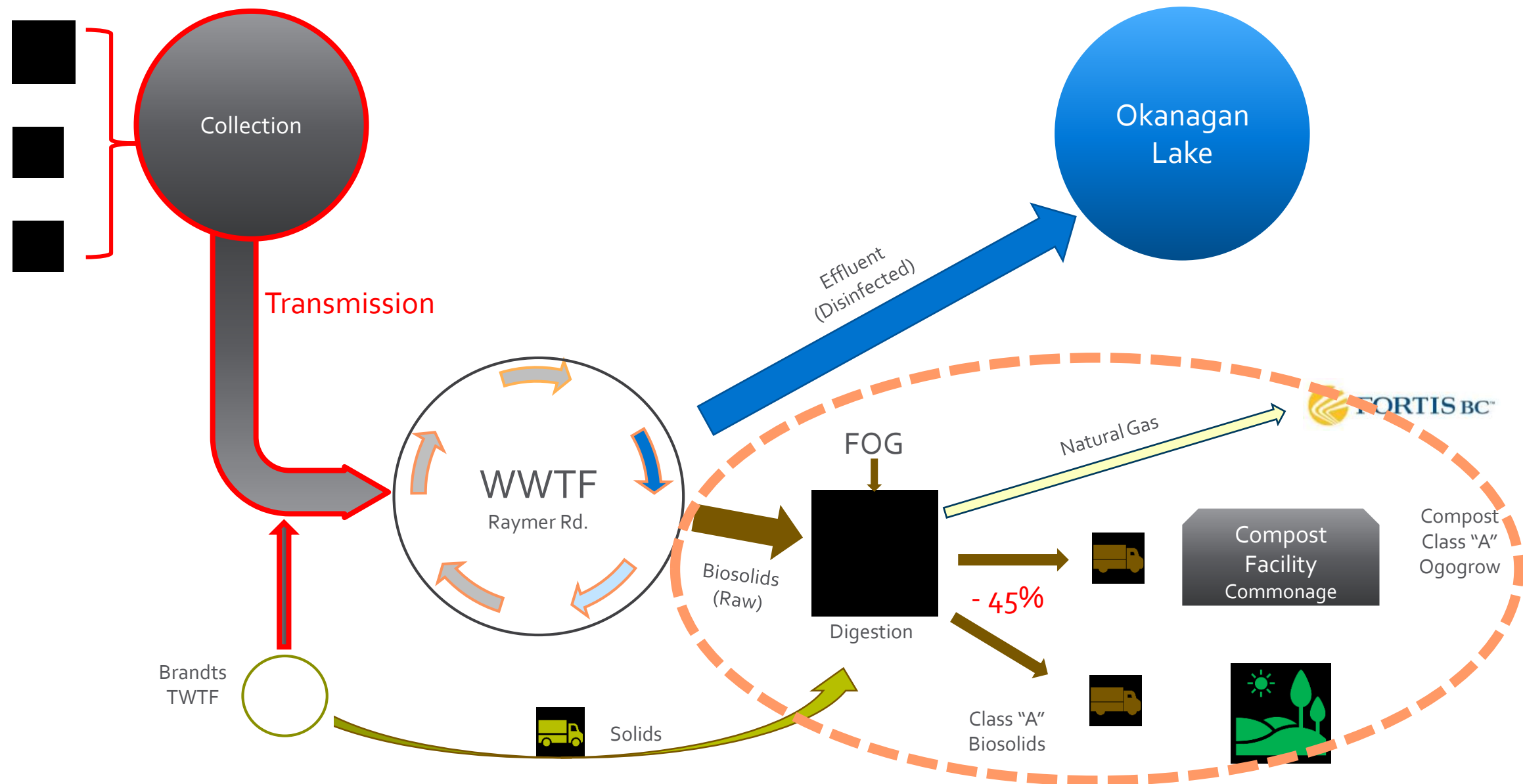
- ▶ Background of Biosolids Issue
- ▶ Review of Completed Feasibility Study
- ▶ Decision Process / Siting Review
- ▶ Next Steps - Recommendation

Area Based Water Management

- ▶ Focus on Okanagan Lake
- ▶ Strategic Planning and Policy initiatives.



2040 Growth Scenario



2040 OCP Level of Service

City of Kelowna Wastewater Utility

2040 LOS

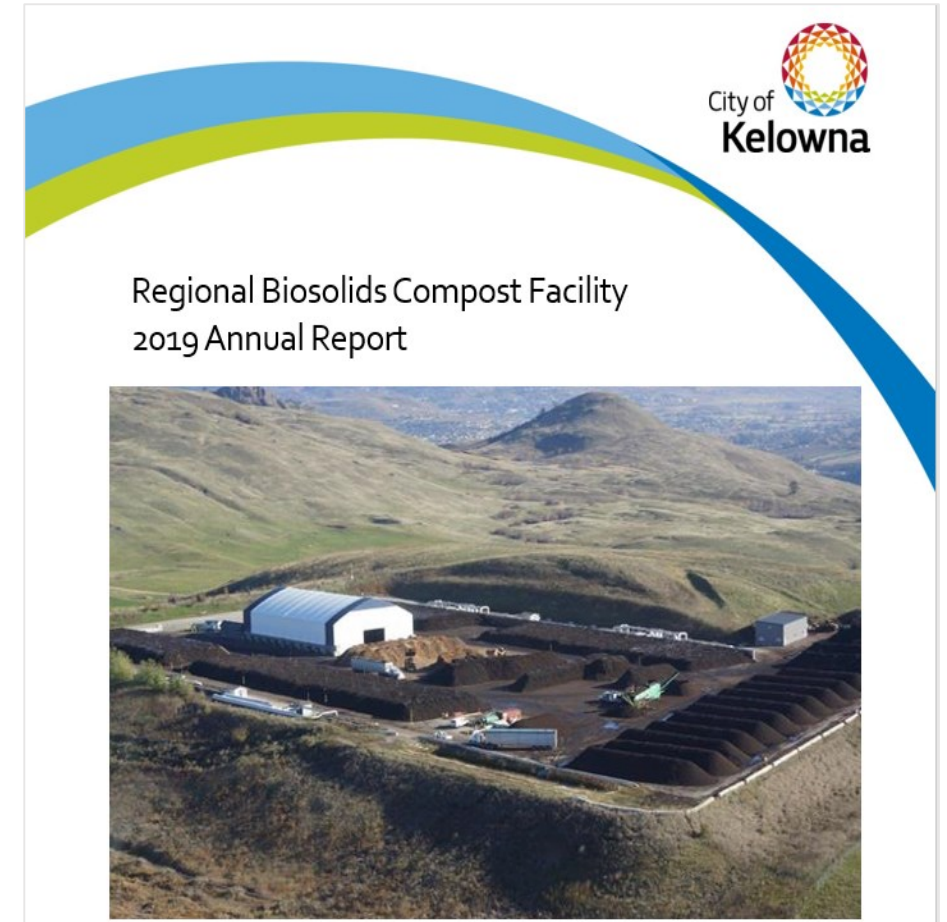
- Capacity to at least 2040
 - Collection for 95% Population
 - Septic – 5%
 - Transmission
- Modern Treatment
 - Effluent Disposal to OK Lake
- Biosolids Management
 - Class "A" Compost
 - Class "A" Biosolids
 - FOG & Tradewaste Solids Removal
 - Regional Facility

Goals

Efficient and cost-effective service
Meets regulatory needs with added flexibility
Aligns to the needs of a growing community
Holistic Approach - Source to Environment
Net reduction in GHG
Improved Operations

COMMONAGE – LIMITATIONS

- Regional Biosolids Composting Facility
 - Opened 2006 – Expanded 2010
 - Produces Class A compost OgoGrow
 - 87 % of capacity (as of 2019)
 - Produces OgoGrow
 - Only method of disposal
- Facility will require expansion
 - 87% of capacity (as of 2019)
- Other Challenges
 - Inventory management
 - Odour complaints (minor)
 - Tolko wood-chip supply
 - Changing regulations



PREVIOUS WORK

Conclusions

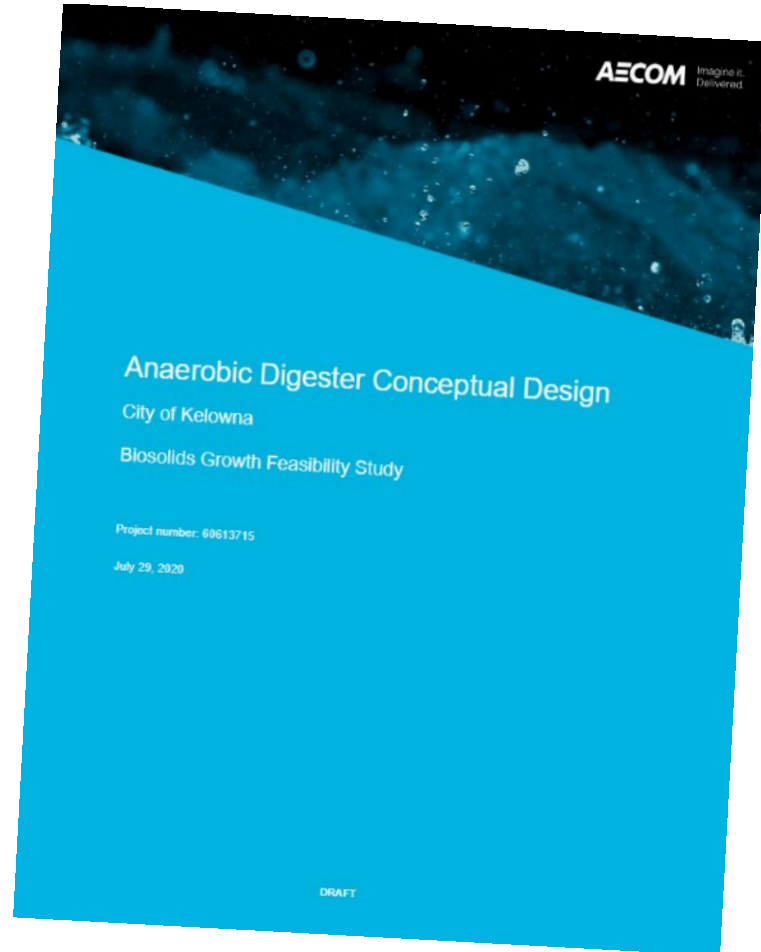
- Biosolids can be reduced by 45 percent.
- Digestion is necessary to manage OgoGrow Inventory
- Communication with regulators and public is essential

Recommendations

- Consider non-financial objectives
- Proceed with conceptual design of digestion
- Implement Public Education
- Engage Provincial stakeholder early (related to land application)
- Investigate land application potential – especially woody biomass



Biosolids Feasibility Study



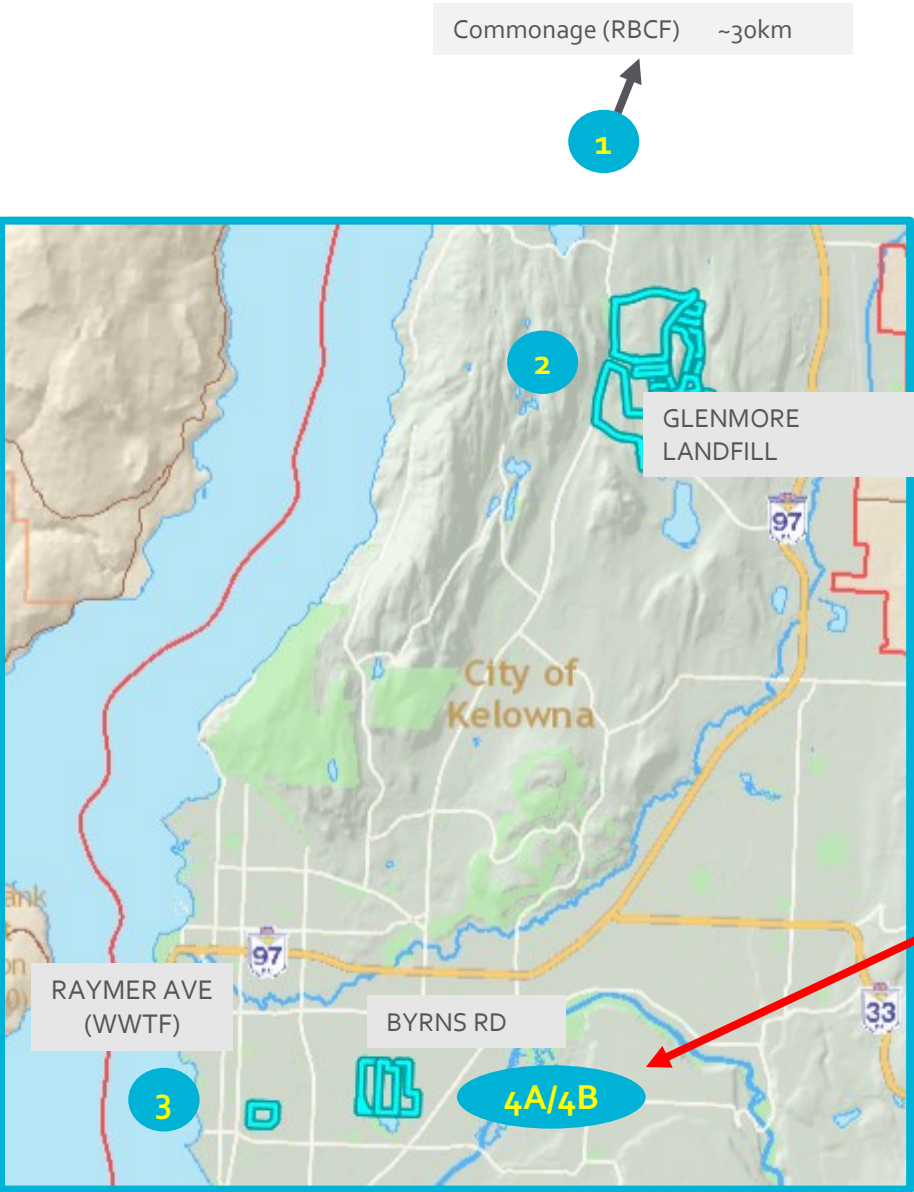
- ▶ Scope
 - Feasibility of anaerobic digestion facility without compromising Kelowna BNR Process.

- ▶ Tech Memos
 - ▶ Background Info
 - ▶ Site Options
 - ▶ Technology Options
 - ▶ Biogas & Sidestreams
 - ▶ Cost/Lifecycle Analysis
 - ▶ Odour Review

AECOM

City of **Kelowna**

ALTERNATIVE SELECTED IN WORKSHOP C



AD Facility Alternatives	
1	Status-Quo Biosolids Management
2	Glenmore Landfill AD
3	Raymer Ave WWTF AD
4A	Byrns Road AD
4B	Byrns Regional AD

City of Kelowna

Chilliwack Digester



Nanaimo Digester

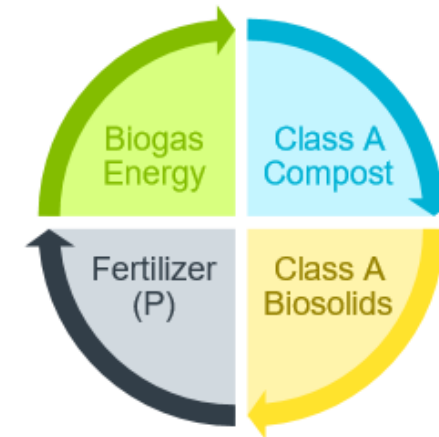


WORKSHOP C – DECISION OBJECTIVES EXAMPLE

Objectives	Alt 2 - Landfill AD	Alt 3 - WWTF Compact
Technical Objectives		
○ Meet future capacity requirements	4	1
○ Meet future fats, oils, and grease requirements	3	3
○ Maximize City staff health and safety	4	4
○ Resilience to unanticipated changes in technology, flows and/or loadings	4	4
○ Enhance adaptability and resilience to future regulatory changes	5	4
○ Minimize technical risk for conveyance of biosolids	3	5
Social Objectives		
○ Maximize public health and safety associated with volume of traffic	24	32
○ Maximize public health and safety associated with traffic and schools	60	180
○ Minimize nuisance odour exposure	49	592
○ Aesthetics	4	1
○ CoK Reputation: Leadership in sustainable innovation and responsibility	4	4
Environmental Objectives		
○ Minimize feed stock / product transport / handling risks	0	0
○ Minimize net GHG emissions	4	4
○ Minimize loss of greenfield	5	0
○ Minimize PERCEIVED impacts to environmentally sensitive areas	5	4
Financial Objectives		
○ Minimize Lifecycle total cost	120	103
○ Minimize market and cost risk - wood fibre	4	4
○ Minimize market and cost risk - markets for biosolids products	4	4

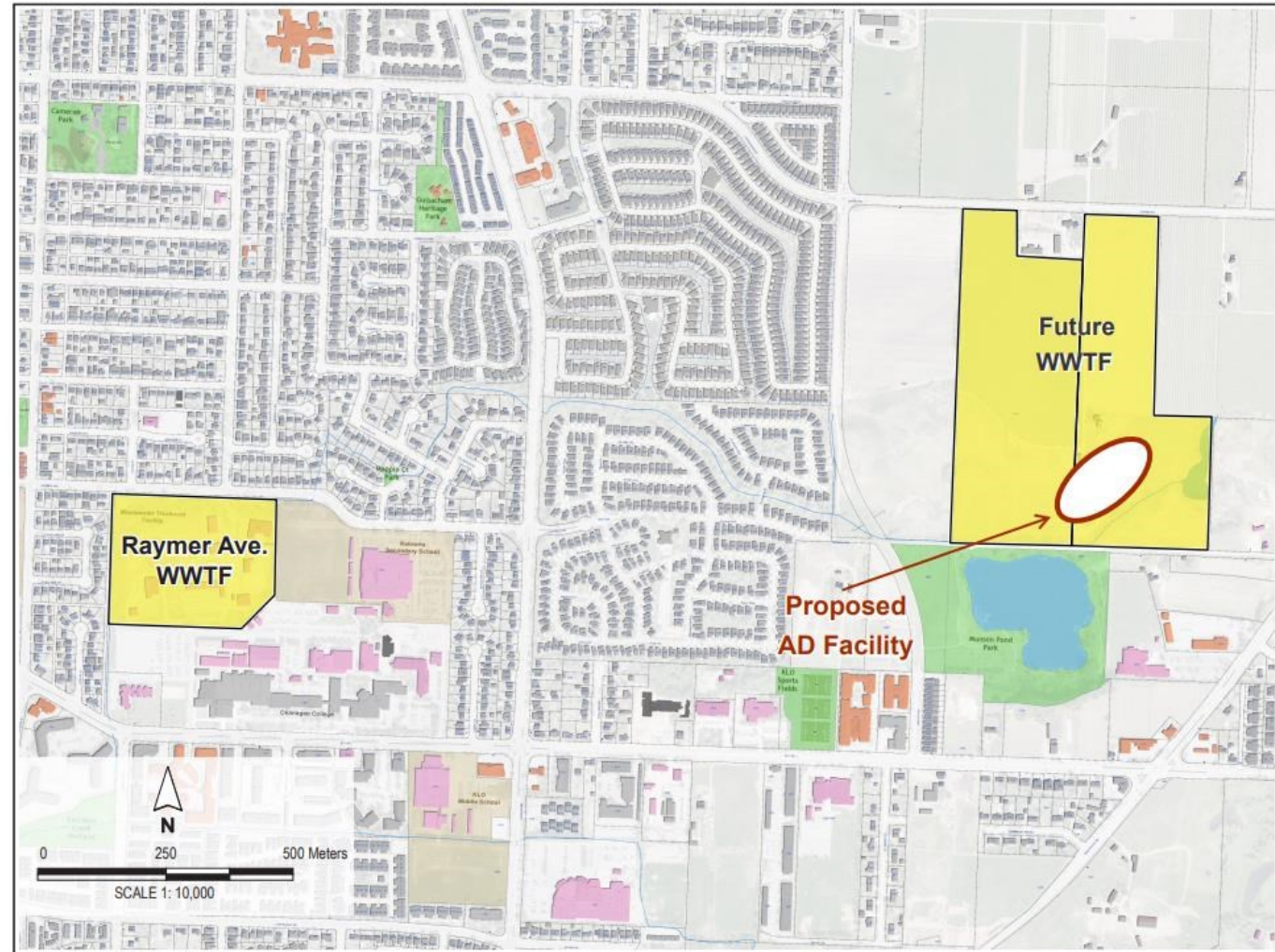
Preferred Option

- Byrns Rd Location
 - Site of future WWTF
- Multiple Stage Anaerobic Digestion
- Raw Biogas sale to FortisBC
- Regionalization potential



Location of Facility

► Byrns Road



REFERENCE: City of Kelowna, July 2020.



BYRNS RD

GRAVITY RAW SEWAGE

GRAVITY RAW SEWAGE

Byrns
Road

City Owned Parcels

- ALR
- Requires Re-Zoning
- Site of Future Wastewater Treatment Facility

SECONDARY
CLARIFICATION

BIOREACTORS

Indicative Size of
Digestion Facility

FILTRATION

DISINFECTION

RAW SEWAGE FM

FINAL EFFLUENT

Munson
Road

MUNSON RD

PROCESS

FLARE



SOUTHEAST BIRDSEYE PERSPECTIVE

Issue Status: DRAFT



NORTH BIRDSEYE PERSPECTIVE

Issue Status: DRAFT

Path Forward

- ▶ Public engagement.
- ▶ Environmental impact assessment of the Fascieux Creek corridor under the Riparian Areas Protection Regulation.
- ▶ Anaerobic Digestion Piloting
- ▶ Decision on Regionalization
 - ▶ Impacts design and traffic.
 - ▶ Provincial
 - ▶ Other Decision Processes.
- ▶ Development buffering with existing and future residential areas.
- ▶ Odour management review.

Next Step - Recommended Scope

- ▶ Investigate technical aspects for the “Path Forward”.
- ▶ Preliminary design of the facility and siting requirements,
- ▶ Application to the Agricultural Land Commission for Land Removal for siting of the future WWTF at 1639 Byrns Road.
- ▶ Application to amend the Wastewater Operational Certificate.
- ▶ Investigate regional options and cost implications.
- ▶ Confirmation of costs requirements for DCC program, long term borrowing, and long-term utility rate structure.



Questions?

For more information, visit kelowna.ca.