

Okanagan Landing Sanitary Sewer Servicing Plan

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Executive Summary

Introduction

This Master's Project provides the City of Vernon with a service implementation strategy that explores options to extend sewer service to properties in an area of the city commonly known as the Okanagan Landing. The Okanagan Landing area was annexed to the City of Vernon in 1993 and at the time, there was no community sewerage system available (Urban Systems Ltd, 2012, p.19). Since 1993, city sewers have been extended to most of the Okanagan Landing area; however, approximately 736 properties in 15 different subdivisions developed prior to annexation still use septic disposal.

Extension of sewer service to these properties is one of city council's top strategic goals (City of Vernon, 2015). This project is designed to assist the City of Vernon in realizing their servicing goal for the Okanagan Landing area by identifying the service area and then providing options for cost recovery and cost apportionment, and finally, putting forward recommendations for efficient implementation.

Methodology and Methods

A needs assessment approach was used for this project to explore the following research question: What is the most effective service implementation strategy that would allow the city to extend sewer service to the Okanagan Landing area? This approach was used because in general, as noted by Witkin & Altschuid (1995), this type of assessment identifies various stages that are taken to set priorities and make decisions about an organizational improvement and to develop a plan and allocate resources accordingly.

The primary method used for this project was a document review and to a lesser extent, meetings with city staff at key stages of the project to informally explore the research question and to determine specific needs, priorities, and outcomes of the client. The literature review also provided key sources of information that helped to better understand the key issues related to local government servicing authority, cost recovery, and implementation.

This project was completed in the following stages:

1. Stage 1 - The proposed service area was defined and the capital cost of service estimated.
2. Stage 2 - Cost recovery options and relevant case law issues were identified.
3. Stage 3 - Implementation success factors were identified.
4. Stage 4 - An implementation plan, including recommendations for phasing of service and cost recovery were provided to guide implementation.

Key Findings

The following findings were derived from the literature review and research:

1. **Service area defined** - The general service area was initially defined by Urban Systems Ltd. (2014, s.5.1, Figure 5) for the City of Vernon's liquid waste management plan (LWMP). The LWMP map was used as a starting point to define the general service area and then City of Vernon engineering records were reviewed to identify and remove properties serviced since the map was created. The resulting service area included 736 properties in 15 different subdivisions in the Okanagan Landing area.

The service area was also defined at the neighbourhood level to allow costs estimates to be completed for each of the 15 geographically separate areas and to provide flexibility for exploring different phasing and cost recovery scenarios.

2. **Capital costs estimated** - The capital cost of service was estimated for each of the 15 separate areas using a unit price method and City of Vernon cost data. The capital cost to service all 736 properties in the service area was estimated at \$18.28 million. The area with lowest per parcel cost of service was Claremont at \$18,333. The highest cost area was Kokanee at \$41,692. High cost variance was primarily due to development density which resulted in fewer properties sharing the capital cost of service in areas developed with larger lots and conversely lower unit costs in higher density areas with smaller lots.
3. **Cost recovery options explored** - Cost recovery options were also explored during the research phase. The literature review provided the primary source of information for this stage of the project. The literature shows that the Community Charter provides British Columbia municipalities with "broad" (Bish & Clemens, 2008, p.23) servicing powers and that taxes and fees are commonly used to fund services.

The literature also shows that the user pay system is commonly used in British Columbia and where service is provided to "spatially defined groups" (Bish & Clemens, 2008, p.179), the group should pay the overall cost of service. For this specific project where the cost of service is to be funded from specific users, options for cost recovery are municipal fees per s. 194 of the Community Charter and local service taxes per s. 210-s. 219. An important fee related issue identified in the case law literature is that fees have very specific legal requirements and with respect to cost recovery a fee can only be imposed on a voluntary basis (Althaus & Tedds, 2016, p.44).

4. **Implementation strategies identified** - Factors that could help improve success during implementation were also explored. The literature review provided the primary source of information for this research. The literature review shows that success during implementation can be improved by involving stakeholders in the policy process (Poister & Streib, 2005, p.54; Bryson, 2011; Allio, 2005); providing goals and objectives that are

specific, measurable, and attainable (Jung & Lee, 2013, p.677); tracking and linking performance to goals (Poister & Streib, 2005, p.54); and linking budget to specific goals (Poister & Streib, 2005, p.54). The literature also shows that these success factors could be conveyed using an action plan which would ground a plan with specific action items to ensure goals, strategies, objectives, responsibilities and timelines are clearly conveyed (Allio, 2005, p.15).

Options Considered and Recommendations

Options explored for this project are related to methods for recovery of service related capital costs permitted in the Community Charter (2003), apportionment of service related costs within the overall service area, and implementation success factors. The following provides a brief discussion of options considered:

Option 1 – Combine Areas with Similar Servicing Costs and Recover Costs from the Specific Groups Serviced

A high per parcel cost variance was noted between several of the geographically separate neighbourhoods within the overall service area. To achieve equity within the service area neighbourhoods with similar unit servicing costs could be combined, and a service levy specific to each area used to recover capital costs. This method would ensure the group serviced pays the cost of servicing and would also ensure the levy imposed best reflects the actual cost of service, which is an important issue noted in the fee related case law literature (Althaus & Tedds, 2016, p.52).

Option 2 – Levy a Local Service Tax to Recover Costs

A local service tax per s. 210- 219 of the Community Charter is an option that would allow the city to recover service related costs from the specific properties serviced. Per s. 216 of the charter the local service tax could be collected using either a parcel tax or property value tax. Property value taxes vary based on assessed values making equitable distribution of costs difficult to achieve. Parcel taxes could be levied on the basis of a single charge per parcel, frontage or area per s. 200.

Option 3 – Levy a Fee to Recover Costs

The fees provisions per s. 194 of the charter provide the city with another option to recover service related costs. Per s.194.1 (a) the city could impose a fee to all or part of the city and per s.194.2 could establish different factors, terms, and conditions by bylaw. An issue identified in the literature that could impact the ability to recover costs using a fee is the voluntary nature of a fee (Althaus & Tedds, 2016, p.42). Althaus and Tedds 2016 (p.44) discuss the related case law and note that if a levy is compulsory, it would likely be considered a tax. Use of fees would therefore be limited to situations where

costs could be recovered over time as owners voluntarily apply to connect to the service provided.

Option 4 – Apportion Service Costs Based on a Single Charge per Parcel

The parcel tax provisions of the Community Charter (2003, s.200) allow for a levy to be based on a single charge per parcel, frontage, or area. Costs apportioned on the basis of a single charge per parcel would allow equitable distribution of the cost of service by the specific group serviced, which is an important theme noted in the literature (Bish & Clemens, 2008, p.179). To also ensure the levy imposed best reflects the actual cost of service, this method could be used to average servicing costs between areas with similar per unit costs, or to each of the 15 separate neighbourhoods within the service area.

Option 5 - Apportion Costs Based on Frontage

The parcel tax provisions of the Community Charter (2003, s.200) also allow for a levy to be based on property frontage. Due to varying frontages noted in the service area, levies imposed on a frontage basis would vary significantly, making equitable distribution of service costs difficult to achieve.

Option 6 - Apportion Costs Based on Area

The parcel tax provisions of the Community Charter (2003, s.200) also allow for a levy to be based on property area. Due to varying areas of properties in the service area, levies imposed on an area basis would vary significantly, making equitable distribution of service costs difficult to achieve.

Option 7 - Implement Service Using Limited Success Factors

The strategic planning literature shows that success during implementation can be affected by many factors such as stakeholder involvement, use of performance measures, SMART (specific, measurable, attainable, realistic and timely) goals, and linking budget to goals. Several of these, such as stakeholder involvement, would require significant resources to address, however the city could easily link budget to key goals as part of the annual budget process to help improve success during implementation.

Option 8 – Implement Service Using Several Key Success Factors and Action Plan

The literature clearly shows that several factors are key for successful implementation and that excluding these factors is likely to result in failure during implementation. Stakeholder involvement, use of SMART (specific, measurable, attainable, realistic and timely) goals, linking budget to goals, and use of performance measures are key factors that should be considered to improve success (Poister & Streib, 2005, p.54; Bryson,

2011; Jung & Lee, 2013, p.677). The use a simple action plan could also help clearly convey goals, objectives, strategies and responsibilities to guide implementation.

Recommendations for this project were developed based on the needs assessment completed at each stage of the project, the literature review, and the research completed as part of the project. The needs assessment is particularly suited to this applied project as it allows the research questions to be explored directly with the client, and for solutions to be determined based on the client's desired outcomes.

The following recommendations provide the best chance of successfully moving forward with implementation of service to the Okanagan Landing area, consistent with legislation, case law, best practices, and the client's desired outcomes:

Recommendation 1 – Combine Areas with Similar Servicing Costs and Recover Costs from the Specific Groups Serviced (Option 1)

Cost estimates completed for each of the 15 separate neighbourhoods show high variance in the per parcel service costs between several of the areas. To equitably distribute service costs, it is recommended that areas with similar per parcel costs are combined and the cost of service recovered from the specific groups serviced. This recommendation would allow the entire capital cost of servicing to be recovered from the area serviced while ensuring service levies are based on the actual cost of service, which is an important case law issued noted by Althaus and Tedds (2016, p.52).

Recommendation 2 – Levy a Local Service Tax to Recover Costs (Option 2)

Cost recovery using a local service tax per s. 210-s. 219 of the Community Charter (2003) is recommended. This method of cost recovery is the only form of tax that could be applied to the specific area serviced, has low financial risk, and empowers owners to participate in the decision making process as petitioning would be required as part of the local service process. A levy imposed to the specific properties serviced is consistent with British Columbia's user pay system and equity principles and it would also be possible to use a separate tax for areas with similar servicing costs to ensure the levy imposed best reflects the actual cost of service.

Recommendation 3 – Apportion Service Costs on the Basis of a Single Charge per Parcel (Option 4)

Apportioning costs based on a single charge per parcel, as permitted by s. 200 of the Community Charter (2003), would allow for equitable distribution of the cost of service to the specific group serviced, which is an important theme noted in the literature (Bish & Clemens, 2008, p.179). The per parcel cost of service was noted to vary significantly between several areas, which supports averaging costs only between areas with similar per unit costs.

Recommendation 4 – Implement Service Using Several Key Success Factors and Action Plan (Option 8)

The literature clearly shows that stakeholder involvement, SMART (specific, measurable, attainable, realistic and timely) goals, linking budget to goals, and use of performance measures are key factors that can lead to improved success during implementation (Poister & Streib, 2005, p.54; Bryson, 2011; Jung & Lee, 2013, p.677). It is recommended that the city consider using the action plan provided in the implementation section to clearly convey key program goals, objectives, strategies, and responsibilities to guide implementation. It is also recommended that the city consider some form of stakeholder engagement to provide feedback during implementation to help improve strategies.

The following service phasing plan shown in Figure 1 and action plan shown in Figure 2 provide a preliminary guide for implementation based on the above recommendations. The service phasing plan combines areas with similar servicing costs into groupings of approximately two million dollars and averages costs within groups. This method of apportionment meets the city’s desired 10 year serving timeframe, reflects the user pay philosophy commonly used in British Columbia, and ensures the levy imposed best reflects the actual cost of service. The action plan incorporates key success factors and provides a preliminary guide for implementation. Key program items are identified in the action plan and it is recommended that these items are also incorporated into the city’s annual financial plan.

Location	Year	# Parcels	Capital Cost	Levy
Willow Park & Dallas	2018	75	\$1,740,000	\$23,200
Claremont	2019	108	\$1,980,000	\$18,333
Longacre	2020	99	\$2,060,000	\$20,808
Cameo & Appaloosa	2021	87	\$2,270,000	\$26,092
Dunsmuir	2022	33	\$1,040,000	\$31,515
Southwind	2023	106	\$2,230,000	\$21,038
Crosby	2024	74	\$1,690,000	\$22,838
Cameron & Joharon	2025	33	\$1,110,000	\$33,636
Harbour Heights, Smith/Peters & Adventure Bay	2026	56	\$1,450,000	\$25,892
Kokanee	2027	65	\$2,710,000	\$41,692

Figure 1: Preliminary Service Phasing Plan

Goals	Objectives	Strategies	Responsibility	Timeline
Goal #1: Service is implemented to Okanagan Landing Area	Service is made available to all properties in the service area	1a: Estimate the cost of service	GT	2018
		1b: Define the method of cost recovery and draft related bylaws	GT, MD, Finance	2018
		1c: Council endorsement of phasing and cost recovery	GT, MD	Fall 2018
	Cost is recovered from owners	1d: Petition owners and adopt local service bylaw	GT, MD, ADMIN	Annual
		1e: Tender and construct works	GT, MD	Annual
		1f: Determine levy and establish related bylaws	GT, MD, ADMIN	Annual
Goal #2: Policy is updated to reflect stakeholder needs	Feedback is incorporated into plan	2a: Establish performance measures	GT, MD	2018
		2b: Track performance	GT	Annual
	Policy changed	2c: Recommend policy changes	MD	Ongoing

Figure 2: Preliminary Action Plan (adapted from McNamara, n.d.)

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1 Introduction

1.1 Defining the Problem and Background

The City of Vernon (city) is planning to extend sewer service to an area commonly known as the Okanagan Landing. The Okanagan Landing area was annexed to the City of Vernon in 1993 and a key driver of this annexation was access to city sewer service (Urban Systems Ltd, 2012, p.19). To help resolve this service related policy problem, city council included the following goal in their 2015-2018 strategic plan: “Develop a plan to expand sewer services in Okanagan Landing through the investment of \$2 million per year for the next ten years” (City of Vernon, 2015). The intention of this master’s project is to provide the city with a service implementation strategy that explores options and makes recommendations to extend sewer service to the area and recover related costs from the benefitting properties.

In 1993, a portion of Electoral A of the Regional District of North Okanagan, commonly known as the Okanagan Landing, was annexed to the City of Vernon (Urban Systems Ltd, 2012, p.19). Appendix A shows the annexed area in purple, and pre annexation city boundary in green. Prior to annexation, municipal sewer service was not available in the Okanagan Landing area and as noted by Urban Systems (2012, p.19) a key driver of annexation was access to city sewer service to protect water quality. An engineering study completed by Dayton and Knight (1999) identified the water quality impact of failing septic systems in the Okanagan Landing area and was also corroborated by the Regional Health Board (Clarkson, N., May 1, 1997, Letter to Mayor Wayne McGrath, in Dayton and Knight 1999) and Province of British Columbia (Minister Cathy McGregor, June 30, 1998, Letter to Mayor Wayne McGrath and Councillors, in Dayton and Knight, 1999).

Since 1993, the city’s sanitary sewer system has been extended to most of the Okanagan Landing area, primarily through development, and to a lesser degree local servicing projects to existing neighbourhoods. The capital cost of development related extensions in the city was funded by development, while the local neighbourhood extensions were funded by those benefitting from the service. This method of servicing has facilitated progression of sewer service to the Okanagan Landing area; however, as noted by Urban Systems (2014, Figure 5), many of the existing single family subdivisions developed prior to annexation remain un-serviced.

In 2014, the city updated their liquid waste management plan, and as noted by Urban Systems (2014a, p.3), included extension of city sewer to the Okanagan Landing area as a top strategy. Appendix B identifies un-serviced properties in the Okanagan Landing identified in the LWMP.

The city is currently extending its sewer collection system to four neighbourhoods in the Okanagan Landing area. This work is funded by a combination of federal/provincial grants and

city reserves and will service approximately 100 parcels. The city intends to recover servicing costs from owners of these parcels at time of connection using a fee type levy. Properties serviced as part of this grant project will not be included in the service area considered in this report.

Local governments across Canada fall under the constitutional authority of provincial governments (Bish & Clemens, 2008, p.11). Bish and Clemens (2008, p.5) note that in British Columbia, the primary legislation for local government, which includes regional districts and municipalities, are the Community Charter and Local Government Act. With respect to municipal servicing, the Community Charter (2003, s. 8) is the enabling legislation that provides municipalities with the legal authority to impose service related requirements and recover costs from those that benefit from a particular service. The Community Charter (2003, s 192- s. 259) identifies various revenue options available to municipalities. In the case of non-development related servicing, revenue sources would be limited to fees, property value taxes, parcel taxes, and local service taxes (Community Charter, 2003, s.192).

Municipalities also have the option to borrow for items considered capital in nature, as noted by the British Columbia Ministry of Municipal Affairs and Housing (2017, 1 par). Borrowing provides the opportunity to fund capital intensive projects that may otherwise be difficult to fund through reserves or other sources, and to some degree helps pass a share of capital costs on to future users. The provincial government sets limits on borrowing under the Municipal Liabilities Regulation (2004), which requires that a municipality's total borrowing amount does not exceed 25% of its annual revenue. Some types of borrowing may also require approval of electors, and long term borrowing must be done through the Municipal Finance Authority (MFA) and coordinated by the respective regional districts (pars 2-3).

1.2 Project Client

The client is Mark Dowhaniuk, Manager of Infrastructure Management for the City of Vernon. Mr. Dowhaniuk is responsible for delivering council's strategic goal of extending city sewer service to the Okanagan Landing area within a ten year time frame (City of Vernon, 2015, p.4). This project is designed to assist the client by exploring options to help improve a specific policy problem and to help city staff develop service related policy that achieves council's servicing goal for the Okanagan Landing.

1.3 Project Objective and Research Question

The objective of this project is to provide the city with a strategy to implement sewer service to the Okanagan Landing area of the City of Vernon to achieve council's strategic goal of developing "a plan to expand sewer services in Okanagan Landing through the investment of \$2 million per year for the next ten years"(City of Vernon, 2015). The research question answered by this project is what is the most effective service implementation plan that would allow the city

to extend sewer service to the remaining un-serviced properties in the Okanagan Landing area over a ten year time frame. Effective in this instance refers to a policy that is feasible to implement in terms of resource capacity and one that is acceptable to key stakeholders such as Council and those directly affected by the extension of sewer service.

2 Literature Review

2.1 Introduction

This section of the report reviews academic and professional literature related to the general subject areas of municipal service, municipal revenue, public policy, and strategic planning. These particular topics were reviewed as they provide historical context and current practice for municipal servicing and cost recovery; help to better understand the government policy process and how policy problems are typically resolved; and help to better understand where this project is situated in the overall strategic planning framework and factors that could improve success during implementation.

The key words that were used to assist in finding resources used in this literature review are: municipal service, municipal revenue, public policy, local government service delivery, sewer service, policy service implementation, and strategic planning.

The literature search commenced using the above key word searches in the University of Victoria (UVIC) Summon and Google Scholar databases. The top search results were scanned for relevant documents and then filtered using the above terms and variations of the words/phrases. Reference lists from several documents retrieved during the initial scan were reviewed to locate additional sources. The initial scan was also used to identify the following peer reviewed journals, which were also searched using the initial key words:

Administration & Society
American Political Science Review
Canadian Tax Journal
Harvard Business Review
International Public Management Journal
Journal of Business Strategy
Journal of the American Planning Association
Political Studies Review
Public Administration Review
Strategic Design Research Journal
The American Review of Public Administration
Total Quality Management & Business Excellence

Due to the search method used, all of the above journals produced results; however, the majority of peer reviewed journal documents were retrieved from the Public Administration Review. Several books were also used (Bryson, 2011; Tindal, Tindal, Stewart & Smith, 2013; Althaus & Tedds, 2016). A total of 29 documents were used in this review, including several non-academic sources that provided first-hand knowledge and experience of professionals working in the municipal government field.

2.2 Municipal Service

One of the key roles of local government in Canada is provision of services such as water, sanitary sewer, and transportation systems (Bish & Clemens, 2008, p.1). In Canada, the local order of government is responsible for over half of the nation's service related infrastructure, and for providing local citizens and businesses with a variety of social and other soft services (Bradford, 2004, pp. 39-49; FCM, 2016, p.10; Lazar & Seal, 2005, pp.32-34). Reviewing service related literature will provide background information for this project by providing a commonly accepted definition of the term "local government"; identify the legal basis of municipal government's servicing authority in Canada and British Columbia; and determine how services are commonly provided by Canadian local government.

2.2.1 Definition of Local Government

In Canada, the term local government is often used to refer to those "municipal institutions" (Dewing, Young & Tolley, 2006, p.2) that are constitutionally and legally subordinate to the respective provincial governments. As the term is often confused it is important to review the literature in order to provide a commonly accepted definition of local government, particularly in the British Columbia context.

Lazar and Seal (2005, p.28) note in general terms that "local government, as defined by the Canadian Constitution, is a wholly provincial creation" (p.28). Tindal, Tindal, Stewart and Smith (2013) also discuss Canadian local government and governance and note that the term local government refers to "democratically elected municipal councils and their departments of municipal staff" (p.286). They use the term "local governance" (p.286) to describe the "governing structures" and all other public and private organizations that exist to "address community needs" (p.286). Bish and Clemens (2008, p.5) provide a discussion of local government that is particularly relevant to this project as it is specific to the Province of British Columbia where the regional district system is prevalent and also reflects the "nine" (p.5) different local government organizations that exist in British Columbia. Bish and Clemens (2008) define "local government" as follows:

a government, other than the federal or provincial government, which: has jurisdiction over a defined territory, is governed by a body of locally elected public officials and has the power under provincial legislation to impose property taxes either directly, indirectly, or conditionally (p.5).

The above definition provided by Bish and Clemens will be used for this report as it is specific to British Columbia, and recognises that the current local government structure in British Columbia is much broader than the more restrictive definition provided in the Local Government Act (2015, Schedule, s. 1), which includes only municipalities and regional districts.

The constitutional arrangement of Canada's federal system of government, division of power between the federal and provincial governments, and legal basis of municipal power is discussed by Dewing, Young, and Tolley (2006). Dewing, Young, and Tolley (p.2) note that the *Constitution Act, 1867* sets out the division of power and relationships between municipalities and higher orders of government, with s.92.8 giving provincial government's exclusive control over their respective municipalities. Similar to Dewing, Young, and Tolley, Bish and Clemens (2008, p.11) note that the provinces have exclusive constitutional control over local governments, and that in 2003 the Province of British Columbia reformed municipal related legislation with enactment of the *Community Charter*, which now provides municipalities with "broad" (p.23) servicing powers.

Harding (2012) also discusses the servicing powers of local government, and notes that "Section 8(2) of the charter provides that a municipality may operate any service council considers necessary or desirable for all or part of the municipality" (p.15). Harding provides further details with respect to the municipal servicing authority and notes that s.8 (3) of the charter allows council to regulate services by bylaw, and similar to Bish and Clemens notes that municipalities have very broad authority to establish services. Tindal, Tindal, Stewart and Smith (2013, p.4) also discuss local government authority and note that they are all incorporated, have the ability to raise revenues through taxes (and other levies), have specific boundaries, and are governed by an elected council. They note that these features give municipal government reasonable autonomy to "deliver a wide range of necessary services, programs, facilities, and regulations to local residents" (p.9), while also fulfilling the desires of higher orders of government.

2.2.2 Service Provision

Bish and Clemens (2008) discuss service provision in British Columbia and note that most service decisions can be categorized as "provision" (p.81) or "production" (p.81). Provision relates to issues such as "whether or not to provide a service, how much to spend on it, and how to fund the expenditure" (Bish & Clemens, 2008, p.81), while production relates to how the service will be delivered. Bish and Clemens (p.84) note that common methods of service delivery used by Canadian local governments are own forces, contracting with other public/private organizations, joint government provision, franchising, partnerships, vouchering, and engaging volunteers. They further note that in British Columbia, services are typically delivered by way of "own-forces, contracted, and joint service production" (p.89). Bish (1999, p.28) reviews service provision in the Capital region of Vancouver Island, British Columbia, and notes that a wide variety of production methods are used including volunteers, non-profits, private, intergovernmental and own source. Skelly (1997, p.55) also discusses service delivery and notes that in response to changing service levels and decreasing revenue, Canadian governments are also using alternative delivery methods such as contracting, volunteers, intergovernmental agreements, and user fees, in an attempt to reduce service costs.

2.3 Municipal Revenue

Reviewing municipal revenue related literature is important as it will provide context for the cost recovery section of this report and may also identify issues that should be explored as part of this project. The review will start by exploring literature related to municipal financing and revenue sources available to Canadian local government, then explore case law related literature to identify legal issues that should be considered as part of this project.

2.3.1 Revenue Sources

Kitchen (2003, pp.28-29) discusses capital financing and notes that in Canada projects are typically funded internally through property taxes or user fees, or externally through grants and long term borrowing. Bish and Clemens (2008, pp. 179-206) also discuss local government revenue sources and similar to Kitchen (2003) note that British Columbia local governments typically finance their activities from “property taxes (including grants in lieu of taxes), service charges and special assessments, transfers from other governments, and various other of their own sources, including developer contributions, licence fees, fines, earnings on reserve funds, and sale of assets” (p.182). They also note that reliance on each source “varies considerably among the different local governments” (p.183). Althaus and Tedds (2016) also discuss user fees in Canada and similar to the other authors reviewed note that municipalities can only access “property taxes, user fees, and regulatory charges” (p.2) as sources of revenue.

2.3.2 Shift towards User Fees

The literature also indicates that there has been a fundamental shift towards user fees as a revenue source by Canadian municipal governments (Amborski, 2006, pp.29-31; Althaus & Tedds, 2016, p.2). Amborski (2006) notes that for period “1947-2000” (p.30), transfers from senior governments to municipalities dropped from “71.2% to 17.0 %” (p.30). Amborski (p.31) notes that this reduction resulted from the federal government cutting transfers to the provinces in order to divert funds to pay off debt, which was compounded by provincial offloading of services to municipal governments in order to reduce costs. Althaus and Tedds (2016, p.2) also discuss the shift towards user fees at the municipal level and note that user fees have “tripled since 1965” and now account for “22%” (p.2) of municipal own source revenue. While Althaus and Tedds (p.2) do not comment on the federal reduction in transfers as a possible cause of increased reliance on user fees as Amborski (2006) does, they do note that the literature cites the following reasons from the increase in user fees:

- 1) the perceived political costs of raising property taxes;
- 2) a need to reduce municipalities’ vulnerability to fluctuations in property taxes, which rise and fall in accordance with the property values on which they are typically based;
- and 3) a need for a tighter link between the goods and services supplied by the municipality and those demanded by its constituents.

2.3.3 Fiscal equivalence

An important consideration when planning service delivery is who should fund the cost of service. Bish and Clemens (2008, p.179) discuss this concept and note that according to the economic principle of fiscal equivalence, those that benefit from a specific service should pay the costs. They further note that the user pay system is essentially how services are provided in British Columbia (p.179). Bish and Clemens also note that in the case of services provided to “spatially defined groups” (p.179), it is appropriate that the group pay the overall cost of providing the specific service. The discussion by Bish and Clemens is relevant to this project as it identifies that the user pay system is commonly used in British Columbia and also reinforces the importance of apportioning service related costs to those that benefit from the specific service.

2.3.4 Fee and Tax Case Law

Reviewing fee and tax case law related literature is important as this literature could identify factors to be addressed as part of the cost recovery section of this report and also help design a legally compliant cost recovery system to support implementation. While there is limited literature available on this topic in the Canadian context, several authors (Althaus & Tedds, 2016; Farish & Tedds, 2014) provide current and comprehensive information that will be included in this review.

The two key cases used by Canadian courts to explore tax and fee related challenges are *Lawson v. Interior Tree Fruit and Vegetable Committee of Direction, 1931* and *Eurig Estate, 1998* (Althaus & Tedds, 2016; pp.39-63; Farish & Tedds, 2014, pp. 640-654). Farish and Tedds (2014, p.637) note that while municipalities commonly rely on user fees to fund a variety of services, some have experienced legal issues as the requirements aren't “well understood” (p.637). To help clarify the legal requirements, Farish and Tedds (p.642) outline the case law tests often used by the courts when exploring tax and fee related legal challenges in Figure 3. With respect to fee design for a British Columbia municipality acting in accordance with the appropriate legislation, Lawson criterion #1, #4, and the two Eurig criteria are key. These criteria are discussed in detail below.

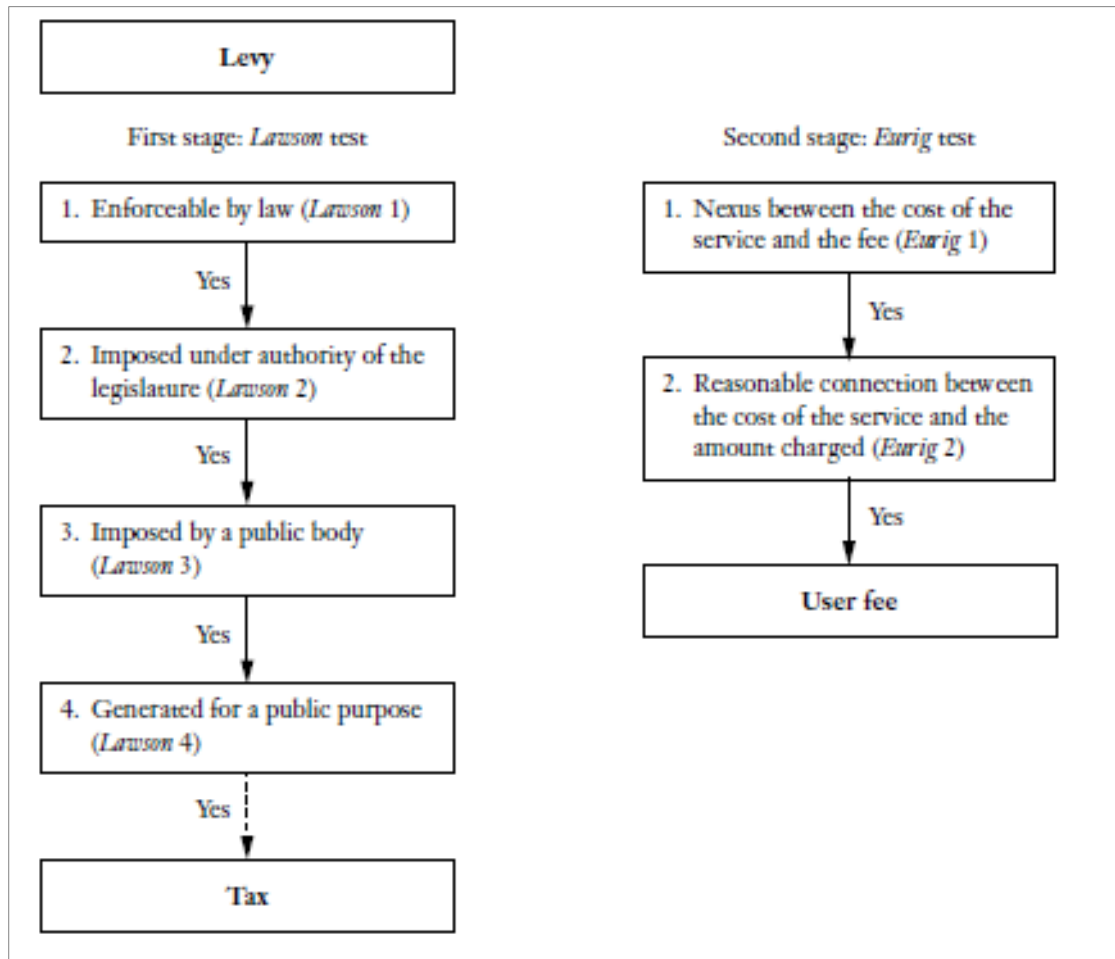


Figure 3: Summary of Current User Fee Test. (Farish & Tedds, 2014, p.642).

2.3.4.1 Lawson Criterion #1: Enforceable by Law

The first test used by the courts determines if a levy is a tax and evaluates if the levy is enforceable by law, or “mandatory” (Althaus & Tedds, 2016, p.42). Althaus and Tedds (2016) note that a levy would likely not be considered a tax if “a body chooses to enter into a situation where it will incur a levy” (p.42). The first Lawson test has particular relevance to this project and should be considered if the city wishes to recover costs using a fee. If the city attempted to make connection to the service compulsory, the levy would likely be considered a tax and not within the legislated authority of the municipality. A reasonable alternative would be to allow owners to connect on a voluntary basis but require payment of the fee as a condition of building permit or plumbing permit. Farish and Tedds (2014, p.644) discuss a similar situation where the courts determined that a fee wasn’t a tax if payment was required as a condition of building permit. While this particular case was related to payment of development cost charges at time of building permit, the rationale used by the courts in arriving at their decision would likely be the same for other fees required as a condition of permit approval, provided the fee was authorized by legislation.

2.3.4.2 Lawson Criterion #4: Fee Used for a Public Purpose

Althaus and Tedds (2016, p.51) note that the final Lawson criterion considers whether funds collected from a levy are used for a general public purpose, or specifically for providing the service for which the fee is collected. Althaus and Tedds (p.51) discuss the court's interpretation of the final Lawson criterion, and note that if funds collected are directed to a general account, the levy would likely be considered a tax. If funds are not used for a general purpose, the fee would then be evaluated against the two *Eurig Estate* (1998) criteria, as further discussed below, to determine if the levy is a fee. With respect to cost recovery for this project, it is important to consider Althaus and Tedds (2016) discussion of Lawson criterion #4 to ensure any fee related cost recovery is administered using separate accounts and not a general account. Althaus and Tedds (2016, p.55) note that while there is no specific case law requirement to actually establish a separate fee related account, doing so is a recommended "smart practice" (p.55).

2.3.4.3 Eurig Test (nexus and reasonable connection)

The second stage of testing used if a levy passes the Lawson criteria is to evaluate the levy according to the two *Eurig Estate* (1998) criteria, as shown in Figure 3. Althaus and Tedds (2016) note that according to the Eurig case, a levy would be considered a fee if "1) there exists a nexus between the levy and cost of the good or service provided and 2) there is a reasonable connection between the cost of the good or service" (p.52). The terminology used for the two Eurig criterion are similar, and as Althaus and Tedds (p.56) note if the fee doesn't generate a net revenue, and revenues are only used to recover the actual cost of service, the levy would likely be considered a fee. Althaus and Tedds discussion of the Eurig test is relevant to this project and should be considered for any fee related cost recovery proposed.

2.4 Public Policy

Exploring public policy literature is important as it provides background information for this policy related project and identifies where in the policy cycle this particular project is situated. Literature included in this review was selected specifically to provide historical context, identify stages of the modern policy process, and identify key issues that should be considered as part of this project.

Savard (2012) notes that the policy cycle "concept" (p.1) was first coined by Harold Laswell in the mid-1900s, who used the term to describe the rational scientific process practitioners of the day used to analyze policy problems and arrive at the best possible policy solutions. Savard further notes that while Laswell's concept of the policy cycle was revolutionary for the time, it is now considered a somewhat "fragmented approach" (p.1) to the policy process. Savard (pp.1-2) discusses the various steps in the modern policy cycle and notes

that most public policy experts consider the following five key stages representative of the current policy process:



Figure 4: Modern Policy Cycle (Adapted from Savard 2012, pp.1-2)

Savard (2012, p.1) notes that agenda setting is the initial stage where the policy problem is first discovered and deemed worthy of attention of the political elite. Savard (p.1) further notes that agenda setting is also where government makes the decision to allocate scarce public resources to solving the policy problem. Of particular relevance to this project is the policy formulation stage which as Savard (p.1) notes is where solutions to the problem are explored and options identified. A key issue related to policy formulation noted by Savard (p.1) is the importance of forming strong coalitions throughout the policy process in order to simplify the formulation stage. Savard notes that if strong coalitions have not been formed, it is likely that the policy process will loop back to previous stages, or end. Savard (p.2) notes that the decision making and implementation stages are where policy actors select the best policy solution and put it into effect. He once again notes the importance of developing strong coalitions to ensure the best chance of successful implementation.

Bardach (2012, p.xvi) also discusses the policy process and provides an eight step approach to the policy cycle as follows: Define the problem; assemble evidence; construct alternatives; select criteria; project outcomes; confront trade-offs; decide; tell your story. An important point noted by Bardach (p. xvi) is that the policy steps are not always taken in the order presented, or even applicable. Similar to Savard (2012), Bardach (p.1) notes that the problem definition stage is a key step in the cycle as it provides a sense of direction for all subsequent stages of the policy process.

Bridgman and Davis (2003) discuss the eight step policy process used in Australia. They note that the policy process is a series of steps that can help guide public servants “through the institutions of government” (p.102) and that it is a dialogue “between procedures and substance, between public debate and private analysis” (p.102). A key point noted by Bridgman and Davis (2003, p.98) is that the policy cycle provides structure in a complex process, and acts as a “guide to action” (p.99). Although some of the terminology and steps in Bridgman and Davis’s policy process are different than Savard’s (2012), they are similar in concept. Both start with a policy problem that is then elevated to the political level where resources are allocated to define the problem, solutions identified for implementation, and effectiveness evaluated. An important distinction between the policy process described by Bridgman and Davis (2003), and that of

Savard (2012), is Bridgman and Davis's idea of policy as a continuous cycle instead of a linear process.

Lindblom (1959) also discusses public policy and some of the difficulties in the policy process and notes that the process of policy making is essentially a system or science of "muddling through" (p.88). Lindblom notes that analysis of any but the most basic policy problems requires simplifications and assumptions that makes rational decision making almost impossible (pp.84-85). Lindblom goes on to say that policy making is "... at best a very rough process" (p.86) and politicians, administrators and policy experts do not know enough about complex relationships in the "social world" (p.86) to be effective at anything other than incremental policy changes. Lindblom notes that incremental changes in existing policy simplifies analysis to comparison of "marginal differences" (p.84) between the proposed and current policy, and also allows stakeholders to come to agreement on a particular policy. Lachapelle (2011, p.4) also comments on incremental policy making and similar to Lindblom (1959) notes that incrementalism is central to public policy decision making, and that it "can be perceived as an outbreak of rational decision making" (p.4). The concept of incremental policy making is particularly relevant to this project which may also form part of the incremental policy leading to implementation of service to the Okanagan Landing area.

2.5 Strategic Planning

Government organizations often engage in strategic planning to help understand the environment they operate in as they work to address challenges and provide public value (Bryson 2011, p.8). The City of Vernon (2015) completed a strategic plan in 2015 and one of the goals identified in the plan was implementation of sewer service to the Okanagan Landing area. Reviewing strategic planning literature will provide context for this project by helping to understand where in the overall strategic planning process this implementation project is situated, and also help to identify factors specific to implementation that should be considered as part of this project to improve success during implementation.

2.5.1 The Strategic Planning Process

Bryson (2011) provides a comprehensive discussion of the strategic planning process for public and non-profit organizations. Bryson (2011, pp.3-9) notes that in today's complex environment it more important than ever for organizations to have strategic plans in place to inspire and guide the organization to create "public value" (p.10). A key point that resonates throughout Bryson's text is how strategic planning helps leaders to "think, act, and learn strategically- to figure out what is desirable and why, and how to get it" (p.43). Hambrick and Fredrickson (2001, p.49) also discuss strategic planning and note that companies often end up with a collection of fragmented strategies that can result in confusion. To help navigate the process and ensure realistic and achievable goals are pursued, Bryson (2011, pp. 44-45) provides

a ten step cycle that breaks an otherwise complicated exercise into a “reasonably orderly” (p. 71) series of steps.

A key difference between Bryson’s (2011, p. 44) “modern” strategic planning process, and earlier linear processes such as the “strategic staircase” discussed by Hay and Williamson (1991), is that Bryson’s process is cyclical, with feedback from latter stages used to inform earlier stages, allowing for the plan to be incrementally adjusted. Lindblom (1959) and Lachapelle (2011) also discuss the idea of incremental policy making and both note that incremental adjustments are part of the normal process. Lindblom (1959) comments that most policy problems are too complex to allow for rational analysis and incremental policy making should not be considered a “failure of method” (p.87). Lachapelle (2011, p.7) also supports the idea of incremental policy when he notes that with respect to budget changes it’s wise to use “small adjustments” (p.4).

The idea of using feedback during implementation to incrementally adjust policy is relevant to this project. Challenges encountered during implementation could help inform earlier stages of the plan and as Lindblom (1959, p.87) notes should be considered part of the normal policy process and not a failure.

2.5.2 Implementation Problems and Success Factors

Hay and Williamson (1991) discuss strategic planning and some of the key reasons why organizations typically fail to implement strategies. Hay and Williamson (pp.36-37) note that while implementation failures are often conveniently blamed on management, the root cause is most often “in-built failure of the strategy itself” (p.37). Hay and Williamson (p.42) note that the solution to implementation can be resolved by starting with the mission, and working backwards to develop realistic strategies, allocate resources, and implement strategies. Hay and Williamson’s (1991) discussion of implementation failure is relevant to this project and demonstrates the importance of developing realistic strategies and allocating adequate resources to support implementation.

Poister and Streib (2005) discuss strategic planning in municipal government and some of the factors that can help improve success. They note that approximately “40 %”(p.54) of municipal governments in the United States actually engage in some form of strategic planning, and that many report beneficial results. Poister and Streib (p.54) note that some of the key factors responsible for success were stakeholder involvement, linking performance with goals, tracking performance, and including budget items specific to achieving strategic goals. These success factors are similar to other literature reviewed (Bryson, 2011; Allio, 2005), and perhaps one of the most relevant success factors that could have implications for this particular project is stakeholder involvement, which is discussed in more detail below.

2.5.3 Stakeholders

Bryson (2011) provides a comprehensive discussion of stakeholders related to strategic planning and notes that stakeholders are “any person, group, or organization that can place a claim on an organization’s (or other entity’s) attention, resources, or output or that is affected by that output” (p. 48). While stakeholder consultation is beyond the scope of this project, it is relevant to review stakeholder related literature to help understand how implementation can be affected by stakeholder involvement.

Poister and Streib (2005, p.54), Bryson (2011, p.132), Burby (2003, p.44) and Fletcher, Guthrie, Steane, Roos, and Pike (2003, p. 508) all discuss the importance of involving stakeholders throughout the entire strategic planning process and note that lack of stakeholder involvement often results in failure during implementation. Bryson (2011) notes that perhaps the most important reason to include key stakeholders in the planning process is to create the environment where “strategic thinking acting and learning” (p.71) takes place to help focus on what really matters, and how best to achieve it. Bryson further notes that a stakeholder analysis helps decision makers better understand “the networks and politics surrounding the organization” (p.48). An important note by Fletcher, Guthrie, Steane, Roos, and Pike (2003, p. 508) is that effective stakeholder management is key to ensuring the direction of the organization matches stakeholders’ perceptions.

Based on the literature reviewed, stakeholder involvement throughout the planning process is essential and should be considered during development of this project. The literature shows that where plans have been developed without input from key stakeholders, implementation is likely to stall until feedback is incorporated into the plan. Similar to the previous discussion of incremental policy making, it is important that stakeholder feedback be considered during implementation and used to inform earlier stages of the planning cycle.

2.5.4 Implementing Goals

Of particular relevance to this project is reviewing implementation related literature to help understand how best to achieve the city’s goal of extending sewer to the Okanagan Landing area. In the context of strategic planning, strategic objectives help operationalize the organizations plans (Alogan & Yetiş, 2006, pp. 676-677). Alogan and Yetiş (2006, p.677) note that to achieve the organizations objectives, it is critical they are defined correctly. This is similar to the discussion by Top Achievement (n.d., 1 par) who notes that using SMART (specific, measurable, attainable, realistic and timely) goals helps translate goals into action. Allio (2005, p.12) provides an excellent guide to implementing strategies, and notes that using a straight forward methodology is essential to translate ideas to action. Allio recommends using the template shown in Figure 5 to help break the broad strategy into “shorter-term actions” (p.15)

Strategy		<i>Strategy Manager:</i>	
Key Programs	Responsibility	Start Date:	Complete By:
Metrics	Resources Required		
	<i>People:</i>		
	<i>Investment/expense:</i>		
Milestones	Critical Issues		

Figure 5: Implementation Template. (Allio, 2005, p. 15)

with defined start, middle, and end. Allio (p.15) describes these actions as programs. The other categories shown in Figure 5 are “metrics” (p.16) which are the “yardsticks” (p.16) used to measure implementation; “milestones” (p.16) which are the major events in implementation; “resources” (p.16) which are staff and capital over and above regular operating resources that are necessary for implementation; and “critical issues” (p.16) which are the “risks, vulnerabilities, or concerns that may impact” (p.17) implementation. Allios template could be modified for use in this project in order to provide clear goals, objectives, and strategies necessary to support implementation.

McNamara (n.d.) also discusses strategic planning and methods to improve success during implementation. McNamara notes that it is important to ground a plan with specific action items to ensure goals, strategies, objectives, responsibilities and timelines are clearly conveyed. Similar to Allio (2005, p.15), McNamara provides a simple table that could be used to establish a high level action plan as shown in Figure 6.

Strategic Goal	Strategy	Objective	Responsibility	Timeline
1. (Goal #1)	1.1 (first strategy to reach Goal #1)	1.1.1 (first objective to reach while implementing Strategy #1.1)	(who's going to accomplish that objective)	(when the implementer is going to accomplish that objective)

Figure 6: Action Plan Template. (McNamara, n.d.)

2.6 Summary of Literature Review

There is significant literature available on the topic areas of municipal service, municipal revenue, public policy, and strategic planning to help guide this project. Literature selected for review provides background information on the topic areas noted, identifies factors that should be considered as part of this project to improve success during implementation of service, and with respect to revenue and service provides information specific and relevant to Canadian and British Columbia local government. The following conceptual framework summarizes key literature and discusses factors relevant to this project that will be explored further.

2.7 Conceptual Framework

The conceptual framework shown in Figure 7 identifies key factors to be explored in this project. As Sinclair (2007) notes, the framework is similar to a “map or travel plan” (p.39) that can be used to the guide the project. The conceptual framework for this project is informed from the literature review and client direction. Client direction provides the general scope for the project while the literature review identifies specific factors to be explored, as discussed in more detail below.

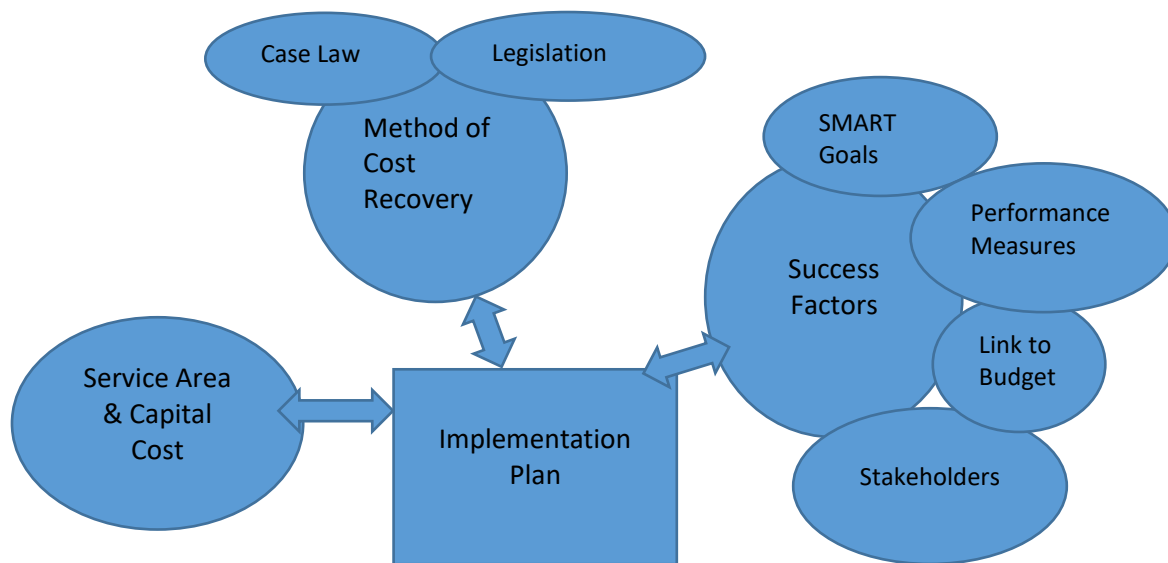


Figure 7: Conceptual Framework Diagram

2.7.1 Service Area and Cost of Service

The literature review shows that in British Columbia the user pay system is commonly used and that according to the economic principle of fiscal equivalence, those that benefit from a specific service should pay the costs (Bish & Clemens, 2008, p.179). In order to allow the city to calculate a variety of servicing scenarios and costs recovery methods that could occur with incremental policy adjustments, service areas at the neighbourhood level will be defined, and the capital cost of servicing each separate neighbourhood will be determined. Estimating costs in this manner would provide the greatest flexibility in planning servicing and cost apportionment and also provide sufficient detail to allow the city to pursue alternate servicing strategies in the future.

2.7.2 Method of Cost Recovery

The literature review shows that local government has significant latitude with respect to servicing and that in British Columbia the Community Charter (2003) enables municipalities to establish service related bylaws and recover costs through special levies or fees from benefitting owners (Harding, 2012, p.15). The literature review also shows that the user pay system is commonly used in British Columbia to recover service related costs, and that to achieve fiscal equivalence the actual cost of servicing should be recovered from those the benefit from a specific service (Bish & Clemens, 2008, p.179). The literature review also shows that government has experienced legal challenges related to imposing service related levies, and that case law can help design a levy that meets the legal tests commonly used by courts when evaluating validity of a levy (Althaus & Tedds, 2016, Farish & Tedds, 2014).

Based on the literature review, options for cost recovery to be explored as part of this project will be based on the Community Charter (2003); the cost of servicing will be recovered from the specific users of the service consistent British Columbia's user pay system (Bish & Clemens, 2008, p.179); and the Lawson and Eurig case law criteria will be considered to ensure cost recovery recommendations are legally compliant.

2.7.3 Success Factors

The literature review shows that success during implementation can be improved by involving stakeholders in the policy process (Poister & Streib, 2005, p.54; Bryson, 2011; Allio, 2005); providing goals and objectives that are specific, measurable, and attainable (Jung & Lee, 2013, p.677); tracking and linking performance to goals (Poister & Streib, 2005, p.54); and linking budget to specific goals (Poister & Streib, 2005, p.54). These factors will be considered as part of this project and summarized in the action plan template provided by McNamara (n.d.) or Allio (2005, p. 15).

3 Methodology and Methods

3.1 Methodology

A needs assessment approach will be used to explore the research question. This approach will be used because in general, this type of assessment helps to identify various stages that are taken to set priorities and make decisions about an organizational improvement and to develop a plan and allocate resources (Witkin & Altschuld, 1995). As Ellis (2018, pp.2-3) notes, there are three distinct phases in a needs assessment as follows: Identify needs of the “target audience” (p.2), data gathering and analysis, and the final decision making stage that leads to some type of action.

3.2 Methods

The methods used for this project will include document review and meetings with the client at key stages of the project to informally explore the research questions and determine specific needs and outcomes of the client. The needs assessment will be completed while working directly with the client and his comments will be incorporated into the project research and recommendations. The literature review will provide a key source of information that will complement background information such as legislation and existing city documents.

The project includes several key stages as follows:

3.2.1 Stage One: Service Area and Cost of Service

Stage one work includes review of existing city documents and meetings with city staff to identify properties in the service area and determine the capital cost of service provision.

The un-serviced properties boundary identified in the city’s liquid waste management plan will be used a starting point for stage one work (Urban Systems Ltd., 2014, s.5.1, Figure 5). City sanitary sewer service records, and engineering record drawings will also be reviewed to determine changes in the city’s sanitary sewer collection infrastructure since 2011. Based on the results of this review, the service area will be defined graphically and reviewed with the client prior to proceeding with capital cost estimates for the service area.

The capital cost of service will be determined for the defined service area using available city pre design engineering documents and City of Vernon historical cost data and estimating template provided in Appendix E. In order to provide a suitable level of detail to support various implementation scenarios, costs will be provided for each separate neighbourhood in the service area. Historical cost data, city geographic information data (ESRI, n.d.), engineering design records, and reports will provide the basis for this work. City of Vernon unit price cost data and excel based estimating worksheets will be used to prepare estimates to maintain consistency with

the city's historical cost data, and standard estimating format. The following outlines the general procedure for preparing cost estimates for this project:

1. Using the city's geographic information system software (ESRI, n.d.), measure the length of new sewer collector pipe necessary to extend from the existing city sewer collection system to all properties, and input into the cost estimating worksheet.
2. Calculate the area of road restoration required and input into cost estimating worksheet.
3. Determine the number of services required and input into the unit cost worksheet.
4. Using the city's geographic information system software (ESRI, n.d.), determine if additional restoration is required specific to each area and enter into cost estimating worksheet.
5. Review existing engineering reports to identify if additional items have been identified that should be considered in the estimates.

Unless otherwise noted, all estimates include installation of new sewer collector pipe from the existing city system to all properties in the service area; installation of services to the roadside property line for each property; and restoration of all disturbed areas. To simplify preparation of cost estimates the following assumptions were made:

- Average depth of sewer collector pipe is 2 meters, in order to meet the city's minimum service depth requirements at property line (City of Vernon, 2015a).
- All sewer collector pipe is 200 mm diameter, unless noted otherwise, according to the city's minimum pipe size specification (City of Vernon, 2015a).
- All services are 100mm diameter, unless noted otherwise, according the city's residential service pipe size specification (City of Vernon, 2015a).
- Road restoration is limited to one laneway only, to a maximum width of 3.5 meters for the entire length of sanitary sewer collector pipe installed.
- Road structure includes 75 mm thickness of asphalt, 100mm thickness of granular road base, 400mm thickness of subbase gravels, and geogrid, in accordance with Fletcher Paine Associates Ltd. (2017) recommendation for two similar residential roads in the Okanagan Landing are (Apollo Road, and Longacre Drive).

Accuracy of cost estimates can be affected by many factors, including the level of engineering and investigations completed, and experience of the estimator (Consulting Engineers of British Columbia [CEBC], 2009, p.25). To account for these factors, CEBC (2009, p.25) established several different classes of estimates, and recommended contingency amount for each. CEBC notes that Class A estimates are prepared using tender level information, and

typically include a contingency between 10%-15%. Class B estimates are prepared after site investigations are complete, and major systems defined, and include contingencies between 15%-25%. Class C estimates are prepared using only limited site investigations and include contingencies between 25%-40%. At the other end of the spectrum, Class D estimates are prepared using limited site information, and typically include contingencies of 50% or higher.

The city has completed engineering investigations for many of the areas included in this study. Where engineering information is available it will be noted and the appropriate level of contingency used. Estimates completed using existing engineering investigations will be considered Class B with contingencies of 15%. Where limited site information is available, cost estimates completed will be considered Class C with contingencies of 25%.

3.2.2 Stage 2: Cost Recovery Options

Stage two work includes review of the Community Charter (2003) and relevant case law to provide the city with cost recovery options. As funding is limited for this project, any outstanding issues raised during stage two that require legal review would be identified for subsequent investigation by the city. Stage two recommendations would be considered in subsequent stages of this project and could also help inform future policy development and bylaws as the city implements service to the Okanagan Landing area.

3.2.3 Stage 3: Implementation Plan

Stage three work includes preparation of a preliminary plan to implement service to the Okanagan Landing area according to the client's desired outcomes. The implementation plan will incorporate information from previous stages of the project and will include recommendations for cost recovery, service phasing, and an action plan for key program items. The literature review will provide the main source of information for this stage of the project and key factors will be discussed with the client to determine if they warrant inclusion in the implementation plan.

3.3 Document Review

The City of Vernon completed several studies related to servicing the Okanagan Landing area, including preliminary engineering reports, and detailed engineering design. The reports reviewed, and general description are as follows:

1. City of Vernon Tronson Specified Areas: (Focus Corporation, 2008): The Focus 2008 report is a pre-design level engineering report for several different sewer service areas in the city. Several of the neighbourhoods included in this project are discussed in the Focus engineering report.

2. City of Vernon Sanitary Sewer Study (Focus Corporation, 2012). The Focus report is a comprehensive analysis of the city's sanitary sewer system and includes pipe size analysis based on current and future land use. Information contained in the Focus report will be used in the capital costs section of this report where appropriate.
3. City of Vernon Subdivision and Development Servicing Bylaw #3843 (City of Vernon, 2015a): The city's subdivision bylaw provides design criteria that will be referenced in the capital cost section of this report.
4. Various geotechnical investigations: The city completed several geotechnical investigations that will be referenced in the capital cost section of this report where appropriate. Geotechnical investigations provide valuable insight into subsurface conditions, such as presence of groundwater and soil types, that can help improve the accuracy of cost estimates.

3.4 Limitations

Limitations of the proposed project includes the following:

1. Existing studies used to support preparation of capital cost estimates are assumed to be complete and comprehensive. Any errors contained in the existing studies may affect the validity of the study.
2. Funding for the project is limited. If additional funds are required for items such as legal review, these items would be identified for future consideration by the city.
3. The City of Vernon funds extensions of its sewer collection system on a user pay basis with capital costs typically funded by those that benefit from the specific service. Operational costs are funded by all users of the sewer system using a variable fee type levy (City of Vernon, 2013, schedule A, s.2.2). Cost estimates completed for this project include capital costs only.
4. Cost estimates are based on city supplied unit price data. The report includes summary level cost information only. Excel data files used to complete estimates will be provided to the client upon completion.

3.5 Delimitation

Delimitations of the project include the following:

1. The focus of this project is providing the city with an implementation plan that meets the servicing needs for a specific area, while also meeting the City of Vernon administrative and policy related needs. These factors can be complex and rely on feedback from the client to provide direction, identify needs, and desired outcomes at key stages of the

project. Client direction can inherently bias results, however it could be considered a normal part of the exploration process for a needs assessment used to resolve a specific piece of a broader policy problem for an organization.

2. Cost of service is limited to capital costs only. Operational costs are not included in the cost analysis and are outside the scope of this project.
3. Cost recovery options were based on the Community Charter (2003) only and limited case law related literature available.
4. The literature review focused on Canadian local government and wherever possible British Columbia specific information was used.
5. Stakeholder engagement was not included in the scope of this project due to time and funding limitations. As the city moves forward with implementation stakeholder engagement will occur, and the city may need to revisit earlier stages of the policy process to incorporate feedback into the plan.
6. A preliminary action plan will be provided that identifies key action items required to implement service.
7. All work is to take place in the City of Vernon over a twelve month period between January 2017 and May 2018.

3.6 Organization of Report

The general project outline is shown in Figure 8 and includes several key stages as discussed in more detail below:

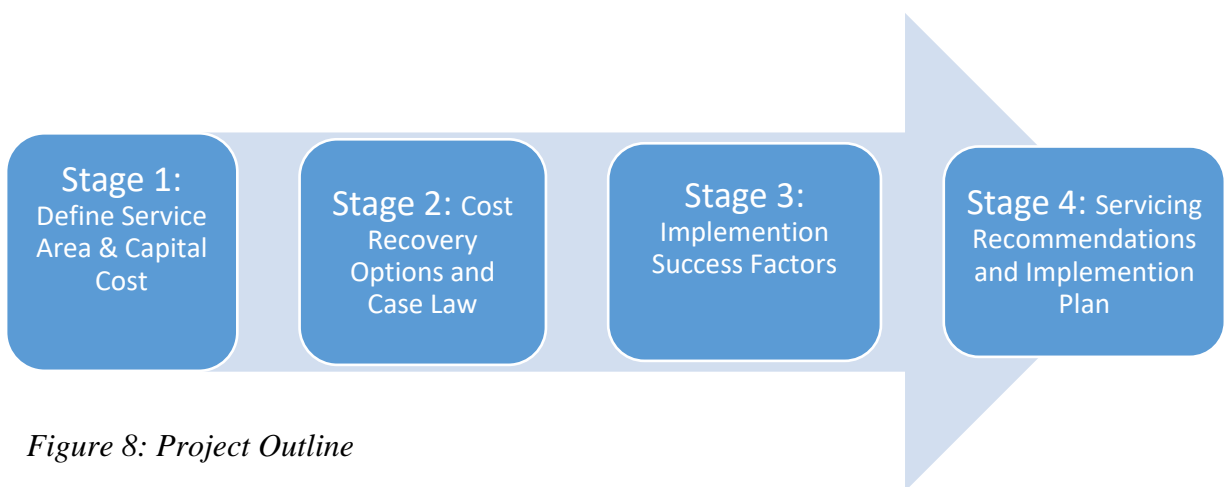


Figure 8: Project Outline

Stage one of the project identifies the service area and capital cost of service. Defining the service area and cost of service is an essential first step in understanding the overall scope of the project, and also provides context for the cost recovery and implementation stages.

Stage two of the project reviews options available to the city for recovery of service related capital costs and also explores fee and tax related case law to help design a legally complaint levy. Stage 2 information will provide context for stage 3 of this project and also support future development of service related policy and bylaws as the city moves forward with implementation of service to the area.

Stage three of the project identifies key factors that could help improve success during implementation of service to the Okanagan Landing area. The literature review will provide the primary source of information for this stage. Success factors identified will be incorporated in the recommendations and used to form a preliminary action plan for key implementation items.

Stage Four of the project provides servicing recommendations and an implementation plan to strategically guide servicing of the Okanagan Landing area. This stage analyses information researched in previous phases and provides recommendations for cost recovery, phasing of service, and an action plan that includes goals, objectives, and strategies for key program items.

4 Findings

4.1 Introduction

This project was commissioned to support the City of Vernon in the development of an implementation plan for extension of city sewer service to an area of the city commonly referred to as the Okanagan Landing. Servicing the area is one of council's top strategic goals, and this project provides information that would help the city realize their servicing goal (City of Vernon, 2015). Using a needs assessment approach, the policy problem will be explored with the client, and an implementation plan prepared that would allow the city to initiate service to the Okanagan Landing area. The main sections of the report are as follows:

1. Service Area and Cost
2. Cost Recovery Options and Case Law
3. Implementation Success Factors

4.2 Service Area and Capital Cost

Defining the service area and capital cost of service is an important part of this project that identifies specific properties in the Okanagan Landing area that will be included in this servicing initiative, and also provides information that will be considered in subsequent stages of this report. The general service area boundary was identified in the city's Liquid Waste Management Plan (LWMP) (Urban Systems Ltd., 2014, s.5.1, Figure 5.0). The LWMP map is shown in Appendix B and is considered the general service area boundary for purposes of this report. There have been changes in the city's sewer infrastructure since the LWMP was created, and a review of city engineering records is necessary to update the service area and determine scope for preparing capital cost estimates.

The following starts with a summary of the overall service area and cost of service, and then explores each of the geographically separate neighbourhoods included in the overall service area. A neighbourhood level analysis was done to simplify the engineering records review and to allow costs to be estimated for each geographically separate area to support different servicing and cost apportionment scenarios.

The overall service area defined for this project includes approximately 736 properties in 15 geographically separate neighbourhoods. The cost to extend city sewer service to all properties in the service area is estimated at \$18,280,000. The majority of these properties were developed prior to annexation in 1993, and at the time of this investigation none of the properties had access to city sewer service. The majority of properties (582) in the service area are located in nine single family neighbourhoods, in the floodplain and hillside areas east of Okanagan Lake, as shown in Appendix C (blue shading). These 582 properties are collectively referred to as

Service Area #1 (SA#1). The cost to extend sewer to the 582 properties in SA#1 is estimated at \$13,010,000. The remaining 154 properties are located in six lower density single family lakeshore neighbourhoods as shown in Appendix D (blue shading). These properties are collectively referred to as Service Area #2 (SA#2). The cost to service these 154 properties is estimated at \$5,270,000.

4.2.1 Willow Park

The proposed Willow Park service area includes 24 parcels as shown in Figure 9. Land use for all parcels in Willow Park is “Mobile Home Residential” (City of Vernon, 2004). Review of the city’s engineering records show that the sanitary sewer collection system was extended to the area in 2011, and five properties adjacent to Okanagan Landing Road that were included in the LWMP boundary for Willow Park area are now serviced (Focus Corporation, 2011). The service area boundary shown in Figure 9 reflects these changes and is considered current as of June 2018.

Servicing of the 24 parcels in Willow Park requires extension of approximately 390 lineal meters of new sewer collector pipe from the existing city system located immediately adjacent to Willow Park Road, as shown by the Focus Corporation (2011) engineering record drawing. Geotechnical investigations were completed in the area by Fletcher Paine Associates Ltd. (2017). The investigation provided sufficient information for the estimate to be considered Class B, with 15% contingency and 10% engineering applied. The Class B estimate and cost inputs for this area are shown in Figure 10.

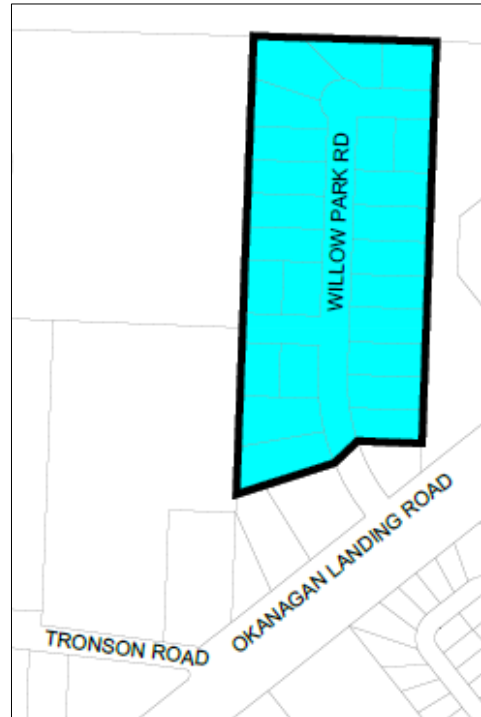


Figure 9: Willow Park Service Area

Capital Cost Estimate-November 2017					
WILLOW PARK SEWER					
ITEM	DESCRIPTION	UNIT OF MEASURE	QTY	UNIT PRICE	AMOUNT
ITEM A: General					
01050.1	General Requirements	LS	1	3.0%	\$10,076
01050.2	Surveys and Layout	LS	1	3.0%	\$10,076
01050.3	Mobilize/Demobilize	LS	1	3.0%	\$10,076
01050.4	Quality Control Testing	LS	1	3.0%	\$10,076
ITEM B: Section 01570S - Traffic Regulation					
01570S.1	Traffic Control/Management	Zone	1	\$5,000.00	\$5,000
ITEM C: Section 02224 - Roadworks					
02224.1	Asphalt Removal and Disposal	sq.m	1374	\$5.01	\$6,884
02224.2	Road Restoration - 75mm asphalt, 100mm crush,400mm subbase, GeoGrid	sq.m	1374	\$61.87	\$85,009
02731.7	Unsuitable Trench Material- Removal,disposal, replacement with 150mm minus F	cu.m	468	\$38.63	\$18,079
ITEM D: Section 02725 - Manholes and catch Basins					
02725.1	1050 dia precast manhole complete	each	5	\$5,000.00	\$25,000
ITEM E: Section 02731 - Sanitary Sewers					
02731.1	200mm dia. pipe PVC SDR35 - 0 to 2.5m deep (incl imported backfill)	lin.m	390	\$250.00	\$97,500
02731.8	Service Installation (complete)	each	24	\$3,600.00	\$86,400
02731.9	Serv. Restoration	each	24	\$500.00	\$12,000
SUB TOTAL - ITEMS B-E					\$335,872
SUB TOTAL - ITEM A					\$40,305
TOTAL ITEMS A TO D					\$376,177
CLASS B ESTIMATE 10% ENGINEERING & 15% CONTINGENCY				25%	\$94,044
TOTAL OPINION OF PROBABLE COST					\$470,000

Figure 10: Willow Park Sewer Capital Cost Estimate

4.2.2 Dallas

The proposed Dallas service area includes 51 parcels as shown in Figure 11. Similar to Willow Park area, land use in the Dallas area is primarily “Mobile Home Residential” (City of Vernon, 2004), with two small agricultural lots fronting Okanagan Avenue (2340 and 2345 Dallas Road). Review of the city’s engineering records shows that the sanitary sewer collection system was extended to the westerly side of the Dallas area in 2006 (Quantum, Consulting Group Ltd, 2005). The westerly limits of the city’s sewer system in this area have not changed since

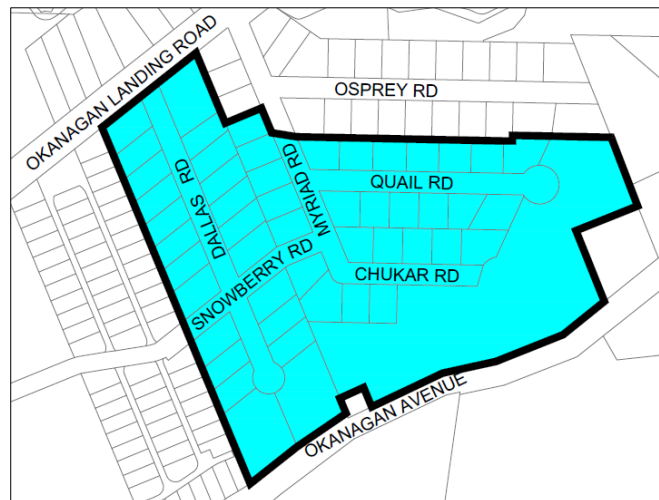


Figure 11: Dallas Service Area

the LWMP boundary was created, however the city is currently extending its sewer infrastructure easterly down Okanagan Landing Road to the end of Osprey Road as shown on the True Consulting (2017) design drawing. The work in progress will service 33 parcels adjacent to Okanagan Landing Road, Myriad Road, and Osprey Road that were included in the LWMP boundaries. The service area shown in Figure 11 reflects the current limits of city service in the area and does not include properties serviced by the current city project.

Servicing of the 51 parcels in Dallas requires extension of approximately 980 lineal meters of new sewer collector pipe from the existing city system noted above. An engineering investigation was completed in the area by Fletcher Paine Associates Ltd. (2017). The investigation provided sufficient information to allow the estimate to be considered Class B with 15% contingency and 10% engineering applied. The Class B estimate and cost inputs for this area are shown in Figure 12.

Capital Cost Estimate-November 2017					
DALLAS SEWER					
ITEM	DESCRIPTION	UNIT OF MEASURE	QTY	UNIT PRICE	AMOUNT
<u>ITEM A: -General</u>					
01050.1	General Requirements	LS	1	3.0%	\$27,953
01050.2	Surveys and Layout	LS	1	3.0%	\$27,953
01050.3	Mobilize/Demobilize	LS	1	1.5%	\$13,976
01050.4	Quality Control Testing	LS	1	1.5%	\$13,976
<u>ITEM B: -Traffic Regulation</u>					
01570S.1	Traffic Control/Management	LS	3	\$5,000	\$15,000
<u>ITEM C: - Roadworks</u>					
02224.1	Asphalt Removal and Disposal	sq.m	3486	\$5	\$17,465
02224.2	Road Restoration - 75mm asphalt, 100mm crush,400mm subbase, GeoGrid	sq.m	3486	\$62	\$215,679
02731.7	Unsuitable Trench Material- Removal,disposal, replacement with 150mm minus F	cu.m	588	\$38.63	\$22,714
<u>ITEM D: - Manholes and catch Basins</u>					
02725.1	1050 dia precast manhole complete	each	10	\$5,000	\$50,000
<u>ITEM E- Sanitary Sewers</u>					
02731.1	200mm dia. pipe PVC SDR35 - 0 to 2.5m deep (incl imported backfill)	lin.m	980	\$250	\$245,000
02731.8	Service Installation (complete)	each	51	\$3,600	\$183,600
02731.9	Serv. Restoration	each	51	\$500	\$25,500
S3	Trench Dewatering (Wellpoint)	lin.m	490	\$320	\$156,800
SUB TOTAL - ITEMS B-E					\$931,758
SUB TOTAL - ITEM A					\$83,858
TOTAL ITEMS A TO D					\$1,015,616
CLASS B ESTIMATE 10% ENGINEERING & 15% CONTINGENCY				25%	\$253,904
TOTAL OPINION OF PROBABLE COST					\$1,270,000

Figure 12: Dallas Sewer Capital Cost Estimate

4.2.3 Claremont

The proposed Claremont service area includes 108 parcels as shown in Figure 13. Land use in the area is designated “Large Lot Residential [R5]” (City of Vernon, 2004) for all of Apollo Road and properties on the south side of Longacre Drive. The north side of Longacre Drive is zoned “Four- Plex Residential”



Figure 13: Claremont Service Area

(City of Vernon, 2004). While zoning does not affect development of the service area boundary, it may be an important factor to consider during future policy and bylaw development related to cost recovery. For example, if the cost apportionment method used is an equal charge per legal parcel, several of the multiple family zoned lots with strata type ownership could conceivably pay more than comparable non strata properties, which may have fairness implications.

Review of the city’s engineering records shows that the sanitary sewer collection system was installed to east side of Longacre Drive in 2011 (Quantum, Consulting Group Ltd, 2010). On the westerly side of the Claremont area, the city is currently working to install sanitary sewer to properties fronting Apollo Road (True Consulting, 2017a). The service area excludes properties serviced as part of the current city project and is current as of June 2018.

Servicing of all 108 parcels in the Claremont area requires extension of approximately 1500 lineal meters of new sewer collector pipe from the existing city system noted above. An engineering investigation was completed in the area by Fletcher Paine Associates Ltd. (2017). The investigation provided sufficient information to allow the estimate to be considered Class B with 15% contingency and 10% engineering applied. The Class B estimate and cost inputs for this area are shown in Figure 14.

Capital Cost Estimate-November 2017					
CLAREMONT SEWER					
ITEM	DESCRIPTION	UNIT OF MEASURE	QTY	UNIT PRICE	AMOUNT
ITEM A: General					
01050.1	General Requirements	LS	1	3.0%	\$43,596
01050.2	Surveys and Layout	LS	1	3.0%	\$43,596
01050.3	Mobilize/Demobilize	LS	1	1.5%	\$21,798
01050.4	Quality Control Testing	LS	1	1.5%	\$21,798
ITEM B: Traffic Regulation					
01570S.1	Traffic Control/Management	LS	5	\$5,000	\$25,000
ITEM C: Roadworks					
02224.1	Asphalt Removal and Disposal	sq.m	5467	\$5	\$27,390
02224.2	Road Restoration - 75mm asphalt, 100mm crush,400mm subbase, GeoGrid	sq.m	5467	\$62	\$338,243
02731.7	Unsuitable Trench Material- Removal,disposal, replacement with 150mm minus F	cu.m	900	\$39	\$34,767
ITEM D: Manholes and catch Basins					
02725.1	1050 dia precast manhole complete	each	15	\$5,000	\$75,000
ITEM E: Sanitary Sewers					
02731.1	200mm dia. pipe PVC SDR35 - 0 to 2.5m deep (incl imported backfill)	lin.m	1500	\$250	\$375,000
02731.8	Service Installation (complete)	each	108	\$3,600	\$388,800
02731.9	Serv. Restoration	each	108	\$500	\$54,000
S4	Service upcharge for difficult servicing in steep hillside, lake area, rock etc.	each	54	\$2,500	\$135,000
SUB TOTAL - ITEMS B-E					\$1,453,200
SUB TOTAL - ITEM A					\$130,788
SUB TOTAL ITEMS A TO D					\$1,583,988
CLASS B ESTIMATE 10% ENGINEERING & 15% CONTINGENCY				25%	\$395,997
TOTAL OPINION OF PROBABLE COST					\$1,980,000

Figure 14: Claremont Sewer Capital Cost Estimate

4.2.4 Longacre

The Longacre service area includes 99 parcels as shown in Figure 15. Land use in the area is “Large Lot Residential [R2]” (City of Vernon, 2004) for all properties in the area. Review of the city’s engineering records shows that the city’s sanitary sewer collection system was extended to several locations adjacent to the proposed service area as follows:

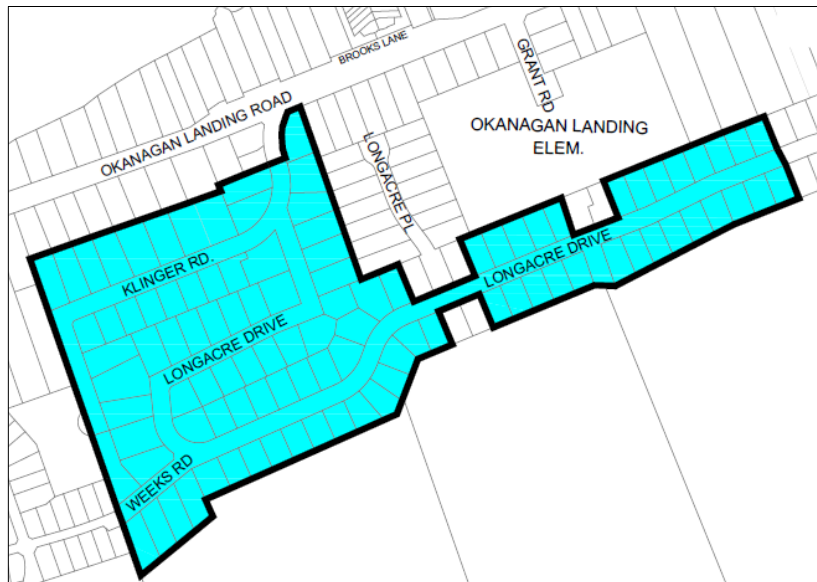


Figure 15: Longacre Service Area

- On the easterly side, sewer was extended from Grant Road, through Okanagan Landing Elementary School, terminating adjacent to 7187 Longacre Drive (Dayton & Knight Ltd., 1994). As noted on the Dayton and Knight engineering drawings, properties fronting this sewer collector pipe are now serviced.
- In the middle of the area, the sewer collector pipe was extended to Longacre Road via Longacre Place (Focus Corporation, 2005). All fronting properties were serviced into this section of pipe, with service terminating at 7252 and 7248 Longacre Drive.
- On the westerly side of the service area, the sewer collector system was extended in 2005 from Grant Road to 1028 Okanagan Landing Road (Focus Corporation, 2005a). All fronting properties were also serviced as part of this work. On the westerly side of the area, the sewer collector pipe was also extended in 1995 along Okanagan Landing Road, terminating one lot west of Longacre Drive (Dayton & Knight Ltd., 1995). Two Longacre Drive properties (7510 and 7490) were serviced into this sewer collector pipe.

The service area boundary shown reflects the current limits of city service in the area, and additional servicing work the city is currently completing.

Servicing of the 99 parcels in Longacre requires extension of approximately 1750 lineal meters of new sewer collector pipe from the existing city system at locations noted above. An engineering investigation was completed for the area by Fletcher Paine Associates Ltd. (2017). The investigation provided sufficient information to allow the estimate to be considered Class B with 15% contingency and 10% engineering applied. The Class B estimate and cost inputs for this area are shown in Figure 16.

Drive to the intersection of Topaz Road (True Consulting Ltd., 2017b). The service area boundary shown reflects the limits of sewer service in the area and also excludes properties serviced as part of the current city project.

Servicing of the 57 parcels in Cameo area requires extension of approximately 1310 lineal meters of new sewer collector pipe from the existing city system noted above. Pre design engineering investigations were completed for this area by Focus (2008), and Fletcher Paine and Associates (2017). The Focus engineering report provides pipe routing information, and the Fletcher Paine report provides geotechnical information. These investigations provided sufficient information to allow the estimate to be considered Class B with 15% contingency and 10% engineering applied. The Class B estimate and cost inputs for this area are shown in Figure 18.

Capital Cost Estimate-November 2017					
CAMEO SEWER					
ITEM	DESCRIPTION	UNIT OF MEASURE	QTY	UNIT PRICE	AMOUNT
<u>ITEM A: Section 01050 -General</u>					
01050.1	General Requirements	LS	1	3.0%	\$47,000
01050.2	Quality Control Testing	LS	1	3.0%	\$47,000
01050.3	Surveys and Layout	LS	1	1.5%	\$23,500
01050.4	Mobilize/Demobilize	LS	1	1.5%	\$23,500
<u>ITEM B: Section 01570S -Traffic Regulation</u>					
01570S.1	Traffic Control/Management	Zone	3	\$5,000	\$15,000
<u>ITEM C: Section 02224 - Roadworks</u>					
02224.1	Asphalt Removal and Disposal	sq.m	3758	\$5	\$18,825
02224.2	Road Restoration - 75mm asphalt, 100mm crush,400mm subbase, GeoGrid	sq.m	3758	\$62	\$232,477
<u>ITEM D: Section 02725 - Manholes and catch Basins</u>					
02725.1	1050 dia precast manhole complete	each	10	\$5,000	\$50,000
<u>ITEM E- Section 02731 - Sanitary Sewers</u>					
02731.0	38,50,64mm Series PVC Low Pressure Sewer - 1.5m cover	lin.m	160	\$160	\$25,600
02731.1	200mm dia. pipe PVC SDR35 - 0 to 2.5m deep (incl imported backfill)	lin.m	1150	\$250	\$287,500
02731.2a	250mm dia. pipe PVC SDR35 - 0 to 4.0m deep	lin.m		\$350	
02731.8	Service Installation (complete)	each	55	\$3,600	\$198,000
02731.9	Serv. Restoration	each	55	\$500	\$27,500
02731.10	Air Valve Chambers complete as per detail	each		\$7,500	
02731.11	Flushing Connections complete as per detail	each	1	\$3,000	\$3,000
02731.12	Trench rock -1.5m deep	lin.m	500	\$175	\$87,500
02731.13	Unsuitable Trench Material-Removal, disposal, replacement with gravel (150mm)	cu.m	300	\$36	\$10,707
S5	Lump sum extra for collector pipe through easements (per parcel charge)	each	1	\$10,000	\$10,000
S4	Service upcharge for difficult servicing in steep hillside, lake area, rock etc.	each	27.5	\$2,500	\$68,750
SUB TOTAL - ITEMS B-E					\$1,034,859
SUB TOTAL - ITEM A					\$141,000
TOTAL ITEMS A TO D					\$1,175,859
CLASS B ESTIMATE 10% ENGINEERING & 15% CONTINGENCY				25%	\$293,965
TOTAL OPINION OF PROBABLE COST					\$1,470,000

Figure 18: Cameo Sewer Capital Cost Estimate

4.2.6 Appaloosa

The proposed Appaloosa service area includes 30 parcels as shown in Figure 19. Land use in the area is designated “Rural Residential [RR]” (City of Vernon, 2004) for all properties. Review of the city’s engineering records shows that the city’s sanitary sewer collection system was installed in Bellavista Road to the intersection of Appaloosa Way in 2010 (Quantum Consulting Group, 2011). City sewer was also installed immediately north of Pinto Place and Appaloosa Way in 2006, however as shown on the Quantum (2006) engineering drawing adjacent properties were not serviced due to elevation differences. The service area boundary shown reflects the limits of sewer service in the area and is current as of June 2018.

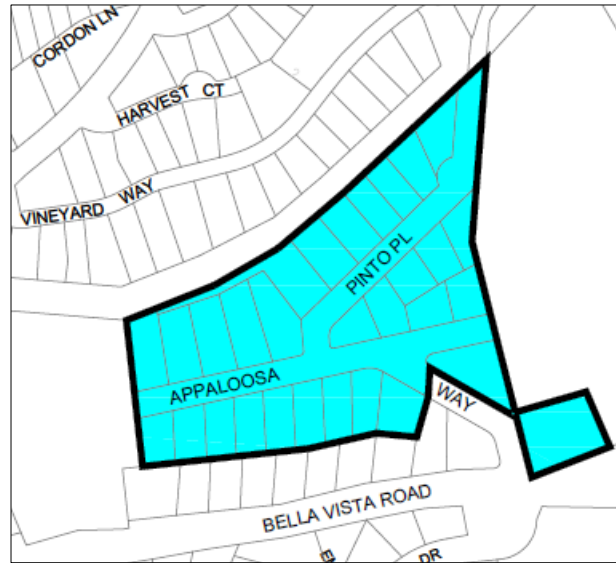


Figure 19: Appaloosa Service Area

Servicing of the 30 parcels in Appaloosa requires extension of approximately 630 lineal meters of new sewer collector pipe from the existing city system located at the intersection of Appaloosa and Bellavista Road as noted above. No engineering investigations were used to prepare the cost estimate for this area. Accordingly, the cost estimate shown in Figure 20 is considered to be Class C with 25% contingency and 10% engineering applied.

Capital Cost Estimate-November 2017					
APPALOOSA SEWER					
ITEM	DESCRIPTION	UNIT OF MEASURE	QTY	UNIT PRICE	AMOUNT
<u>ITEM A: Section 01050 -General</u>					
01050.1	General Requirements	LS	1	3%	\$12,500
01050.2	Surveys and Layout	LS	1	3%	\$12,500
01050.3	Mobilize/Demobilize	LS	1	2%	\$12,500
01050.4	Quality Control Testing	LS	1	2%	\$12,500
<u>ITEM B: Section 01570S -Traffic Regulation</u>					
01570S.1	Traffic Control/Management	Zone	2	\$5,000	\$10,000
<u>ITEM C: Section 02224 - Roadworks</u>					
02224.1	Asphalt Removal and Disposal	sq.m	2363	\$5	\$11,836
02224.2	Road Restoration - 75mm asphalt, 100mm crush,400mm subbase, GeoGrid	sq.m	2363	\$62	\$146,168
<u>ITEM D: Section 02725 - Manholes and catch Basins</u>					
02725.1	1050 dia precast manhole complete	each	7	\$5,000	\$35,000
<u>ITEM E- Section 02731 - Sanitary Sewers</u>					
02731.1	200mm dia. pipe PVC SDR35 - 0 to 2.5m deep (incl imported backfill)	lin.m	630	\$250	\$157,500
02731.6	Trench Rock - 2.5 depth	lin.m	150	\$150	\$22,500
02731.8	Service Installation (complete)	each	30	\$3,600	\$108,000
02731.9	Serv. Restoration	each	30	\$500	\$15,000
S4	Service upcharge for difficult servicing in steep hillside, lake area, rock etc.	each	15	\$2,500	\$37,500
SUB TOTAL - ITEMS B-E					\$543,504
SUB TOTAL - ITEM A					\$50,000
TOTAL ITEMS A TO D					\$593,504
CLASS C ESTIMATE ADD 10% ENGINEERING & 25% CONTINGENCY				35%	\$207,726.40
TOTAL OPINION OF PROBABLE COST					\$800,000

Figure 20: Appaloosa Sewer Capital Cost Estimate

4.2.7 Dunsmuir

The proposed Dunsmuir area includes 33 parcels as shown in Figure 21. Land use is designated “Rural Residential [RR]” (City of Vernon, 2004) for all properties. Review of the city’s records shows that sewer service is currently being installed to the intersection of Bellavista Road and Dunsmuir Road (True Consulting Ltd., 2017c). The service area boundary shown reflects servicing work in progress and is current as of June 2018.

Servicing of the Dunsmuir area requires extension of approximately 1000 lineal meters of new sewer collector pipe from the existing city system. No engineering investigations were noted for this area,

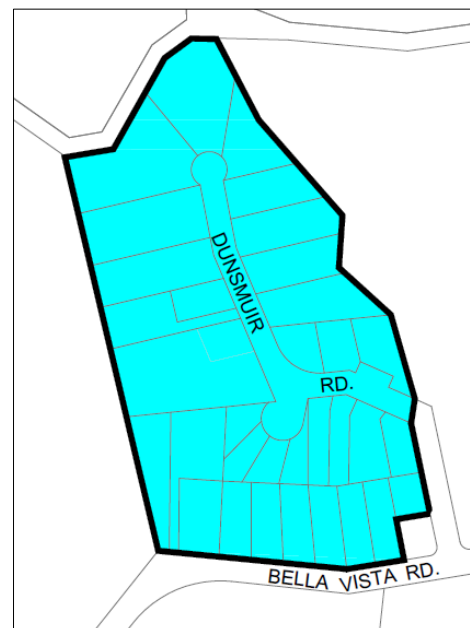


Figure 21: Dunsmuir Service Area

accordingly the cost estimate shown in Figure 22 is considered Class C with 25% contingency and 10% engineering applied.

Capital Cost Estimate-November 2017					
DUNSMUIR SEWER					
ITEM	DESCRIPTION	UNIT OF MEASURE	QTY	UNIT PRICE	AMOUNT
<u>ITEM A: Section 01050 -General</u>					
01050.1	General Requirements	LS	1	3.0%	\$22,000
01050.2	Surveys and Layout	LS	1	3.0%	\$22,000
01050.3	Mobilize/Demobilize	LS	1	1.5%	\$11,000
01050.4	Quality Control Testing	LS	1	1.5%	\$11,000
<u>ITEM B: Section 01570S -Traffic Regulation</u>					
01570S.1	Traffic Control/Management	Zone	3	\$5,000	\$15,000
<u>ITEM C: Section 02224 - Roadworks</u>					
02224.1	Asphalt Removal and Disposal	sq.m	3673	\$5	\$18,403
02224.2	Road Restoration - 75mm asphalt, 100mm crush,400mm subbase, GeoC	sq.m	3673	\$62	\$227,264
<u>ITEM D: Section 02725 - Manholes and catch Basins</u>					
02725.1	1050 dia precast manhole complete	each	8	\$5,000	\$40,000
<u>ITEM E- Section 02731 - Sanitary Sewers</u>					
02731.1	200mm dia. pipe PVC SDR35 - 0 to 2.5m deep (incl imported backfill)	lin.m	1000	\$250	\$250,000
02731.6	Trench Rock - 2.5 depth	lin.m	100	\$150	\$15,000
02731.8	Service Installation (complete)	each	33	\$3,600	\$118,800
02731.9	Serv. Restoration	each	33	\$500	\$16,500
SUB TOTAL - ITEMS B-E					\$700,967
SUB TOTAL - ITEM A					\$66,000
TOTAL ITEMS A TO D					\$766,967
CLASS C ESTIMATE ADD 10% ENGINEERING & 25% CONTINGENCY				35%	\$268,438
TOTAL OPINION OF PROBABLE COST					\$1,040,000

Figure 22: Dunsmuir Capital Cost Estimate

4.2.8 Southwind

The proposed Southwind service area includes 106 parcels as shown in Figure 23. Land use in the area is designated “Rural Residential [RR]” (City of Vernon, 2004) for all properties in the area. Review of the city’s engineering records shows that the city’s sanitary sewer collection system is currently located approximately 1.2 km south west of the proposed service area, in Scott Road west of Cameo Drive (Quantum Consulting Group Ltd., 2007). The city is currently installing sanitary sewer collector pipe and services from Scott Road to the intersection of Orchard Hill Road and Bellavista Road intersection, and

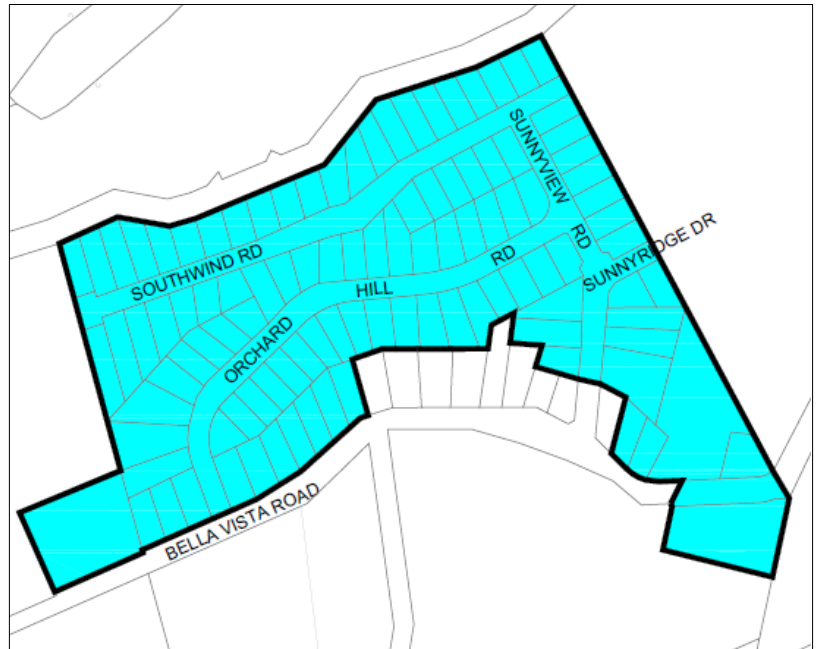


Figure 23: Southwind Service Area

the intersection of Sunnyview Road and Bellavista Road (True Consulting Ltd., 2017b). The service area boundary shown in Figure 23 reflects the current servicing work the city is completing, however the boundary should be reviewed after the city work is complete and updated if necessary.

Servicing of the 106 parcels in Southwind area requires extension of approximately 1500 lineal meters of new sewer collector pipe from the existing city system. Preliminary engineering was completed in the area by Focus Corporation (2008), however due to pipe routing changes in the area since 2008, the information is no longer relevant and will not be considered in the cost estimate. Accordingly, the cost estimate shown in Figure 24 is considered to be Class C with 25% contingency and 10% engineering applied.

boundary shown in Figure 25 reflects the limits of sewer service in the area and is current as of June 2018.

Servicing of the 74 parcels in Crosby area requires extension of approximately 1260 lineal meters of new sewer collector pipe from the existing city system. No engineering investigation were available for this area. Accordingly, the cost estimate shown in Figure 26 is considered to be Class C, with 25% contingency and 10% engineering applied.

Capital Cost Estimate-November 2017					
CROSBY SEWER					
ITEM	DESCRIPTION	UNIT OF MEASURE	QTY	UNIT PRICE	AMOUNT
<u>ITEM A: Section 01050 -General</u>					
01050.1	General Requirements	LS	1	3%	\$30,000
01050.2	Surveys and Layout	LS	1	3%	\$30,000
01050.3	Mobilize/Demobilize	LS	1	2%	\$20,000
01050.4	Quality Control Testing	LS	1	2%	\$20,000
<u>ITEM B: Section 01570S -Traffic Regulation</u>					
01570S.1	Traffic Control/Management	Zone	4	\$5,000	\$20,000
<u>ITEM C: Section 02224 - Roadworks</u>					
02224.1	Asphalt Removal and Disposal	sq.m	4799	\$5	\$24,040
02224.2	Road Restoration - 75mm asphalt, 100mm crush,400mm subbase.	sq.m	4799	\$62	\$296,883
<u>ITEM D: Section 02725 - Manholes and catch Basins</u>					
02725.1	1050 dia precast manhole complete	each	16	\$5,000	\$80,000
<u>ITEM E- Section 02731 - Sanitary Sewers</u>					
02731.1	200mm dia. pipe PVC SDR35 - 0 to 2.5m deep (incl imported ba	lin.m	1260	\$250	\$315,000
02731.6	Trench Rock - 2.5 depth	lin.m	150	\$150	\$22,500
02731.8	Service Installation (complete)	each	74	\$3,600	\$266,400
02731.9	Serv. Restoration	each	74	\$500	\$37,000
S4	Service upcharge for difficult servicing in steep hillside, lake area	each	37	\$2,500	\$92,500
SUB TOTAL - ITEMS B-E					\$1,154,324
SUB TOTAL - ITEM A					\$100,000
TOTAL ITEMS A TO D					\$1,254,324
CLASS C ESTIMATE ADD 10% ENGINEERING & 25% CONTINGENCY				35%	\$439,013
TOTAL OPINION OF PROBABLE COST					\$1,690,000

Figure 26: Crosby Sewer Capital Cost Estimate

4.2.10 Joharon

The proposed Joharon service area includes 29 parcels as shown in Figure 27. Land use in the area is designated “Rural Residential [RR]” (City of Vernon, 2004) for all properties in the proposed service area. Review of the city’s engineering records shows that the city’s sanitary sewer collection system is currently

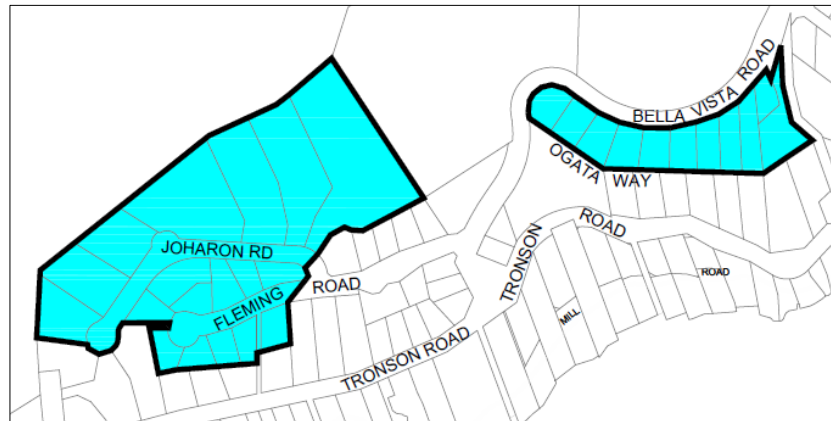


Figure 27: Joharon Service Area

installed in Fleming Road to the intersection of Joharon Road, and Tronson Road immediately south of Ogata Way (Dayton & Knight Ltd., 1996; Focus Corporation, 2010). As shown by Dayton and Knight Ltd. (1996) and Focus Corporation (2010), properties adjacent to the existing city system are serviced, and thus are excluded from the proposed service area boundary. The boundaries shown reflects the limits of sewer service in the area and are current as of June 2018.

Servicing of the 29 parcels in Joharon area requires extension of approximately 850 lineal meters of new sewer collector pipe from the existing city system located at several locations as noted above. Note that all Ogata Way properties will service uphill to the intersection of Fleming Road and Bellavista Road, or through private property to Tronson Road if an appropriate right of way across private property can be negotiated. Focus (2008) completed pre-design engineering for this area. The Focus report identified key pipe routing and need for a pressure type sewer system to service several Fleming Road properties. The Class B cost estimate shown in Figure 28 includes design recommendations from the Focus report.

Capital Cost Estimate-November 2017					
JOHARON SEWER					
ITEM	DESCRIPTION	UNIT OF MEASURE	QTY	UNIT PRICE	AMOUNT
ITEM A: Section 01050 -General					
01050.1	General Requirements	LS	1	3.0%	\$12,500
01050.2	Surveys and Layout	LS	1	3.0%	\$12,500
01050.3	Mobilize/Demobilize	LS	1	1.5%	\$6,250
01050.4	Quality Control Testing	LS	1	1.5%	\$6,250
ITEM B: Section 01570S -Traffic Regulation					
01570S.1	Traffic Control/Management	Zone	1	\$5,000	\$5,000
ITEM C: Section 02224 - Roadworks					
02224.1	Asphalt Removal and Disposal	sq.m	3477	\$5	\$17,421
02224.2	Road Restoration - 75mm asphalt, 100mm crush,400mm subbase, GeoGrid	sq.m	3477	\$62	\$215,137
ITEM D: Section 02725 - Manholes and catch Basins					
02725.1	1050 dia precast manhole complete	each	11	\$5,000	\$55,000
ITEM E- Section 02731 - Sanitary Sewers					
02731.1	200mm dia. pipe PVC SDR35 - 0 to 2.5m deep (incl imported backfill)	lin.m	950	\$250	\$237,500
02731.6	Trench Rock - 2.5 depth	lin.m	150	\$150	\$22,500
02731.8	Service Installation (complete)	each	29	\$3,600	\$104,400
02731.9	Serv. Restoration	each	29	\$500	\$14,500
S5	Lump sum extra for collector pipe through easements (per parcel charge)	each	2	\$10,000	\$20,000
S4	Service upcharge for difficult servicing in steep hillside, lake area, rock etc.	each	15	\$2,500	\$36,250
SUB TOTAL - ITEMS B-E					\$727,708
SUB TOTAL - ITEM A					\$37,500
TOTAL ITEMS A TO D					\$765,208
CLASS B ESTIMATE ADD 10% ENGINEERING & 15% CONTINGENCY				25%	\$191,302.12
TOTAL OPINION OF PROBABLE COST					\$ 960,000

Figure 28: Joharon Sewer Capital Cost Estimate

4.2.11 Harbour Heights

The proposed Harbour Heights service area includes 16 parcels as shown in Figure 29.

Land use in the area is designated “Estate Lot Residential [R1]” (City of Vernon, 2004) for all properties in the proposed service area.

Review of the city’s engineering

records shows that the city’s sanitary sewer collection system is currently installed in Okanagan Landing Road adjacent to Harbour Heights Road (Stantec Consulting Ltd., 2005). As shown by the Stantec engineering design properties adjacent to the existing city system in Okanagan Landing Road are serviced and thus excluded from the proposed service area boundary. The

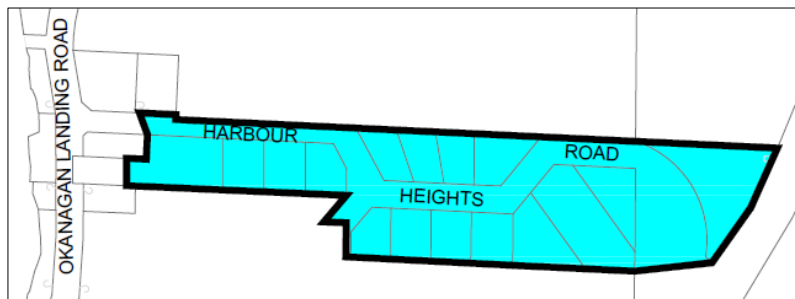


Figure 29: Harbour Heights Service Area

service area boundary shown reflects the limits of sewer service in the area and is current as of June 2018.

Servicing of the 16 parcels in Harbour Heights requires extension of approximately 590 lineal meters of new sewer collector pipe from the existing city system. No engineering investigations were used to prepare the cost estimate for this area. Accordingly, the cost estimate shown in Figure 30 is considered Class C with 25% contingency and 10% engineering applied.

Capital Cost Estimate-November 2017					
HARBOUR HEIGHTS SEWER					
ITEM	DESCRIPTION	UNIT OF MEASURE	QTY	UNIT PRICE	AMOUNT
<u>ITEM A: Section 01050 -General</u>					
01050.1	General Requirements	LS	1	3.0%	\$8,000.00
01050.2	Quality Control Testing	LS	1	3.0%	\$8,000.00
01050.3	Surveys and Layout	LS	1	1.5%	\$4,000.00
01050.4	Mobilize/Demobilize	LS	1	1.5%	\$4,000.00
<u>ITEM B: Section 01570S -Traffic Regulation</u>					
01570S.1	Traffic Control/Management	Zone	2	\$5,000	\$10,000
<u>ITEM C: Section 02224 - Roadworks</u>					
02224.1	Asphalt Removal and Disposal	sq.m	1575	\$5	\$7,891
02224.2	Road Restoration - 75mm asphalt, 100mm crush,400mm subbase, GeoGrid	sq.m	1575	\$62	\$97,445
02731.7	Unsuitable Trench Material- Removal,disposal, replacement with 150mm mi	cu.m	708	\$39	\$27,350
<u>ITEM D: Section 02725 - Manholes and catch Basins</u>					
<u>ITEM E- Section 02731 - Sanitary Sewers</u>					
02731.0	38,50,64mm Series PVC Low Pressure Sewer - 1.5m cover	lin.m	590	\$160	\$94,400
02731.8	Service Installation (complete)	each	16	\$3,600	\$57,600
02731.10	Air Valve Chambers (complete)	each	2	\$7,500	\$15,000
02731.11	Flushing Connections (complete)	each	2	\$3,000	\$6,000
SUB TOTAL - ITEMS B-E					\$315,686
SUB TOTAL - ITEM A					\$24,000
TOTAL ITEMS A TO D					\$339,686
CLASS C ESTIMATE ADD 10% ENGINEERING & 25% CONTINGENCY				\$0	\$118,890
TOTAL OPINION OF PROBABLE COST					\$460,000

Figure 30: Harbour Heights Sewer Capital Cost Estimate

4.2.12 Smith/Peters

The proposed Smith/Peters service area includes 30 parcels as shown in Figure 31. Land use for lakeshore lots in the proposed service area is “Lakeshore Residential [R6]” (City of Vernon, 2004). Land use for all other lots in the area is “Estate Lot Residential [R1]” (City of Vernon, 2004). Review of the city’s engineering records shows that the city’s sanitary sewer collection system is currently installed in Smith Road at the westerly side of the proposed service area and Okanagan Landing Road adjacent to Peters Road at the easterly side of the service area (Stantec Consulting Ltd, 2007; Stantec Consulting Ltd., 2016). The service area boundary shown reflects the limits of sewer service in the area and is current as of June 2018.

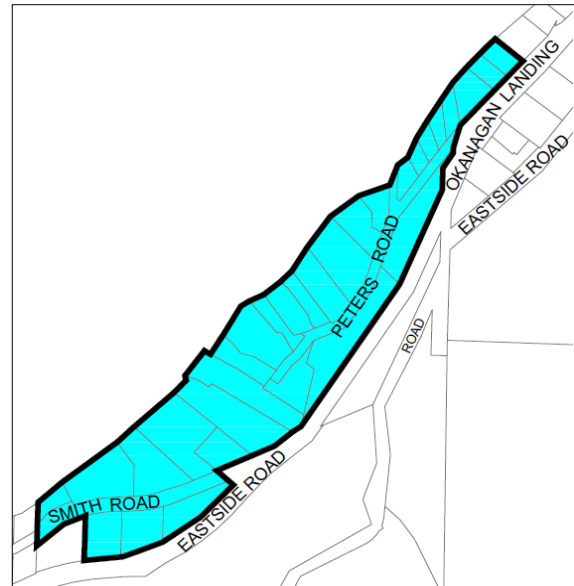


Figure 31: Smith/Peters Service

Servicing of the 30 parcels in the area requires extension of approximately 930 lineal meters of new sewer collector pipe from the existing city system. Stantec (2007a) completed pre-design engineering for this area. The Stantec engineering report provides sufficient information to allow the estimate to be considered Class B with 15% contingency and 10% engineering applied. The Class B estimate and cost inputs for this area are shown in Figure 32.

Capital Cost Estimate-November 2017					
SMITH/PETERS SEWER					
ITEM	DESCRIPTION	UNIT OF MEASURE	QTY	UNIT PRICE	AMOUNT
<u>ITEM A: Section 01050 -General</u>					
01050.1	General Requirements	LS	1	3.0%	\$16,500
01050.2	Quality Control Testing	LS	1	3.0%	\$16,500
01050.3	Surveys and Layout	LS	1	1.5%	\$8,250
01050.4	Mobilize/Demobilize	LS	1	1.5%	\$8,250
<u>ITEM B: Section 01570S -Traffic Regulation</u>					
01570S.1	Traffic Control/Management	LS	1	\$10,000	\$10,000
<u>ITEM C: Section 02224 - Roadworks</u>					
02224.1	Removal,disposal of existing asphalt,sawcut as required	sq.m	3000	\$7	\$21,000
02224.2	Road Restoration - 50mm asphalt, 100mm crush,150mm subbase	sq.m	3000	\$50	\$150,000
02731.7	Unsuitable Trench Material- Removal,disposal, replacement with 150mm minus	cu.m	580	\$39	\$22,405
<u>ITEM D: Section 02725 - Manholes and catch Basins</u>					
<u>ITEM E- Section 02731 - Sanitary Sewers</u>					
02731.0	38,50,64mm Series PVC Low Pressure Sewer - 1.5m cover	lin.m	930	\$160	\$148,800
02731.8	Service Installation (complete)	each	30	\$3,600	\$108,000
02731.10	Air Valve Chambers (complete)	each	2	\$7,500	\$15,000
02731.11	Flushing Connections (complete)	each	2	\$3,000	\$6,000
02731.12	Trench rock -1.5m deep	lin.m	350	\$175	\$61,250
S4	Service upcharge for difficult servicing in steep hillside, lake area, rock etc.	each	5	\$2,500	\$12,500
SUB TOTAL - ITEMS B-E					\$554,955
SUB TOTAL - ITEM A					\$49,500
TOTAL ITEMS A TO D					\$604,455
CLASS B ESTIMATE ADD 10% ENGINEERING & 15% CONTINGENCY				25%	\$151,114
TOTAL OPINION OF PROBABLE COST					\$760,000

Figure 32: Smith/Peters Sewer Capital Cost Estimate

4.2.13 Cameron

The proposed Cameron service area includes four properties as shown in Figure 33. Land use for all properties in the service area is “Estate Lot Residential [R1]” (City of Vernon, 2004). Review of the city’s engineering records shows that the city’s sanitary sewer collection system is currently installed in Cameron Road and Hodgson Road at the southwesterly side of the proposed service area, and Delcliffe Road on the northerly side of the service area (Shatzko Engineering Ltd, 2008; Focus Corporation, 2010a). All of the Cameron Road properties fronting Eastside Road are excluded from the service area as they can access the city’s Eastside Road sewer system. The service area boundary shown reflects the limits of sewer service in the area

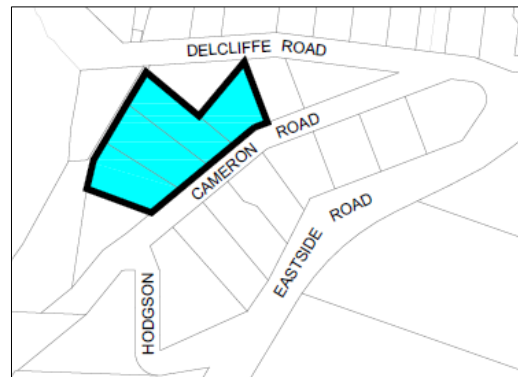


Figure 33: Cameron Service Area

and excludes properties adjacent to existing city sewer infrastructure that could connect directly into the existing city system.

Servicing of the four parcels in Cameron Road area requires extension of approximately 110 lineal meters of new sewer collector pipe from the existing city system. Pre design engineering was completed for this area by Stantec (2007a). The Stantec report provides sufficient information to allow the estimate to be considered Class B with 15% contingency and 10% engineering applied. The Class B estimate and cost inputs for this area are shown in Figure 34.

Capital Cost Estimate-November 2017					
CAMERON SEWER					
ITEM	DESCRIPTION	UNIT OF MEASURE	QTY	UNIT PRICE	AMOUNT
<u>ITEM A: Section 01050 -General</u>					
01050.1	General Requirements	LS	1	3.0%	\$ 4,000
01050.2	Quality Control Testing	LS	1	3.0%	\$ 4,000
01050.3	Surveys and Layout	LS	1	1.5%	\$ 2,000
01050.4	Mobilize/Demobilize	LS	1	1.5%	\$ 2,000
<u>ITEM B: Section 01570S -Traffic Regulation</u>					
01570S.1	Traffic Control/Management	LS	1	\$5,000	\$ 5,000
<u>ITEM C: Section 02224 - Roadworks</u>					
02224.1	Asphalt Removal and Disposal	sq.m	700	\$5	\$ 3,507
02224.2	Road Restoration - 75mm asphalt, 100mm crush,400mm subbase, GeoGrid	sq.m	700	\$62	\$ 43,309
<u>ITEM D: Section 02725 - Manholes and catch Basins</u>					
<u>ITEM E- Section 02731 - Sanitary Sewers</u>					
02731.0	38,50,64mm Series PVC Low Pressure Sewer - 1.5m cover	lin.m	200	\$160	\$ 32,000
02731.8	Service Installation (complete)	each	4	\$3,600	\$ 14,400
02731.10	Air Valve Chambers (complete)	each	1	\$7,500	\$ 7,500
02731.11	Flushing Connections (complete)	each	1	\$3,000	\$ 3,000
SUB TOTAL - ITEMS B-E					\$ 108,716
SUB TOTAL - ITEM A					\$ 12,000
TOTAL ITEMS A TO D					\$ 120,716
CLASS B ESTIMATE ADD 10% ENGINEERING & 15% CONTINGENCY				25%	\$ 30,179
TOTAL OPINION OF PROBABLE COST					\$ 150,000

Figure 34: Cameron Sewer Capital Cost Estimate

4.2.14 Whitepoint

Whitepoint area was included in the 2011 LWMP service area boundary, however the city's sewer collector system was extended to the area in 2013, as shown on the Monaghan Engineering and Consulting Ltd. (2013) engineering drawing. All properties in Whitepoint now have access to city sewer service and are excluded from the service area.

4.2.15 Adventure Bay

The proposed Adventure Bay service area includes 10 parcels as shown in Figure 35. Land use in the area is designated “Lakeshore Residential” (City of Vernon, 2004) for all but one of the Lakeshore parcels which is zoned “Four-Plex Residential [R5]” (City of Vernon, 2004). As noted previously while zoning does not affect development of the service area boundary, it is worth noting at this stage as it could have implication for future policy development and bylaws related to cost recovery. Review of the city’s engineering records shows that the city’s sanitary sewer collection system was extended to the easterly side of the proposed service area in 2013, as shown by Monaghan Engineering and Consulting Ltd. (2013a). The service area boundary shown in Figure 35 reflects the limits of sewer service in the area and is current as of June 2018.

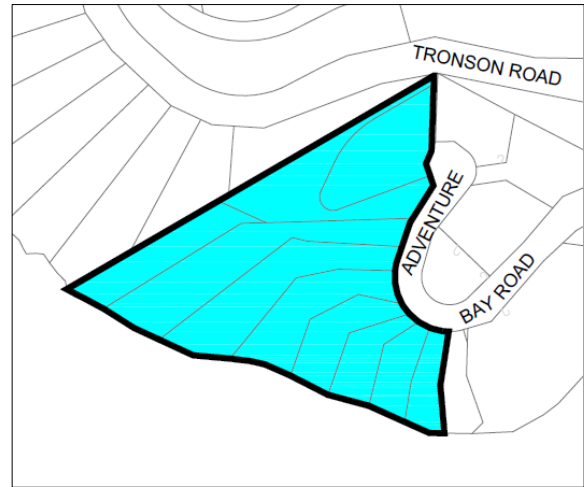


Figure 35: Adventure Bay Service Area

Servicing of the 10 parcels in Adventure Bay area requires extension of approximately 170 lineal meters of new sewer collector pipe from the existing city system. As part of the Monaghan Engineering and Consulting Ltd. (2013a) design engineering work, engineering investigations were completed for the section of sewer pipe in the proposed Adventure Bay service area. Accordingly, the cost estimate shown in Figure 36 is considered to be Class B with 15% contingency and 10% engineering applied.

Capital Cost Estimate-November 2017					
ADVENTURE BAY SEWER					
ITEM	DESCRIPTION	UNIT OF MEASURE	QTY	UNIT PRICE	AMOUNT
ITEM A: Section 01050 -General					
01050.1	General Requirements	LS	1	3.0%	\$5,200
01050.2	Surveys and Layout	LS	1	3.0%	\$5,200
01050.3	Mobilize/Demobilize	LS	1	1.5%	\$2,600
01050.4	Quality Control Testing	LS	1	1.5%	\$2,600
ITEM B: Section 01570S -Traffic Regulation					
01570S.1	Traffic Control/Management	Zone	1	\$5,000	\$5,000
ITEM C: Section 02224 - Roadworks					
02224.1	Asphalt Removal and Disposal	sq.m	655	\$5	\$3,282
02224.2	Road Restoration - 75mm asphalt, 100mm crush,400mm subbase, GeoGrid	sq.m	655	\$62	\$40,525
ITEM D: Section 02725 - Manholes and catch Basins					
02725.1	1050 dia precast manhole complete	each	3	\$5,000	\$15,000
ITEM E- Section 02731 - Sanitary Sewers					
02731.2	200mm dia. pipe PVC SDR35 - 0 to 2.5m deep (incl imported backfill)	lin.m	170	\$250	\$42,500
02731.1	Trench Rock - 2.5 depth	lin.m	120	\$150	\$18,000
02731.6	Service Installation (complete)	each	10	\$3,600	\$36,000
02731.8	Serv. Restoration	each	10	\$500	\$5,000
02731.9					
SUB TOTAL - ITEMS B-E					\$165,306
SUB TOTAL - ITEM A					\$15,600
TOTAL ITEMS A TO D					\$180,906
CLASS B ESTIMATE ADD 10% ENGINEERING & 15% CONTINGENCY				25%	\$45,227
TOTAL OPINION OF PROBABLE COST					\$230,000

Figure 36: Adventure Bay Sewer Capital Cost Estimate

4.2.16 Kokanee

The proposed Kokanee service area includes 65 parcels as shown in Figure 37. Land use in the area is designated primarily “Estate Lot Residential” (City of Vernon, 2004). Two parcels are zoned “Parks & Open Space [P1]” (City of Vernon, 2004). As noted previously, while zoning does not affect development of the service area, it is worth noting at this stage as it could affect future policy development and bylaws related to cost recovery. For example, parks are often amenities owned by municipal or provincial governments, both of whom are exempt

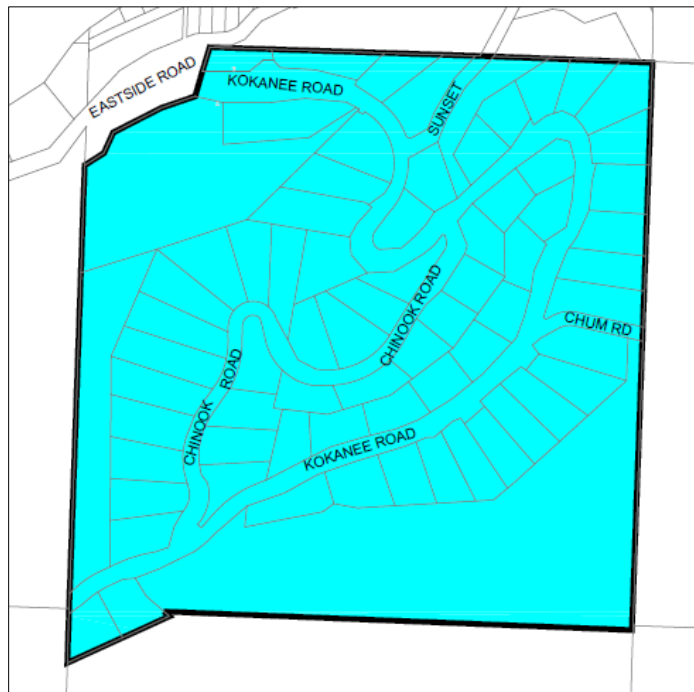


Figure 37: Kokanee Service Area

from taxation under the Community Charter (2003, s 220.1), which could have implications if the charge method proposed is a tax.

City sanitary sewer was extended to the north side of the proposed service area in 2005 as shown by Protec Consultants Ltd. (2005). Along the easterly boundary of the service area, city sewer was extended in 2005 as shown by Stantec Consulting Ltd. (2005a). The service area boundary shown reflects the limits of sewer service in the area and is current as of June 2018.

Servicing of the 65 parcels in Kokanee requires extension of approximately 2700 lineal meters of new sewer collector pipe from the existing city system to all properties in the area. No engineering investigations are available for this area. Accordingly, the cost estimate shown in Figure 38 is considered to be Class C with 25% contingency and 10% engineering applied.

Capital Cost Estimate-November 2017					
KOKANEE SEWER					
ITEM	DESCRIPTION	UNIT OF MEASURE	QTY	UNIT PRICE	AMOUNT
<u>ITEM A: Section 01050 -General</u>					
01050.1	General Requirements	LS	1	3.0%	\$62,000
01050.2	Surveys and Layout	LS	1	3.0%	\$62,000
01050.3	Mobilize/Demobilize	LS	1	1.5%	\$31,000
01050.4	Quality Control Testing	LS	1	1.5%	\$31,000
<u>ITEM B: Section 01570S -Traffic Regulation</u>					
01570S.1	Traffic Control/Management	Zone	5	\$5,000	\$25,000
<u>ITEM C: Section 02224 - Roadworks</u>					
02224.1	Asphalt Removal and Disposal	sq.m	10133	\$5	\$50,764
02224.2	Road Restoration - 75mm asphalt, 100mm crush,400mm subbase, GeoGrid	sq.m	10133	\$62	\$626,898
<u>ITEM D: Section 02725 - Manholes and catch Basins</u>					
02725.1	1050 dia precast manhole complete	each	15	\$5,000	\$75,000
02725.2	Manhole barrels - 1050 dia.	vert.m	30	\$613	\$18,390
<u>ITEM E- Section 02731 - Sanitary Sewers</u>					
02731.1	200mm dia. pipe PVC SDR35 - 0 to 2.5m deep (incl imported backfill)	lin.m	2700	\$250	\$675,000
02731.8	Service Installation (complete)	each	65	\$3,600	\$234,000
02731.9	Serv. Restoration	each	65	\$500	\$32,500
S4	Service upcharge for difficult servicing in steep hillside, lake area, rock etc.	each	33	\$2,500	\$81,250
SUB TOTAL - ITEMS B-E					\$1,818,802
SUB TOTAL - ITEM A					\$186,000
TOTAL ITEMS A TO D					\$2,004,802
CLASS C ESTIMATE ADD 10% ENGINEERING & 25% CONTINGENCY				35%	\$701,680.56
TOTAL OPINION OF PROBABLE COST					\$2,710,000

Figure 38: Kokanee Sewer Capital Cost Estimate

4.2.17 Service Area and Cost Estimate Summary

This section of the report identified the proposed Okanagan Landing sewer service area and capital cost of service. The overall service area included 736 properties in 15 geographically separate neighbourhoods. The capital cost to provide sewer service to all properties in the area is estimated at 18.28 million dollars. Details regarding the service area and capital cost of service are discussed in more detail below.

The service area was defined using the un-serviced properties boundaries map created by Urban Systems Ltd. (2014, s.5.1, Figure 5.0) as part of the city's liquid waste management plan as a starting point, and then reviewing engineering records to remove properties serviced since the map was created. In general, the service area was found to be similar to the LWMP un-serviced properties map with the exception of approximately 100 properties serviced by the city's current grant project, and several other properties shown to be serviced during the engineering records review.

The capital cost of service was estimated for each of the 15 separate areas included in the overall service area. A unit price method of estimating was used, with City of Vernon unit price data shown in Appendix E providing the basis of costs. The unit price method allowed for budget level estimates to be completed using city supplied cost data and quantifying key inputs such as length of pipe and road width using the city's geographic information system database (ESRI, n.d.). To account for the inherent uncertainty using this method of estimating, a contingency amount was applied to all estimates. Where engineering investigations were available to reduce uncertainty, 15% contingency was applied to the total estimated construction cost. Where no engineering investigations were available a 25% contingency was used. All estimates also included 10% of the total cost for construction engineering.

The service area was explored at the neighbourhood level to allow cost estimates to be completed for each geographically separate neighbourhood and to identify factors unique to each area that should be considered in subsequent sections of the report. The cost of service was noted to be much higher in several of the lakeshore areas due to lower development density which resulted in fewer properties sharing the cost of service. This has fairness implications that should be considered. For example, higher density neighbourhoods could end up subsidizing servicing costs in lower density areas if costs were averaged between these areas. This situation is most evident when comparing the lakeshore neighbourhoods to higher density mobile home neighbourhoods.

Figure 39 provides summary level information for each of the 15 separate areas included in the overall service area. Note that costs are generally higher in Service Area #2 primarily due to lower density of development, which as noted previously resulted in fewer properties sharing the capital cost of service. This information is relevant and should be considered in subsequent sections of the report.

Location	# Properties	Primary Zoning	Capital Cost	Cost per lot
Willow Park	24	Mobile Home	\$470,000	\$19,583
Dallas	51	Mobile Home	\$1,270,000	\$24,902
Claremont	108	Large Lot Residential	\$1,980,000	\$18,333
Longacre	99	Large Lot Residential	\$2,060,000	\$20,808
Cameo	57	Rural Residential	\$1,470,000	\$25,789
Appaloosa	30	Rural Residential	\$800,000	\$26,667
Dunsmuir	33	Rural Residential	\$1,040,000	\$31,515
Southwind	106	Rural Residential	\$2,230,000	\$21,038
Crosby	74	Rural Residential	\$1,690,000	\$22,838
Service Area #1	582		\$13,010,000	\$22,354
Joharon	29	Rural Residential	\$960,000	\$33,103
Harbour Heights	16	Estate Lot	\$460,000	\$28,750
Smith/Peters	30	Lakeshore	\$760,000	\$25,333
Cameron	4	Estate Lot	\$150,000	\$37,500
Adventure Bay	10	Lakeshore	\$230,000	\$23,000
Kokanee	65	Estate Lot	\$2,710,000	\$41,692
Service Area #2	154		\$5,270,000	\$34,221
Overall Service Area	736		\$18,280,000	\$24,837

Figure 39: Service Area Summary

4.3 Cost Recovery and Apportionment Options

This section of the report explores cost recovery options available to the city to allow recovery of servicing related costs as the city moves forward with service implementation. The needs assessment completed at the start of this stage indicates that fee and tax options available in the Community Charter are key options that should be explored; case law should be considered; and 100% of servicing costs should be recovered from the specific properties serviced. Information explored in this section will be considered in subsequent stages of the report and will help form implementation strategies in the final stage of this report. Note that the literature review provided the primary source of information for this section.

Canadian municipalities typically fund services through a combination of taxes, fees, and regulatory charges (Tindal, Tindal, Stewart & Smith, 2013, p.4). When deciding upon the method of cost recovery for a particular service, it helps to first identify the planned revenue source, which will then narrow cost recovery options. The Community Charter (2003, s. 192) identifies the following revenue options for municipalities: fees, property value taxes, parcel

taxes, local service taxes, utility company property tax, regulatory charges (fines and penalties), and other miscellaneous revenue. With respect to revenue sources for capital expenditures, the choices would be limited to fees, property values taxes, parcel taxes and local service taxes, which are discussed in more detail below.

4.3.1 Municipal Fee

The Community Charter (2003, s. 194) provides local government in British Columbia with the authority to recover a wide variety of service related costs by way of a fee bylaw. The Community Charter (2003) defines a service as “an activity, work or facility undertaken or provided by or on behalf of the municipality” (Schedule, s.1). As the definition for a service is very broad, a municipality acting in accordance with the applicable legislation would have significant latitude in defining what a service is and per s.194.1-194.2 also have flexibility in setting rates, terms, and other factors to recover related costs using a fee. The initial revenue required to provide the service would still need to come from other sources, but recovering costs using a fee would be an option for a wide variety of services provided by a municipality in British Columbia.

4.3.2 Local service tax

A common method used to fund municipal services in British Columbia is by way of the local service tax provisions of the Community Charter (2003, s. 210-s. 219). The local service sections of the charter authorize municipalities to provide service to a specific area and recover costs from befitting owners by way of a local service tax. A local service tax could be recovered either as a parcel tax or property value tax applied to properties in the specific area serviced (Community Charter, 2003, s. 216). Parcel taxes can be levied on the basis of a single charge per parcel or vary based on parcel area or frontage (Community Charter, 2003, s. 200.3). A property value tax could be applied on the basis of a single rate, or separate rate for each property class in the area (Community Charter, 2003, s. 197.3a- s. 197.3.b).

4.3.3 Parcel Tax

The Community Charter (2003, s.200-209) allows for a municipality to impose a parcel tax to fund service related costs. As noted previously parcel taxes must be imposed city wide and can only be levied to a specific area unless used as a form of local service tax (s.201.1). S. 200 of the charter allows for a parcel tax levy to be based on a single charge per parcel, frontage or area. It is important to explore the basis of apportionment to help identify which method would be appropriate for the Okanagan Landing sewer project.

4.3.3.1 Single Charge per Parcel

Basing the levy on a single charge per parcel would allow the cost of service to be shared equally between all parcels in the specific area where the parcel tax is applied. This is consistent

with the literature which indicates where service is provided to a specific group, the group should pay the overall cost of service (Bish & Clemens, 2008, p.179). Sharing costs equally within a group is also appropriate if the capital cost to provide service to all properties within the group is similar. For the proposed Okanagan Landing sewer project, the cost of servicing properties within each of the 15 separate areas is similar, which supports using a single charge parcel tax applied to each of the 15 separate areas. The cost of service between several groups is also similar, which supports using this method of apportionment for groups with similar per unit servicing costs.

4.3.3.2 Frontage

Basing the levy on a parcel frontage basis would allow the cost of service to be funded by the specific group serviced, however it could result in a variable rate if property frontages vary, which may not be preferable from an equity perspective. For the proposed Okanagan Landing sewer project, frontages vary significantly within each of the 15 separate areas, and also between the areas. An analysis of the Dallas area shows that parcel frontages vary from approximately 25 meters to 76 meters (ESRI, n.d.). Cost variability increases even more if the higher density neighbourhoods with small frontages are combined with lower density areas with large frontages. A parcel tax levied on the basis of parcel frontage for this particular project would result in a highly variable levy, which may not be preferable from an equity perspective.

4.3.3.3 Area

Similar to the parcel frontage method, a levy based on parcel area could result in a variable levy which may not be preferable from an equity perspective. An analysis of the Dallas areas shows that parcels vary from 928 square meters to 1289 square areas (ESRI, n.d.). A parcel tax levied on the basis of parcel area for Dallas would result in 40% variability in the cost of service for this area. Similar variability would occur for the other 14 neighbourhoods within the overall service area, and variability further increases when the analysis combines lower density lakeshore areas with higher density areas.

4.3.4 Property Value Tax

The property value tax provisions of the Community Charter (2003, s.197) allows for a levy under this section to be based on the value of land and improvements. S. 197.2(a) stipulates that property value taxes must apply city wide unless used as a form of local service tax. The literature indicates that in order to achieve fiscal equivalence, those that benefit from a specific service should pay the costs (Bish & Clemens, 2008, p.179). The literature also indicates that user pay system is commonly used in British Columbia (Bish & Clemens, 2008, p.179). The use of a city wide property value tax to fund service costs for a specific group would not achieve equity and would also be contrary to the user pay system of servicing commonly used in British Columbia.

4.3.5 Case law considerations

The case law review provides key fee and tax related information that could be used to help design a legally compliant levy to allow recovery of service related costs. Two key cases currently referred to by the courts when reviewing fee related levies are *Lawson v. Interior Tree Fruit and Vegetable Committee of Direction (1931)* and *Eurig Estate (1998)*. The *Lawson* case is a tax related, however it provides four important test criteria, as shown in Figure 40, that could be used to design a levy that would not be considered a tax and potentially beyond the authority of the body imposing the levy. The *Eurig* case is fee related and the two criteria shown in Figure 40 are used to evaluate a levy that passes the *Lawson* tests to

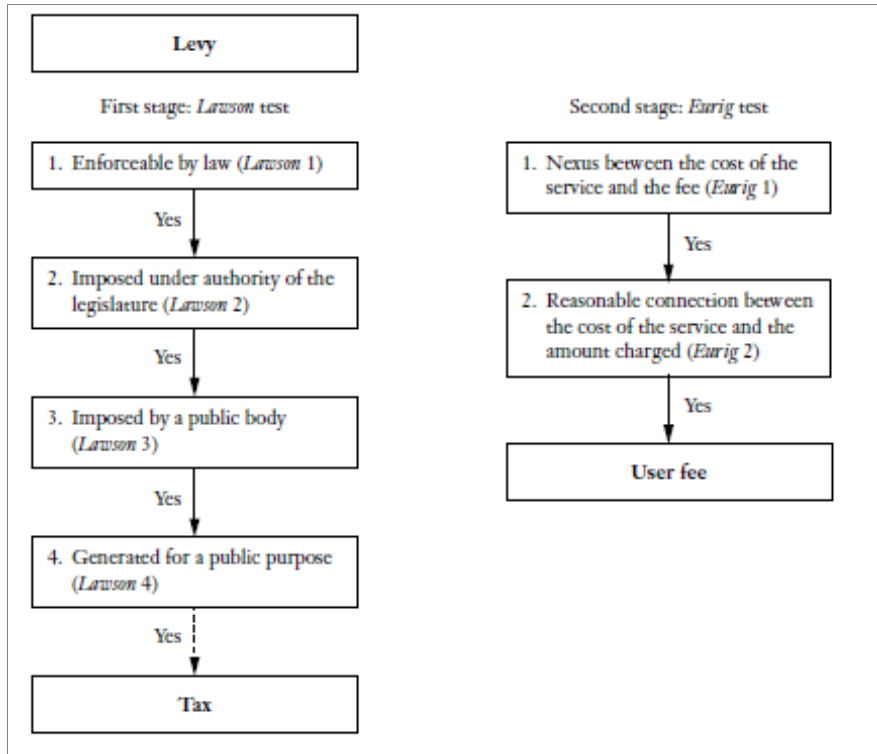


Figure 40: Summary of Current User Fee Test. (Farish and Tedds, 2014, p.642)

determine if it is a fee or regulatory charge (Althaus & Tedds, 2016, p.44; Farish & Tedds, 2014). With respect to fee design for a British Columbia municipality, *Lawson* criterion #1, #4, and the two *Eurig* criteria are key. These criteria are discussed in more detail below.

4.3.5.1 Lawson Criterion #1: Enforceable by Law

The first test used by the courts to determine if a levy is a tax evaluates if the levy is enforceable by law or “mandatory” (Althaus & Tedds, 2016, p.42). If a levy is compulsory it would be considered a tax according the first Lawson test. Althaus and Tedds (2016) note that a levy would likely not be considered a tax if “a body chooses to enter into a situation where it will incur a levy” (p.42).

4.3.5.2 Lawson Criterion #4: Fee Used for a Public Purpose

Althaus and Tedds (2016, p.51) note that the final Lawson criterion considers whether funds collected from a levy are used for a general public purpose, or specifically for providing the service for which the fee is collected. Althaus and Tedds (2016, pp.51) discuss the court’s

interpretation of the final Lawson criterion and note that if funds collected are directed to a general account the levy would likely be considered a tax. If funds are not used for a general purpose, the fee would then be evaluated against the two *Eurig Estate (1998)* criteria discussed below to determine if it the levy is a fee.

With respect to municipal fee design and the final *Lawson* criterion, it is important that revenues collected from the fee bylaw are directed to a specific account used to fund the proposed service and not a general account. Althaus and Tedds (2016, pp.55) note that while there is no specific case law requirement to actually establish a separate fee related account, doing so is a recommended “smart practice” (p.55).

4.3.5.3 *Eurig Test (nexus and reasonable connection)*

The second phase of evaluating a levy is to consider the two *Eurig Estate (1998)* criteria. Althaus and Tedds (2016) note that according to the *Eurig* case, a levy would be considered a fee if “1) there exists a nexus between the levy and cost of the good or service provided and 2) there is a reasonable connection between the cost of the good or service”(p.52). The terminology used for the two *Eurig* criterion are similar, and as Althaus and Tedds (2016, p.56) note, if the fee doesn’t generate a net revenue and revenues are only used to recover the actual cost of service the levy would likely be considered a fee.

4.3.6 Cost Recovery Options Summary

This section of the report explored options that would allow the city to recover service related costs, and also explored fee and tax case law literature to identify key factors that should be considered to design a legally complaint levy.

The literature shows that the primary legislation enabling British Columbia municipalities to recover service related costs is the Community Charter (2003), and that services are typically funded using taxes, fees, and regulatory charges (Tindal, Tindal, Stewart & Smith, 2013, p.4). The literature also shows that the user pay system is commonly used in British Columbia, and where service is provided to a specific group the group should fund the cost of service (Bish & Clemens, 2008, p.179).

For this specific project that would provide service to existing developed areas, options for cost recovery are municipal fees per s. 194 of the Community Charter (2003) and local service taxes per s. 210-s. 219. Other options are available, such as property value taxes and parcels taxes, however these must be levied city wide unless used as a form of local service tax. Funding the overall cost of service by the specific group serviced was a common theme identified in the literature and needs assessment, which limits the use of general property value or parcel taxes, unless used as a form of local service tax.

The fee and tax case law shows that legal requirements surrounding fees and taxes aren't well understood, and that the two key cases currently referred to by the courts when reviewing fee related levies are *Lawson v. Interior Tree Fruit and Vegetable Committee of Direction (1931)* and *Eurig Estate (1998)* (Farish & Tedds, 2014; Althaus & Tedds, 2016). With respect to design of a levy that meets the legal tests, the *Lawson* case provides four important tax related criteria that should be considered, while the *Eurig* case provides two fee related criteria (Althaus & Tedds, 2016, p.44; Farish & Tedds, 2014).

4.4 Implementation Success Factors

This stage of the project identifies several key success factors that could help improve the chance of successfully implementing service to the Okanagan Landing area. The literature review provided the primary source of information for researching success factors. The literature shows that success during implementation can be improved by involving stakeholders in the policy process (Poister & Streib, 2005, p.54; Bryson, 2011; Allio, 2005); providing goals and objectives that are specific, measurable, and attainable (Jung & Lee, 2013, p.677); tracking and linking performance to goals (Poister & Streib, 2005, p.54); and linking budget to specific goals (Poister & Streib, 2005, p.54). These factors are discussed in more detail below.

4.4.1 Stakeholders

Stakeholder engagement is beyond the scope of this project however it is important to briefly identify stakeholder related issues for future consideration by the city as they move forward with implementation. The literature clearly shows that stakeholder involvement at all stages of the policy and strategic planning process is essential and that lack of stakeholder engagement is often the key cause of failure (Poister & Streib, 2005, p.54; Bryson, 2011, p.132; Burby, 2003, p.44). The literature also shows that a key reason to involve stakeholders is to create the environment where “strategic thinking acting and learning” (Bryson, 2011, p.71) takes place to help focus on what really matters and how best to achieve it. Fletcher, Guthrie, Steane, Roos, & Pike (2003, p. 508) note that effective stakeholder management is key to ensuring the direction of the organization matches stakeholders’ perceptions. As the city moves forward with steps leading to servicing of the Okanagan Landing area, stakeholder engagement will occur. It is important that stakeholder feedback gained is incorporated into the plan and if necessary goals, objectives, and strategies adjusted as necessary.

4.4.2 SMART Goals (specific, measurable, attainable, realistic and timely)

A common theme throughout the literature is the importance of clearly defining goals and objectives to improve the chance of successfully implementing strategies. Alogan and Yetiş (2006, pp. 676-677) note that strategic objectives help operationalize the organizations plans, and that it is critical that objectives are defined correctly and “in line with the mission, the vision, and the values” (p.677) of the organization. This is similar to the discussion of goals and objectives

by Top Achievement (n.d., 1 par) who notes that using SMART (specific, measurable, attainable, realistic and timely) goals helps translate goals into action.

4.4.3 Action Plan

Action plans are lower level plans that help an organization achieve its strategic goals, and as McNamara (n.d.) notes they should detail the specific objectives, strategies, responsibilities, and timelines to accomplish the specific goals and objectives. Allio 2005 (p.15) notes the importance of using a straight forward methodology to translate ideas to action, and the importance of breaking a broad strategy into shorter term action items, which he refers to as program items. Similar to Allio, McNamara (n.d.) also discusses strategic planning and methods to improve success during implementation. McNamara notes the importance of grounding a plan with specific action items to ensure goals, strategies, objectives, responsibilities and timelines are clearly conveyed. Both Allio (2005, p.15) and McNamara provide simple tables that could be used to establish and clearly convey goals, strategies, objectives, resources and timelines for key program items. Allios template is shown in Figure 41.

Strategic Goal	Strategy	Objective	Responsibility	Timeline
1. (Goal #1)	1.1 (first strategy to reach Goal #1)	1.1.1 (first objective to reach while implementing Strategy #1.1)	(who’s going to accomplish that objective)	(when the implementer is going to accomplish that objective)

Figure 41: Action Plan Template. (McNamara, n.d.)

4.4.4 Linking Budget to Goals

The strategic planning literature indicates that an important implementation success factor for municipal government is including budget items that are specific to strategic goals (Poister & Streib, 2005, p.54). Including a specific line item in the annual financial plan raises awareness to key goals and ensures capital budgets include sufficient resources to achieve goals and objectives (Poister & Streib, 2005, p. 49). Hay and Williamson (1991) also discuss the importance of breaking the overall strategy into “bite sized pieces” (p.43) and ensuring adequate skills and resources are allocated.

4.5 Summary of Findings

This section of the report identified the proposed Okanagan Landing sewer service area and capital cost of service, explored cost recovery options and related case law, and identified factors that could help improve the chance of success during implementation. The literature review and needs assessment completed with the client provided the main source of information for exploring cost recovery options and success factors. City of Vernon engineering records,

reports, historical cost data, and geographic information system data (ESRI, n.d.) were used to define the service area and estimate the capital cost of service.

The service area was defined to include approximately 736 properties in 15 geographically separate neighbourhoods. The majority of properties (582) are located in 9 residential neighbourhoods in the hillside and floodplain areas east of Okanagan Lake. The remaining 154 properties are generally larger single family lakeshore and hillside properties adjacent to the Okanagan Lake.

The capital cost to service all 736 properties in the service area was estimated at \$18.28 million. Cost estimates were also completed for each of 15 separate neighbourhoods and a per parcel cost of service defined. The area with the lowest per parcel cost of service is Claremont at \$18,333 per parcel. The area with the highest cost was Kokanee at \$41,692 per parcel. A significant cost variance was noted between several areas, primarily due to development density, which resulted in fewer properties sharing the cost of service.

Cost recovery options were also explored to provide the city with a legally compliant method of recovering the capital cost of service from the specific properties serviced. The literature shows that the primary legislation enabling British Columbia municipalities to recover service related costs is the Community Charter (2003) and that services are typically funded using taxes, fees, and regulatory charges (Tindal, Tindal, Stewart & Smith, 2013, p.4). The literature also shows that where service is provided to “spatially defined groups” (Bish & Clemens, 2008, p.179), the group should share the cost of service. For this specific project where the cost of service would be recovered from the specific properties serviced, options for cost recovery are municipal fees per s. 194 of the Community Charter (2003), and local service taxes per s. 210-s. 219. Other options are available, such as property value taxes and parcels taxes, however these must be levied city wide contrary to the user pay philosophy identified in the literature and needs assessment.

Factors that could help improve the chance of success during implementation were also explored. The literature shows that success during implementation can be improved by involving stakeholders in the policy process (Poister & Streib, 2005, p.54; Bryson, 2011; Allio, 2005); providing goals and objectives that are specific, measurable, and attainable (Jung & Lee, 2013, p.677); tracking and linking performance to goals (Poister & Streib, 2005, p.54); and linking budget to specific goals (Poister & Streib, 2005, p.54). Several of these factors could be incorporated into this project by using an action plan to clearly convey goals, strategies, objectives, resources and timelines for key program items. Key program items could also be used to identify budget needs during the city’s annual budget process.

5 Discussion and Analysis

The purpose of this report is to provide the City of Vernon with a sewer service implementation plan for an un-serviced area commonly known as the Okanagan Landing. The project was completed in several phases in order to define properties in the proposed service area; identify the best method of cost recovery and apportionment of the capital cost of service; and identify factors that could improve success during implementation. This section of the report identifies common themes related to the above topic areas and explores key findings to provide a better understanding of cost recovery options, cost apportionment, and implementation success factors.

5.1 Literature Review

The literature review provided the primary source of information for identifying cost recovery options and implementation success factors. Significant sources of strategic planning and policy related literature were available to help identify implementation success factors. There was also significant high level servicing related literature available, however less detailed information related to cost recovery and apportionment in the British Columbia context was found. Fee and tax case law related literature was also limited, however several comprehensive sources were available that provided an excellent source of information for the cost recovery section. Common themes and sources of information related to cost recovery and success factors are summarized in Figure 42.

Factor	Common Theme (source)
Cost Recovery and Apportionment	<ul style="list-style-type: none"> • Community Charter (2003) is main source authority for British Columbia (BC) municipalities (Bish & Clemens, 2008, p.11;); • BC local government has very broad servicing powers(Bish & Clemens, 2008, p.23; Harding , 2012, p.15; Tindal, Stewart & Smith (2013, p.9); • Local government in Canada typically use property taxes and fees as primary revenue sources, although other sources such as grants, and regulatory charges are available (Althaus & Tedds, 2016, p.2; Bish & Clemens, 2008, pp. 179-206; Kitchen, 2003, pp.28-29); • The user pay system is commonly used in B.C. (Bish & Clemens, 2008); • Where service is provided to a specific group, the group should pay the cost of service (Bish & Clemens, 2008, p.179); • There has been a shift towards user fees in Canada at local government level. (Amborski, 2006; Althaus & Tedds, 2016, p.2); • Specific legal requirements exist for fees (Althaus & Tedds, 2016; Farish & Tedds, 2014)

<p>Implementation Success</p>	<ul style="list-style-type: none"> • Incremental changes to policy is often required (Lindblom, 1959, p.84; Lachapelle, 2011, p.7); • Stakeholder involvement is critical (Poister & Streib, 2005, p.54; Bryson, 2011, p.132; Burby, 2003, p.44; Fletcher, Guthrie, Steane, Roos, & Pike, 2003, p. 508); • SMART (specific, measurable, attainable, realistic and timely) goals help guide implementation (Alogan & Yetiş, 2006, p.677; Jung & Lee, 2013, p.677; Top Achievement, n.d., 1 par); • Linking budget to goals (Poister & Streib, 2005, p.54); • Action plan provides straight forward methodology to translate ideas to action (Allio, 2005, p.12; McNamara, n.d.).
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Figure 42: Literature Review Common Themes

5.2 Method of Cost Recovery

For this specific servicing project options for capital cost recovery are limited to fees, parcel taxes, property value taxes, and local service taxes (Community Charter, 2003, s.192). All these options were explored as a potential source of revenue to recover servicing related costs; however, the literature review can help narrow the choices. The literature clearly indicates that service costs should be funded by the specific users and in the case of groups, the specific group serviced should pay the costs. Since parcel taxes and property value taxes must apply city wide unless used as a form of local service tax, they do not provide a method consistent with the literature. Options for this project are thus limited to municipal fees per s. 194 of the charter and local service taxes per s. 210-219 which are discussed in more detail below.

5.2.1 Municipal Fee

The Community Charter (2003, s. 194) provides local government in British Columbia with the authority to recover a wide variety of service related costs by way of a fee bylaw. The service contemplated by the Okanagan Landing sewer servicing project meets the definition of a service in the Community Charter (2003), which is defined as “an activity, work or facility undertaken or provided by or on behalf of the municipality” (Schedule, s.1). S. 194.1-194.2 of the charter provides significant flexibility in setting rates, terms, and other factors to recover service related costs from a specific area, provided the method is defined by bylaw.

Case law can also help inform the analysis of fees as an appropriate method of cost recovery for the proposed servicing project. A key issued noted in the literature is the voluntary nature of fees. Althaus and Tedds (2016, p.45) note that if a levy is compulsory it could be considered a tax and not valid. From a practical sense this requires municipalities to structure fee bylaws such that payment is voluntary. If the initial capital cost of service delivery is significant, the voluntary nature of the levy could result in an extended time frame for cost recovery. The estimated cost of servicing the proposed Okanagan Landing sewer service area is \$18.28 million. The relatively high cost of servicing could be a barrier to using fees as a revenue

source. The needs assessment completed also indicates that low financial risk was a priority. Fees therefore are likely not an appropriate revenue source for this project.

5.2.2 Local Service Tax

The local service provisions of the Community Charter (2003, s. 210-s. 219) provide a municipality in British Columbia with the authority to recover service related costs from the specific area serviced using either a parcel tax or property value tax. Parcel taxes can be levied on the basis of a single charge per parcel or vary based on parcel area or frontage (Community Charter, 2003, s. 200.3). A property value tax could be applied on the basis of a single rate, or separate rate, for each property class in the area (Community Charter, 2003, s. 197.3(a) - s. 197.3(b)). The following provides an analysis of property taxes and parcel taxes imposed as a form of local service tax for the proposed Okanagan Landing sewer servicing project.

5.2.2.1 Property Value Tax

The property value tax provisions of the Community Charter (2003, s.197) allows for a levy under this section to be imposed on the basis of the value of land and improvements. The use of a property value tax would result in a variable rate for service if property values in the service areas vary. Evaluation of appropriateness of a parcel tax requires review of key themes in the literature to determine if a variable rate for service is acceptable, and also an understanding of property values in the specific areas serviced.

The literature indicates that in order to achieve fiscal equivalence, those that benefit from a specific service should pay the costs and that in the case of groups the cost of service should be shared by the group (Bish & Clemens, 2008, p.179). Accordingly, if the levy resulted in a variable service rate it would not be consistent with the literature.

Specific property value data was not available for this analysis; however, a review of the land use and a site visit indicates that property values likely vary within each of the 15 service areas. For example, the most common type of dwelling in Dallas and Willow areas are mobile homes, while the lakeshore areas are predominantly large single family detached homes on large waterfront lots. It is likely that costs between areas are highly variable and within areas some variability would also exist. The use of a property value tax to fund service costs for the proposed project would result in a variable rate for service and would not be appropriate.

5.2.2.2 Parcel Tax

The Community Charter (2003, s.200-209) allows for a municipality to impose a parcel tax to fund service related costs. S. 200 of the charter allows for a parcel tax levy to be based on a single charge per parcel, frontage, or area. It is important to explore the basis of apportionment to help identify which method would be appropriate for the Okanagan Landing sewer project.

Single Charge per Parcel

Basing the levy on a single charge per parcel would allow the cost of service to be shared equally between all parcels in the specific area where the parcel tax is applied. This is consistent with the literature, which indicates where service is provided to a specific group, the group

should share the cost of service (Bish & Clemens, 2008, p.179). Sharing costs equally within a group is also appropriate if the capital cost to provide service to all properties within the group is similar. For the proposed Okanagan Landing sewer project, the cost of servicing properties within each of the 15 separate areas is similar, which supports using a single charge parcel tax applied separately to each of the 15 separate areas. The cost of service between several groups is also similar, which also supports using this method of apportionment for groups formed by combining areas with similar per unit servicing costs.

Frontage

Basing the levy on a parcel frontage basis would allow the cost of service to be funded by the specific group serviced, however it could result in a variable rate if property frontages vary, which may not be preferable from an equity perspective. For the proposed Okanagan Landing sewer project, frontages vary significantly within each of the 15 separate areas, and also between areas. An analysis of the Dallas area shows that parcel frontages vary from approximately 25 meters to 76 meters (ESRI, n.d.). Cost variability increases even more if the higher density neighbourhoods with low frontages are combined with lower density lakeshore areas with frontage that range up to 140 meters (ESRI, n.d.). A parcel tax levied on the basis of parcel frontage for this particular project would result in a highly variable levy, which may not be preferable from an equity perspective.

Area

Similar to the parcel frontage method, a levy based on parcel area could result in a variable levy, which may not be preferable from an equity perspective. Analysis of the Dallas area shows that parcel areas vary from 928 square meters to 1289 square areas (ESRI, n.d.). A parcel tax levied on the basis of area for Dallas would result in 40% variability in the cost of service for this area. Similar variability would occur for the other 14 neighbourhoods within the overall service area, and variability further increases when the analysis combines lower density lakeshore areas with higher density areas.

5.3 Apportionment of Cost

The equity principles discussed in the literature can be used to provide direction for cost apportionment. As noted by Bish and Clemens (2008, p.179) in order to achieve fiscal equivalence, those that benefit from a specific service should pay the costs. Bish and Clemens also note that in the case of “spatially defined groups” (p.179), the group should share the cost of service. Fifteen spatially separate groups with different servicing costs exist in the proposed Okanagan Landing service area. Extending the user pay and fiscal equivalence philosophies to this analysis supports separating groups with similar servicing costs and apportioning costs equally within the group. This method of apportionment would also ensure the levy for service is based as close as possible to the actual cost of service, consistent with the case law criteria as discussed by Althaus and Tedds (2016, p.52).

5.4 Summary

The literature review provided a significant source of information that was used to inform options for cost recovery and implementation success factors. A significant gap in case law related literature exists, however the available literature was current and comprehensive.

Cost recovery options explored included fees and several forms of taxes. Based on the literature review, revenue options permitted in the Community Charter (2003), and needs assessment, the most appropriate method of cost recovery for this project would be a local service tax levied on the basis of a single charge per parcel.

Several factors were also identified that could help improve success during implementation. Key factors that could be incorporated into this project are using the use of SMART (specific, measurable, attainable, realistic and timely) goals to guide implementation (Alogan & Yetiş, 2006, p.677; Jung & Lee, 2013, p.677; Top Achievement, n.d., 1 par); Linking budget to goals (Poister & Streib, 2005, p.54); using a simple action plan to translate ideas to action (Allio, 2005, p.12; McNamara, n.d.). It was also noted in the literature that stakeholder involvement is likely one of the most critical success factors (Poister & Streib, 2005, p.54; Bryson, 2011, p.132; Burby, 2003, p.44; Fletcher, Guthrie, Steane, Roos, & Pike, 2003, p. 508). While stakeholder analysis was not included in the scope of this project, it is a significant factor that should be considered by the city as they move forward with implementation.

6 Options and Recommendations

6.1 Options to Consider:

Several options were considered with respect to cost recovery, apportionment of costs and implementation of service to the proposed Okanagan Landing sewer service area. The needs assessment and literature review provided the framework for exploring this part of the research question. The needs assessment identified that a local service tax or fee would be appropriate for cost recovery, that financial risk should be low, and that a ten year servicing time frame was desired. The literature review indicates that fiscal equivalence is important, the user pay system is commonly used in British Columbia, and that case law can be used to help design a legally compliant levy. The following discusses these factors in more detail and provides several different options for cost recovery and service implementation.

Option 1 - Combine Areas with Similar Servicing Costs and Recover Costs from the Specific Groups Served

An important consideration when planning service delivery is who should fund the cost of service and how costs should be levied to users. The literature indicates that in British Columbia the user pay system is commonly used, and that where service is provided to “spatially defined groups” (Bish & Clemens, 2008, p.179) it is appropriate from a fiscal equivalence position that the group fund the cost of service.

Cost estimates completed for each of the 15 separate neighbourhoods show high variance in the per parcel service costs between several areas. Higher costs were noted in areas developed to a lower density, which resulted in fewer properties sharing the cost of service.

To equitably distribute service costs, it would be reasonable to combine areas with similar servicing costs and recover the cost of service from the specific groups serviced. This option would allow the entire capital cost of servicing to be recovered from the area serviced, while also ensuring the levy imposed best reflects the actual cost of service, which is important case law issue noted by Althaus and Tedds (2016, p.52).

Option 2 – Impose a Local Service Tax to Recover Costs

A common method used to fund municipal services in British Columbia is by way of the local service tax provisions of the Community Charter (2003, s. 210-s. 219). A local service tax is an option that would allow the city to initiate service to the area, and contingent upon successful petitioning, to construct the necessary works, and recover costs from benefitting owners by way of either a parcel tax or property value tax per s. 216. Parcel taxes could be levied on the basis of a single charge per parcel or vary based on parcel area or frontage (Community Charter, 2003, s. 200.3). A property value tax could be applied on the basis of a single rate, or separate rate for each property class in the area (Community Charter, 2003, s. 197.3a- s. 197.3.b). Property value taxes however must be applied on the basis of assessed value of land and improvements for each specific property, making equitable distribution of costs using this form of tax difficult to achieve for this servicing project.

The local service option has low financial and legal risk and provides flexibility in the type of tax and factors used to levy service costs. A local service tax would also provide flexibility in how service related costs were distributed amongst the group and could be levied to the overall Okanagan Landing service area, each of the 15 geographically separate areas, or groups formed by combining areas with similar servicing costs.

Option 3 – Levy a Fee to Recover Costs

The fee provisions of the Community Charter (2003, s.194) could be used to recover service related costs on a limited basis. Per s.194.1 (a) the city could impose a fee to all or part of the city, and per s.194.2 establish different factors, terms, and conditions by bylaw. While fees are not recommended for capital intensive projects due to voluntary nature of the levy and associated unknown time frame for recovering costs, they could provide the opportunity to combine small scale servicing works with other capital projects, and to recover service related costs using a fee.

The fee option should be considered as a reasonable alternative if service related works could be installed at significantly reduced costs concurrent with other capital works. If the city plans to recover service related costs using fees, the following should be considered to ensure compliance with case law:

1. The city should establish a specific account to manage fee related revenues and expenses to ensure revenues are not used for general purpose (Althaus and Tedds, 2016, pp.55).
2. The levy should be structured such that excess revenue isn't generated (Althaus & Tedds, 2016, p.56). It is recommended that the proposed levy be reviewed with legal counsel to ensure excess revenue isn't being generated.
3. The fee bylaw should be structured such that payment of the levy is voluntary. This would ensure the levy is not considered a tax, and potentially beyond the authority of the city (Althaus & Tedds, 2016, p.45).

Option 4 – Apportion Service Costs Based on a Single Charge per Parcel

The parcel tax provisions of the Community Charter (2003, s.200) allow for a levy to be based on a single charge per parcel, frontage, or area. Costs apportioned on the basis of a single charge per parcel would allow equitable distribution of the cost of service by the specific group serviced, which is an important theme noted in the literature (Bish & Clemens, 2008, p.179). A parcel tax levied on an equal charge basis would allow the city to average servicing costs between all 735 properties in the overall service area, or on a neighbourhood specific basis. Using a separate parcel tax for each of the 15 separate groups would be preferable from an equity perspective as the levy imposed would more closely reflect the actual cost to provide service. Alternatively, the city could combine groups with similar estimated unit servicing costs and average the cost of service through the larger group using this method. Combining areas with similar servicing costs could also help achieve economy of scale, which would result in a more cost effective approach to servicing.

Option 5 - Apportion Costs Based on Frontage

The parcel tax provisions of the Community Charter (2003, s.200) also allow for a levy to be based on property frontage. Due to varying frontages noted in the service area, levies imposed on a frontage basis would vary significantly, making equitable distribution of service costs difficult to achieve.

Option 6 - Apportion Costs Based on Area

The parcel tax provisions of the Community Charter (2003, s.200) also allow for a levy to be based on property area. Due to varying areas of properties in the service area, levies imposed on an area basis would vary significantly, making equitable distribution of service costs difficult to achieve.

Option 7 - Implement Service Using Limited Success Factors

The strategic planning literature shows that success during implementation can be affected by many factors such as stakeholder involvement, use of performance measures, SMART (specific, measurable, attainable, realistic and timely) goals, and linking budget to goals. Several of these, such as stakeholder involvement, would require significant resources to address, however the city could easily link budget to key goals as part of the annual budget process to help improve success during implementation.

Option 8 – Implement Service Using Several Key Success Factors and Action Plan

The literature clearly shows that several factors are key for successful implementation and that excluding these factors is likely to result in failure during implementation. Stakeholder involvement, use of SMART (specific, measurable, attainable, realistic and timely) goals, linking budget to goals, and use of performance measures are key factors that should be considered to improve success (Poister & Streib, 2005, p.54; Bryson, 2011; Jung & Lee, 2013, p.677). The following provides a discussion of success factors that should be considered to help improve success during implementation of this project.

Stakeholders

Stakeholder engagement is beyond the scope of this project; however, it is important to briefly identify stakeholder related issues for future consideration by the city as they move forward with implementation. The literature clearly shows that stakeholder involvement at all stages of the policy and strategic planning process is essential, and that lack of stakeholder engagement can be a key cause of failure (Poister & Streib, 2005, p.54); Bryson, 2011, p.132; Burby, 2003, p.44). The literature also shows that a key reason to involve stakeholders is to create the environment where “strategic thinking acting and learning” (Bryson, 2011, p.71) takes place to help focus on what really matters, and how best to achieve it. As the city moves forward with steps leading to servicing of the Okanagan Landing area, stakeholder engagement will occur. It is important that feedback gained is incorporated into the plan, and if necessary that goals, objectives, and strategies are adjusted as necessary.

Budget and Goals

Allio (2005, p.12) provides an excellent guide to implementing strategies, and notes that using a straight forward methodology is essential to translate ideas to action. Allio (p.15) provides several suggestions, such as breaking strategies into short term actions, and ensuring the need for resources is identified. Allio (p.16) further notes that it is important to include any staff and capital over and above regular operating resources that are necessary for implementation. Identifying resource needs for this project is a simple step that could be done by incorporating key program items in the city's annual budget process.

Action Plan

The literature clearly shows that implementation can be improved by providing a straight forward methodology to translate ideas to action (Allio, 2005, p.12; McNamara, n.d.). The action plan template provided by McNamara (n.d.) could be used to help guide implementation by clearly conveying key goals, objectives, strategies, responsibilities, and timelines necessary for service implementation. The action plan could also be used to guide annual budgeting and resource allocation during implementation, and more detailed action plans could be created as necessary.

6.2 Recommendations and Implementation Plan

This section of the report presents recommendations, a preliminary phasing plan, and an action plan for the city to consider with respect to extending sanitary sewer service to the Okanagan Landing area. The implementation plans and recommendations incorporate findings from previous phases of this project, are consistent with key themes identified in the literature, and provide the basis for making incremental changes to the plan as feedback is gained during implementation.

Recommendation 1 – Combine Areas with Similar Servicing Costs and Recover Costs from the Specific Groups Serviced (Option 1)

The first recommendation relates to service delivery, and specifically who should fund the cost of service, and how costs should be levied to users. The literature clearly indicates that the user pay system is commonly used in British Columbia, and that where service is provided to “spatially defined groups” (Bish & Clemens, 2008, p.179) it is appropriate that the group fund the cost of service. It is also important to consider that costs should be distributed equitably between users and the service levy should reflect the actual cost of service. Cost estimates completed for this project show a high variance in the per parcel cost of service for several areas. Consistent with the user pay philosophy and principle of fiscal equivalence, it is recommended that areas with similar servicing costs be combined, and the cost of service recovered from the specific groups serviced. This option would allow the entire cost of servicing to be recovered from the area serviced, while also ensuring the levy imposed best reflects the actual cost of service.

Recommendation 2 – Levy a Local Service Tax to Recover Costs (Option 2)

Cost recovery using a local service tax per s. 210-s. 219 of the Community Charter (2003) is recommended. This method of cost recovery is the only form of tax that could be applied to the specific area serviced, has low financial risk, and empowers owners to participate in the decision making process as petitioning would be required as part of the local service process. A levy imposed to the specific properties serviced is consistent with British Columbia's user pay system and equity principles and could be applied to groups with similar servicing costs to ensure the levy best reflects the actual cost of service.

Recommendation 3 – Apportion Service Costs on the Basis of a Single Charge per Parcel (Option 4)

Cost estimates completed for this project show that there is a high per parcel cost variance between several of the 15 separate areas included in the overall service area, however the cost to service parcels within each of the 15 separate areas is similar. Apportioning costs based on a single charge per parcel, as permitted by s. 200 of the Community Charter (2003), would allow for equitable distribution of the cost of service to the specific group serviced, which is an important theme noted in the literature (Bish & Clemens, 2008, p.179). This method of apportionment could be used to average servicing costs within each of the 15 separate areas, or groups with similar per parcel servicing costs, in order to maintain equity.

Recommendation 4 – Implement Service Using Several Key Success Factors and Action Plan (Option 8)

The literature clearly shows that stakeholder involvement, SMART (specific, measurable, attainable, realistic and timely) goals, linking budget to goals, and use of performance measures are key factors that can lead to improved success during implementation (Poister & Streib, 2005, p.54; Bryson, 2011; Jung & Lee, 2013, p.677). It is recommended that the city consider using the action plan provided to clearly convey key program goals, objectives, strategies, and responsibilities to help guide implementation. It is also recommended that the city consider some form of stakeholder engagement to provide feedback during implementation that could help improve strategies.

Implementation Plan

The service phasing plan shown in Figure 43, and action plan shown in Figure 44, provide a preliminary guide for implementation based on the above recommendations. The service phasing plan combines areas with similar servicing costs into groupings of approximately two million dollars, and averages costs within groups. This method of apportionment meets the city's desired 10 year serving timeframe, reflects the user pay philosophy commonly used in British Columbia, and ensures the levy imposed best reflects the actual cost of service. The action plan incorporates key success factors and provides a preliminary guide for

implementation. Key program items are identified in the action plan and it is recommended that these items are also incorporated into the city’s annual financial plan.

Location	Year	# Parcels	Capital Cost	Levy
Willow Park & Dallas	2018	75	\$1,740,000	\$23,200
Claremont	2019	108	\$1,980,000	\$18,333
Longacre	2020	99	\$2,060,000	\$20,808
Cameo & Appaloosa	2021	87	\$2,270,000	\$26,092
Dunsmuir	2022	33	\$1,040,000	\$31,515
Southwind	2023	106	\$2,230,000	\$21,038
Crosby	2024	74	\$1,690,000	\$22,838
Cameron & Joharon	2025	33	\$1,110,000	\$33,636
Harbour Heights, Smith/Peters & Adventure	2026	56	\$1,450,000	\$25,892
Kokanee	2027	65	\$2,710,000	\$41,692

Figure 43: Preliminary Service Phasing Plan

Goals	Objectives	Strategies	Responsibility	Timeline
Goal #1: Service is implemented to Okanagan Landing Area	Service is made available to all properties in the define service area	1a: Estimate the cost of service	GT	2018
		1b: Define the method of cost recovery and draft related bylaws	GT, MD, Finance	2018
		1c: Council endorsement of phasing and cost recovery	GT, MD	Fall 2018
	Cost is recovered from owners	1d: Petition owners and adopt local service bylaw	GT, MD, ADMIN	Annual
		1e: Tender and construct works	GT, MD	Annual
		1f: Determine levy and establish related bylaws	GT, MD, ADMIN	Annual
Goal #2: Policy is updated to reflect stakeholder needs	Feedback is incorporated into plan	2a: Establish performance measures	GT, MD	2018
		2b: Track performance	GT	Annual
	Policy changed	2c: Recommend policy changes	MD	Ongoing

Figure 44: Preliminary Action Plan (adapted from McNamara, n.d.)

7 Conclusion

The Okanagan Landing area of the City of Vernon was annexed to the city in 1993 (Urban Systems Ltd, 2012, p.19). Prior to annexation land use decisions of the day allowed development to occur using individual on site sewerage disposal systems (septic). Since annexation city sewer has now been extended to many properties in the Okanagan Landing area; however, there are still approximately 736 properties that do not have access to city sewer service. Due to health and environmental issues associated with septic systems, and desire of many residents to convert homes from septic to city sewer, servicing of the area is now one of council's top strategic goals (City of Vernon, 2015). To help the city realize their servicing goal for the Okanagan Landing area, this study was undertaken to complete the following:

1. Identify the service area and estimate the capital cost of service.
2. Review cost recovery options and related case law issues.
3. Provide recommendations for servicing and cost recovery.
4. Provide a plan to guide service implementation.

The service area was defined to include 736 properties in 15 geographically separate areas within the Okanagan Landing area. The capital cost to service all 736 properties was estimated at \$18,280,000. The service area was explored at the neighbourhood level to allow cost estimates to be completed for each geographically separate area, and to identify factors unique to each area that should be considered in the report. Results of the neighbourhood level analysis showed that the cost of service was much higher in several of the lakeshore areas, primarily due to lower development density, which resulted in fewer properties sharing the cost of service. Areas with higher density land use were noted to generally cost less to service on a per unit basis, while lower density areas generally cost more to service.

Service was recommended to proceed by way of council initiated local area service type project, with cost recovery from befitting properties by way of a local service tax (Community Charter, 2003, s.210-s.219). This method of servicing and cost recovery has low financial and legal risk and would allow the city to group areas with similar per unit service costs together under a common local service bylaw and rate structure to achieve fiscal equivalence. A ten year phasing plan reflecting this grouping philosophy was provided to help guide implementation.

An action plan was also provided to help guide implementation. The action plan clearly defines goals, objectives, strategies, and responsibilities for key implementation items. It is important that feedback during implementation be used to re assess and fine tune the plan wherever possible.

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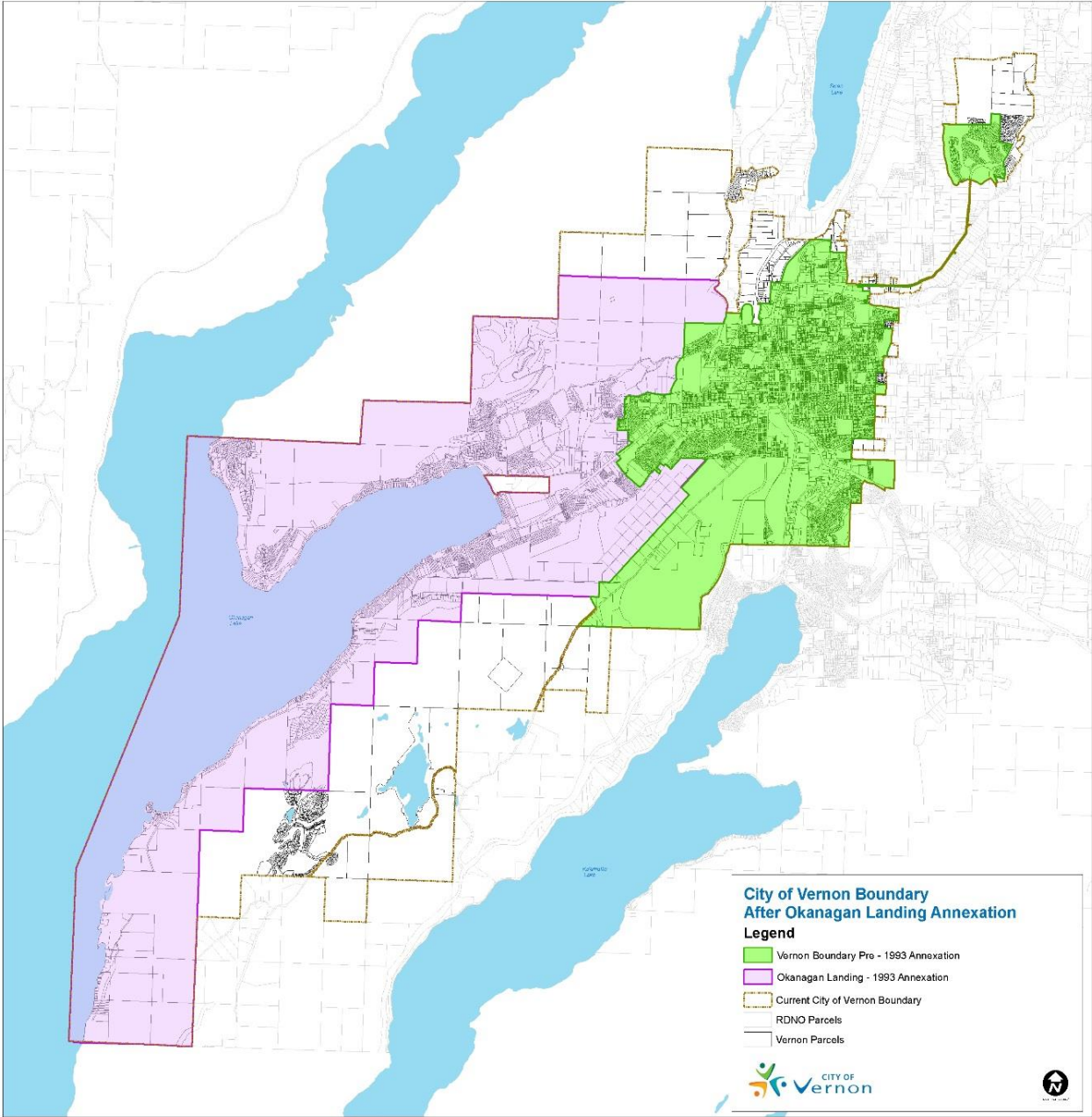
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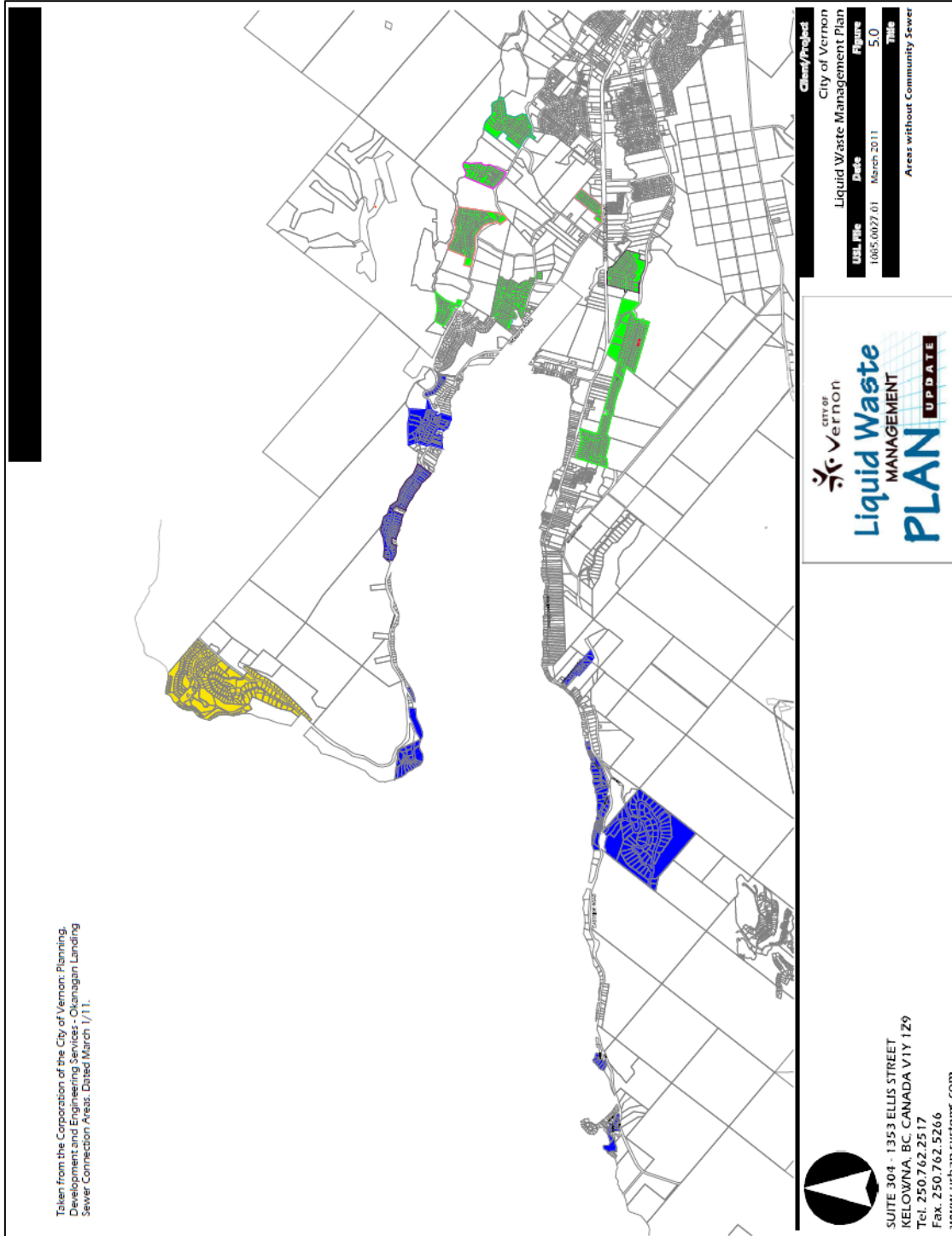
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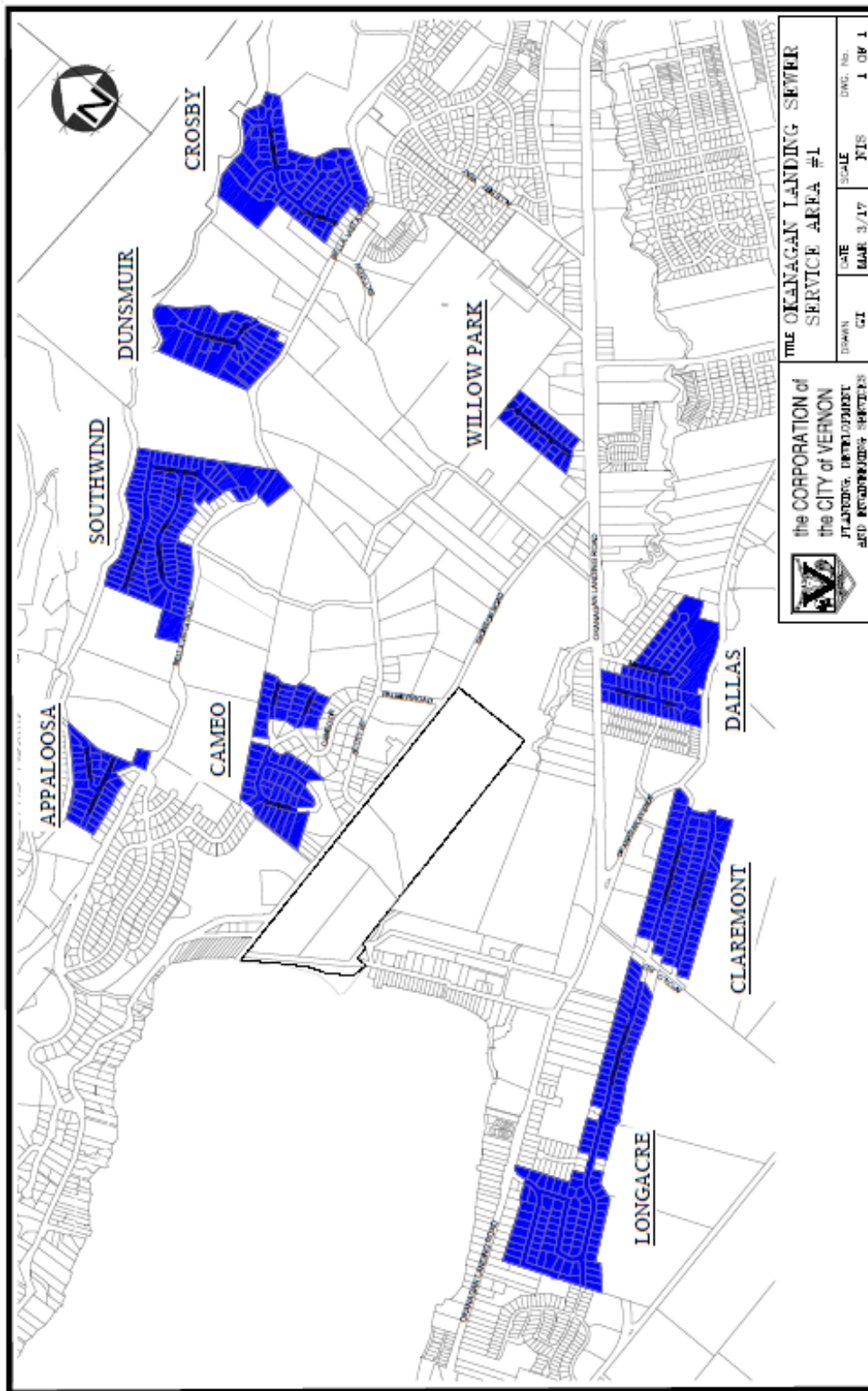
9 Appendix A: Okanagan Landing Annexation Area



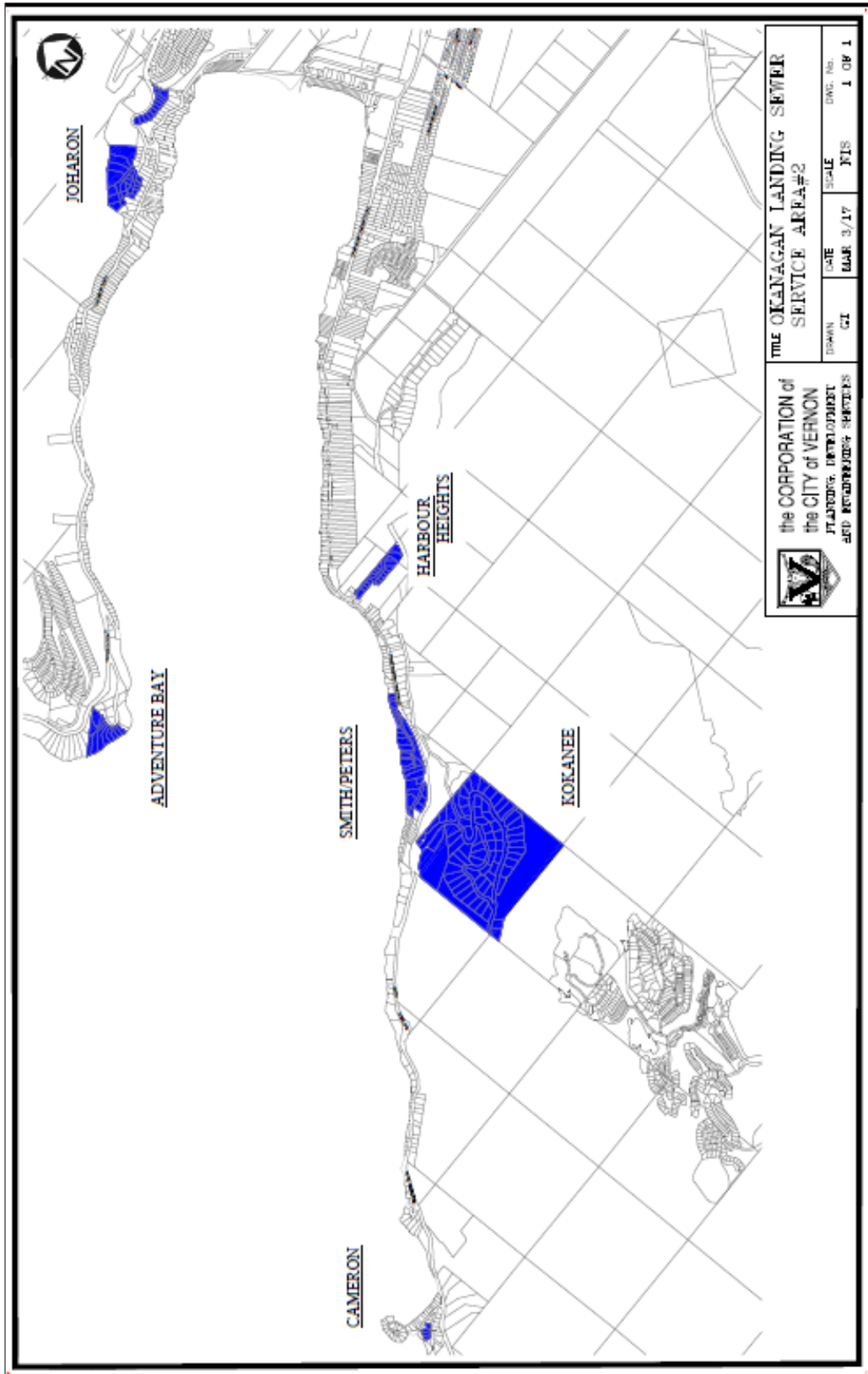
Appendix B: Areas without Community Sewer



Appendix C: Okanagan Landing Sewer Service Area #1



Appendix D: Okanagan Landing Sewer Service Area #2



Appendix E: Unit Price Cost Data

City of Vernon 2018 Unit Price Cost Sheet: OKL Sewer Project				
ITEM	DESCRIPTION	UNIT OF MEASURE	QTY	UNIT PRICE
<u>Section 01050 - General</u>				
01050.1	General Requirements	LS		3.0%
01050.2	Surveys and Layout	LS		3.0%
01050.3	Mobilize/Demobilize	LS		1.5%
01050.4	Quality Control Testing	LS		1.5%
<u>Section 01570S - Traffic Regulation</u>				
01570S.1	Traffic Control/Management	Zone		\$5,000
<u>Section 02224 - Roadworks</u>				
02224.1	Asphalt Removal and Disposal	sq.m		\$5
02224.2	Road Restoration - 75mm asphalt, 100mm crush,400mm subbase, GeoGrid	sq.m		\$62
<u>Section 02725 - Manholes and catch Basins</u>				
02725.1	1050 dia precast manhole complete	each		\$5,000
02725.2	Manhole barrels - 1050 dia.	vert.m		\$613
<u>Section 02731 - Sanitary Sewers - c/w native backfill</u>				
02731.0	38,50,64mm Series PVC Low Pressure Sewer - 1.5m cover	lin.m		\$160
02731.1	200mm dia. pipe PVC SDR35 - 0 to 2.5m deep (incl imported backfill)	lin.m		\$250
02731.2	200mm dia. pipe PVC SDR35 - 2.5 to 4.0m deep (incl imported backfill)	lin.m		\$400
02731.4	100mm dia. service pipe- SDR 28- 0 to 1.8 deep	lin.m		\$272
02731.5	Inspection Chambers	each		\$825
02731.6	Trench Rock - 2.5 depth	lin.m		\$150
02731.7	Unsuitable Trench Material- Removal,disposal, replacement with 150mm minus Pit run	cu.m		\$39
02731.2a	250mm dia. pipe PVC SDR35 - 0 to 4.0m deep	lin.m		\$350
02731.4	200mm dia. pipe PVC SDR35 - 0 to 2.5m deep	lin.m		\$200
02731.8	Service Installation (complete)	each		\$3,600
02731.9	Serv. Restoration	each		\$500
02731.10	Air Valve Chambers (complete)	each		\$7,500
02731.11	Flushing Connections (complete)	each		\$3,000
02731.12	Trench rock -1.5m deep	lin.m		\$175
02731.13	Unsuitable Trench Material-Removal, disposal, replacement with gravel (150mm minus)	cu.m		\$36
<u>Supplemental Items</u>				
S1	Drain Rock	cu.m		
S2	CDF under AC waterline	each		\$500
S3	Trench Dewatering (Wellpoint)	lin.m		\$320
S4	Service upcharge for difficult servicing in steep hillside, lake area, rock etc.	each		\$2,500
S5	Lump sum extra for collector pipe through easements (per parcel charge)	each		\$10,000
CLASS B ESTIMATE 10% ENGINEERING & 15% CONTINGENCY				25%
CLASS C ESTIMATE 10% ENGINEERING & 25% CONTINGENCY				35%
CLASS D ESTIMATE 10% ENGINEERING & 40% CONTINGENCY				50%