MEMORANDUM

MORRISON HERSHFIELD

TO:	Erin Blaney, Regional District of Kitimat Stikine	**FROM:**	Curtis Jung and Eva Robertsson, Morrison Hershfield
		PROJECT No.:	190497600
RE:	Options for Cost Recovery to Consider for Inclusion in the Solid Waste Management Plan	**DATE:**	May 7, 2020

\\MH.LOCAL\DATA\PROJ\2019\190497600-RDKS SOLID WASTE MANAGEMENT PLAN\08. WORKING\05 COST RECOVERY\MEM-2020-05-07-COST RECOVERY_RDKS SWMP-190487600V2.DOCX

Under the Environmental Management Act, regional districts are required to have a solid waste management plan (SWMP), which must be developed following the solid waste management planning guidelines provided by the Ministry of Environment and Climate Change Strategy (the Ministry) for content and process.

The Regional District of Kitimat Stikine (RDKS) is in the process of developing a new SWMP. The planning process was initiated in 2017 and steps 1 and 2 of the planning process were completed in 2018, resulting in the formation of the Public and Technical Advisory Committee (PTAC), assessment of the current system, development of the consultation plan and development of six technical memos covering specific topics. In November 2019, Morrison Hershfield (MH) was commissioned to provide consulting support to continue developing the SWMP for the RDKS.

This is Morrison Hershfield's last technical memo in a series of five, each presenting potential management options on key solid waste related topics:

- Summary of Reduce and Reuse
- Recycling and Composting
- Residual Waste Management at Existing Facilities
- New Facilities and Service Areas for RDKS
- **Cost Recovery**

The content of each memo will be presented to the PTAC. The feedback on these memos will be considered as MH develops a final memo outlining Preferred Options to be included in the new draft SWMP, which will be brought to the public for consultation.

This memo provides context with respect to the current RDKS solid waste management cost recovery model and highlights current key challenges and opportunities that should be considered. The memo outlines a number of potential strategies and options the RDKS may want to pursue to improve cost recovery and maintain financial sustainability.

CONTEXT

The RDKS consists of two solid waste management Service Areas: Terrace Service Area and Hazelton and Highway 37 North Service Area. The two Service Areas were established in July 2015 under Bylaws 657[1] and 658[2]. The service areas are financed separately under these bylaws and the cost recovery is outlined in Section 4 of each bylaw. Cost and revenue sharing is currently not possible

[1] Kitimat-Stikine Hazeltons and Stewart Area Solid Waste and Recyclable Material Management Service Establishment Bylaw No, 657, 2015.
[2] Kitimat-Stikine Terrace Service Area Solid Waste and Recyclable Management Service Establishment Bylaw No. 658, 2015.

between the two distinct service areas under current bylaws as per the Local Government Act (*Part 11, Division 2, Items 378-380*).

The RDKS' solid waste management system has undergone some major changes over the past few years, including the construction of a new landfill, the expansion of another with significant upgrades, and the construction of three new transfer stations, two with integrated recycling depots. Additional changes include the closure of four landfills—two RDKS-owned and two owned by member municipalities. These upgrades have required significant capital investments. The upgrades and added services have also resulted in increased and difficult-to-predict operational costs in both service areas.

The Terrace service area is currently operated with a surplus; however, the Hazelton and Hwy 37 North service area is experiencing higher than expected capital and operating costs and an annual deficit.

Morrison Hershfield representatives Curtis Jung and Eva Robertsson met with the Financial Working Group (FWG) on February 11, 2020, to discuss the current cost recovery models and the member communities' ideas, concerns and observations. The FWG is made up of financial representatives from member municipalities and First Nations within the RDKS. The initial meeting was aimed at guiding the development of this memo and development of the cost recovery strategies and options to be considered for inclusion in the SWMP.

This memo summarizes our review of options for enhancing and improving the current cost recovery models directed by the five Guiding Financial Principals developed in collaboration with the RDKS and the FWG. These five principals are:

1. Long-term financial sustainability
2. Take advantage of economies of scale, where possible
3. Provide good and equal level of service
4. Provide equitable service to all residents in the same service area
5. Improve operating efficiencies of current solid waste management services and facilities

The following sections provide an overview of the current cost recovery models and their associated challenges.

CURRENT COST RECOVERY MODELS AND CHALLENGES FACED

The two RDKS Service Areas have different cost recovery models tailored to each area. The details of the cost recovery models are outlined in Bylaws 657 and 658.

Terrace Service Area

The cost recovery model in the Terrace Service Area was originally established with the intent of covering 50% of the annual operating costs through tipping fee revenues and the balance through property taxes. The tax portion is calculated based on population and the value of improvements[3] in the City of Terrace, Electoral Area C and Electoral Area E, and a population-based contribution from the Kitselas and Kitsumkalum on-reserve communities.

[3] "improvements" means any building, fixture, structure or similar thing constructed or placed on or in land, or water over land, or on or in another improvement…" BC Assessment Act, [RSBC 1996] CHAPTER 20

In 2017, the RDKS found that significantly less waste than expected was brought to the Thornhill Transfer Station and the Forceman Ridge Waste Management Facility. This resulted in a revenue shortfall, which was partially offset by the structure of the contract with Bear Creek Group; the landfill operations contractor. The financial status of the Terrace Service Area has since changed and is now operating with a surplus, mainly due to the acceptance of soil and refuse from industry. Additional revenue streams in the Terrace Service Area are from curbside collection fees (service provided in the Greater Terrace Area and electoral areas) and First Nation cost-sharing revenue.

Approximately 31% of the annual operating costs were covered by taxes in 2019, 53% by tipping fees and other user fees, and 16% by surplus from the previous year. The industrial waste and soil accepted at the Forceman Ridge Waste Management Facility (WMF) contributed to almost $700,000 in revenues, representing about half of the tipping fees collected in the Terrace Service Area in 2019.

Hazelton and Highway 37 North Service Area

The cost recovery model in Hazelton and Highway 37 North Service Area is almost exclusively funded by taxes and cost-sharing with First Nations. No tipping fees are charged on garbage from residential and commercial sources[4] originating from within the Service Area. Waste accepted from outside the Service Area is charged a tipping fee with a 25% surcharge as outlined in Bylaw 688. The solid waste services in the Service Area are funded by taxes from incorporated and electoral areas, calculated based on population and the value of improvement in each community, and population-based contributions from First Nations.

The Hazelton and Highway 37 North Service Area has experienced higher than anticipated operating costs, particularly maintenance at the Hazelton WMF and the Iskut Landfill, since the service area was established. The Service Area is currently operating at a deficit. In January 2020, the RDKS Board voted to increase the tax requisition in the Service Area significantly to cover operating expenses and eliminate deficit in 5 years. The First Nations population-based contributions are also to increase.

The current financial status of the two Service Areas, associated challenges and other relevant information are summarized in Table 1 below.

Table 1. Summary of the financial status of the two RDKS service areas, the associated challenges and the additional information relevant to the respective cost recovery models.

	Terrace Service Area	Hazelton & Highway 37 North Service Area
Estimated Population	20,000	8,000
Annual surplus/deficit	Currently operating on an annual surplus.	Currently operating on an annual deficit.
Loan situation	Significant loan for capital projects with a 25 year financing period.	Small loan for capital projects compared to that for the Terrace Service Area. The tax requisition is not covering the loan repayments.

[4] Tipping fees are currently charged on asbestos, contaminated soils and waste from industrial sites.

	Terrace Service Area	Hazelton & Highway 37 North Service Area
Cost recovery model	Funded by tipping fees, user fees and tax requisition.	Almost exclusively funded by tax requisition and population-based contributions. Strong opposition to tipping fee from community.
Out-of-service-area waste	Significant revenue stream from material (mainly soil) accepted from out-of-service-area charged a 25% surcharge.	Limited waste from out-of-service-area, mostly received at Meziadin Landfill from mining camps.
Other considerations	It took 15 years to decide on the site for Forceman Ridge WMF. The replacement value and the value of airspace at the landfill, is therefore high.	Smaller facilities, smaller population and larger distances compared to the Terrace Service Area results in higher operating costs and higher cost per system user and tonne of waste managed.

The following sections introduce five potential strategies for improving the current cost recovery models, which were developed to align with the established Financial Guiding Principles.

STRATEGY 1. REVIEW COST RECOVERY MODEL WITHIN THE SERVICE AREAS TO PROVIDE FAIR COST SHARING

Over the past five years, facility operating costs in both Service Areas have increased substantially. As shown in Figure 1 below, annual facility operating costs in the Terrace Service Area have increased from approximately $574,000 in 2016 to $1,239,000 in 2019. This significant cost increase is attributed to the commissioning of the Thornhill Transfer Station and Forceman Ridge Waste Management Facility, which opened at the end of 2016 and in the beginning of 2017, respectively. Annual facility operating costs in the Hazelton and Highway 37 North Service Area remained relatively consistent from 2016 to 2018, at approximately $1,400,000 but increased significantly in 2019 up to $1,800,000 as new facilities were completed and opened. The increase in the last year is mainly related to operations of the Stewart Transfer Station, Kitwanga Transfer Station, and Hazelton Waste Management Facility.

Table 2 below summarizes the facility maintenance and operations costs included for both service areas (as presented in Figure 1, Figure 2, and Figure 3).

Table 2. Facilities included in annual operating costs for each Service Area.

Terrace Service Area	Hazelton and Highway 37 North Service Area
▪ Thornhill Transfer Station ▪ Forceman Ridge Waste Management Facility ▪ Rosswood Landfill ▪ Thornhill Landfill (closed)	▪ Hazelton Waste Management Facility ▪ Iskut Landfill ▪ Kitwanga Landfill (closed) ▪ Meziadin Landfill ▪ Kitwanga Transfer Station ▪ Stewart Transfer Station (2018 and 2019) ▪ Stewart Landfill (closed, contributions in 2018, 2019)

Figure 1 presents the annual facility maintenance and operating costs for the two service areas.

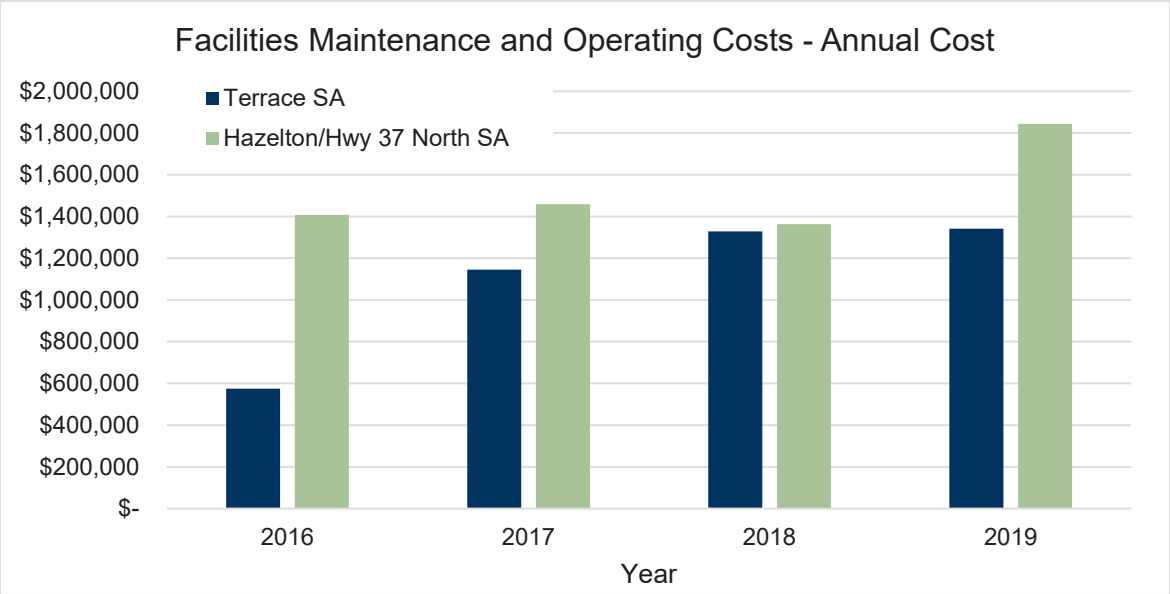

Figure 1. Annual Facility Maintenance and Operating Costs for Service Areas over last four years.

Figure 2 presents the annual facility maintenance and operating costs for the two service areas on a per-capita basis. For the purposes of this analysis, the populations of both service areas were assumed to be constant from 2016 to 2019, with the exception of the 2019 Hazelton and Highway 37 North Service Area population as the District of Stewart was added to the Service Area. The assumed population of the Terrace Service Area is 20,000 and the assumed population of the Hazelton and Highway 37 North Service Area is 8,000 (8,400 in 2019).

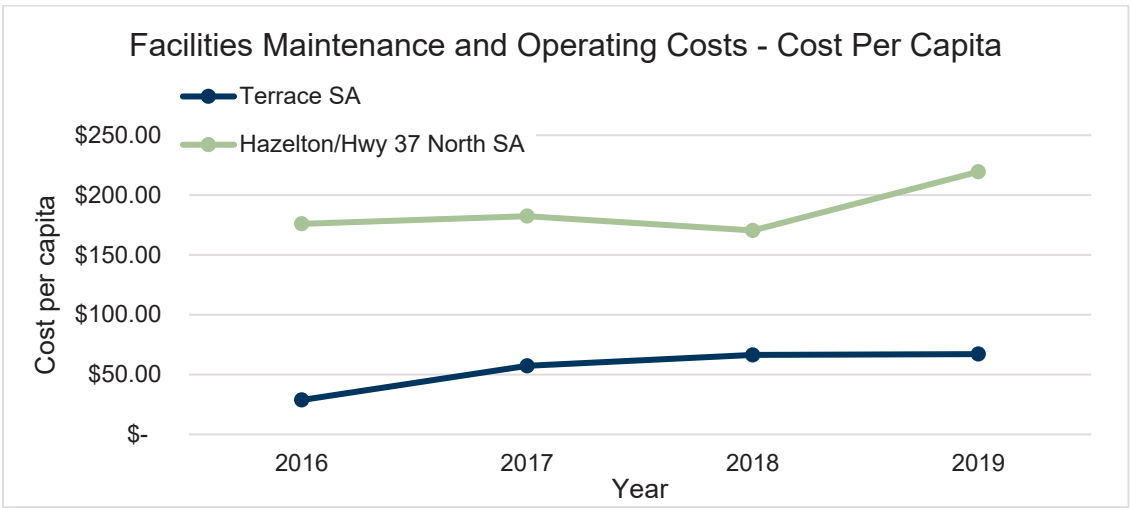

Figure 2. Facilities maintenance and operating costs for the Terrace and Hazelton and Highway 37 North Service Areas, presented as cost per capita.

As shown in Figure 2, the cost per capita to operate the solid waste facilities in the Hazelton and Highway 37 North Service Area is about three to four times higher than the cost of operating the facilities in the Terrace Service Area. The significantly higher per-capita facility operating costs are due to the substantially smaller population base, the greater number of solid waste facilities, and the greater distance between facilities in the Hazelton and Highway 37 North Service Area.

Figure 3 below shows the facility operating costs on a per-tonne basis. The total annual facility operating costs for all facilities in each service area (as summarized in Table 2) are divided by the total tonnes of garbage disposed at all landfills in the service area. In the Terrace Service Area, the primary disposal facility is the Forceman Ridge Landfill, but the tonnages also include waste disposed at the Rosswood Landfill. In the Hazelton and Highway 37 North Service Area, the primary disposal facilities are the landfill at Hazelton WMF and Meziadin Landfill. The other disposal facility owned and funded by the RDKS is the Iskut Landfill. Waste is transferred from the Kitwanga Transfer Station to Hazelton WMF and, as of 2019, from the Stewart Transfer Station to Meziadin Landfill.

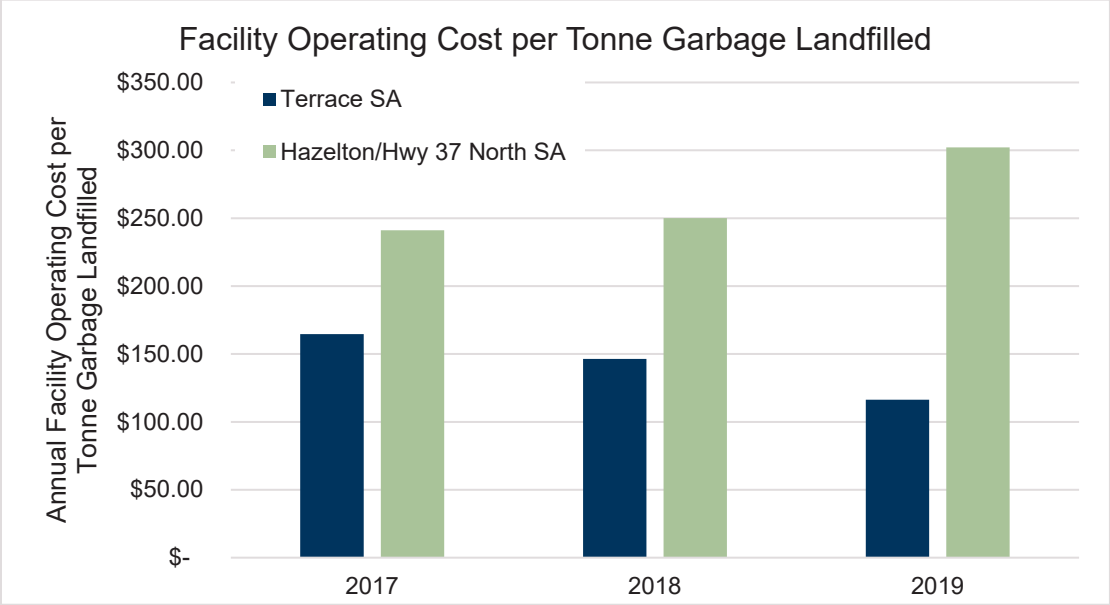

Figure 3. Total facility operating cost per tonne garbage landfilled in both Service Areas.

Disposal data for the Terrace Service Area is available from 2017 to 2019 (scale records from the Thornhill Transfer Station and Forceman Ridge Landfill and assumed disposal tonnages at the Rosswood Landfill). None of the facilities in the Hazelton and Highway 37 North Service Area is equipped with a weigh scale and the disposal is therefore estimated based on accepted volumes. Estimated tonnages are available for 2017[5] and 2018[6]. For the purpose of this report, MH estimates the 2019 tonnages based on the 2017 and 2018 average for the Service Area, plus estimated tonnages of the waste transferred from the District of Stewart. The data in Figure 3 indicates that the per-tonne facility operating costs in the Hazelton and Highway 37 North Service Area may be more than double the per-tonne costs in the Terrace Service Area. The decreasing per-tonne disposal cost in the Terrace Service Area since 2017 is primarily due to the increase in landfilled waste from industrial and commercial sources. The Hazelton and Highway 37 North Service Area does not have the same access to funding through disposal of industrial waste at this time. The increased per-tonne disposal cost seen for the Hazelton and Highway 37 North Service Area between 2018 and 2019 is mainly the result of the costs related to the Stewart Transfer Station.

As discussed above, the two Service Areas have different funding models. The funding models and formula used to calculate the cost to residents through taxes or population-based contributions were established in 2015, prior to the completion of the major capital investments and service changes in the regional district. The RDKS may want to review the long-term sustainability of the cost recovery

[5] *Background Information and Assessment of the Current Solid Waste System – 2018 Update,* Rev. 1.1, January 4, 2019, RDKS

[6] Annual Reports for Hazelton WMF, Meziadin Landfill, and Iskut Landfill.

models, considering it has been five years since the two Service Areas were formed and operating costs have increased substantially since that time.

The objective of the cost recovery model is to generate sufficient revenue to cover all costs associated with the solid waste service (including garbage, recycling, and organics collection, processing, and disposal) while providing an acceptable level of service to residents in both Service Areas.

Two of the Guiding Financial Principles aim to provide an equal service level to residents in each Service Area. The cost recovery model for both Service Areas should consider the following key questions:

- How much does a resident pay for solid waste services?
  - Total cost to the resident for provision of solid waste services (via tax requisition, tipping fees, and/or a combination of both) by both the RDKS and municipal provided services (such as curbside collection). This may also include review of the cost share agreements in place for First Nations communities.
- What level of service is provided to the resident?
  - Consider both RDKS and municipal programs in place to collect, process, and dispose of garbage, recyclables, and organics.
  - Consider the collection programs in place and the proximity of drop-off facilities if curbside collection programs do not exist.

MH recommends that the RDKS develop a number of key performance indicators (KPIs) considering cost per capita, household or business, and cost per tonne of waste generated or disposed. The KPIs will assist with evaluating the current cost recovery models against the Guiding Financial Principals outlined in the Context section above. KPIs normalize costs to a common denominator (such as per capita or household), which allows for a standard comparison of costs between service areas. Using normalized KPIs is particularly important when comparing costs between two different service areas with significantly different populations.

There may not be a clear understanding of the high cost of waste management among residents and business owners. There may, for example, be a perception that recyclables are creating a resource and revenue stream for the RDKS, which is not the case, especially for the Hazelton and Highway 37 North Service Area due to high transportation costs and unfavorable market conditions for recyclable materials. The RDKS may want to include messaging around waste management costs in their public education efforts. The financial messaging could be communicated in the context of reuse and waste reduction activities.

Possible options to incorporate in the SWMP include:
1A. Develop KPIs to assist in evaluation of the current cost recovery models between service areas based a common factor (such as per capita or household). Adjust cost recovery models to facilitate a continued service delivery fair to all residents and businesses.
1B. Include messaging around waste management cost in RDKS's public education efforts.

STRATEGY 2. REDUCE COST

Directing efforts to reduce cost is a natural way to balance the budgets. Cost reductions can sometimes be found through improved operating efficiencies. Cost saving efforts should be considered in conjunction with potential impacts to levels of service or quality provided. All cost saving efforts should aim to avoid compromising the existing service levels being provided to residents.

The Hazelton and Highway 37 North Service Area is currently operating on a deficit, mainly due to high transportation costs, higher than expected operating costs, hauling distances, and the limited market for recyclable materials. The RDKS may want to assess current hauling cost between facilities and explore options for cost savings. Co-haul and back-haul options, baling or compacting loads, and new agreements with stewards are strategies that may reduce hauling costs. Co-hauling can be done within the RDKS or in collaboration with the private industry. Depending on data availability, hauling costs should be assessed for each waste stream (primarily garbage and recyclables) and should be normalized to allow comparison between costs (cost per haul and/or cost per tonne hauled material). The objective of a detailed hauling analysis is to identify haul routes and waste streams presenting the greatest opportunities to reduce costs and improve efficiencies.

As an example, the Yukon Government has been assessing options to reduce its high transportation costs for recyclables within the Territory by co-hauling the Yukon Liquor Corporation.

The RDKS is currently using back-haul[7] for transporting recyclable material from the Hazelton and Highway 37 North Service Area to the processor in Terrace. The resulting cost per tonne of material hauled is considerably high[8], and the RDKS may want to revisit the current hauling agreements. The Iskut Band has recently purchased a hauling company and owns a hauling truck. The band manager has expressed an interest in assessing opportunities to collaborate with the RDKS to increase efficiencies and reduce the cost to both parties.

The RDKS is currently paying a scaled fee to haul cardboard and paper products from the Hazelton and Highway 37 North Service Area to Terrace. The fee varies between $48 and $64 per mega bag depending on the number of bags hauled. The RDKS may want to consider baling or compacting selected materials, as this would increase hauling capacity while reducing the space required for material storage.

The RDKS is currently communicating with Recycle BC and other stewards with the aim of increasing the number of service agreements, as discussed in the previous memo on recycling and organics diversion[8]. Agreements with stewards would offset some of the costs associated with collection, storage, management and hauling of the recyclable products and materials.

The RDKS may also want to assess current facility operations with the aim of improving efficiencies and exploring cost saving alternatives. This could include reassessing the operating hours of selected facilities, the use of RDKS equipment, and the allocation of staffing to specific tasks. It is unlikely for cost savings to be found in the current operating contracts, considering the competitive labour market in the region.

The RDKS may want to explore the opportunity of performing all or some tasks in-house using RDKS staff members (currently contracted), as discussed in Strategy 9 presented in the MH memo on residual

[7] The use of a commercial hauling truck otherwise returning empty after goods have been delivered. The primary delivery is goods, not waste materials.

[8] Recycling Options to Consider for Inclusion in the Solid Waste Management Plan (MH, February 2020)

waste management at existing RDKS facilities[9]. Moving some of the operation in-house may reduce cost through:

- Sharing of staff and equipment resources between waste management facilities
- Greater control over operational efficiencies and staff messaging to site users
- Improved efficiencies and the elimination of RDKS staff hours required to provide operator support and oversight

Cost reduction strategies and options presented in previous memos are listed in Table 3. The presented options are not included under this Strategy - Reduce Cost, as these options already are covered under other strategies.

Additional cost saving initiatives include long-term investments such as increased public education, outreach, and engagement programs developed with the aim to increase diversion and bylaw adherence with the goal of reduced need for oversight and sustainable use of facilities and services.

Table 3. Cost reduction strategies and options presented in previous memos and selected by the Public Technical Advisory Committee to be included in the Preferred Options.

Recycling Options to Consider for Inclusion in the Solid Waste Management Plan (MH, February 2020)
STRATEGY 4. Reduce Recycling Costs ▪ 4A. Maximize partnership opportunities with stewardship organizations, such as for residential recycling at the Kitwanga Transfer Station and curbside collection in the Greater Terrace Area. ▪ 4B. Undertake an efficiency review of the management of recyclables within the region. ▪ 4C. Pursue composting of paper products at locations where deemed feasible. ▪ 4D. Set cost threshold when alternative lower cost options (e.g. composting, burning or landfilling) are pursued until recycling is no longer cost prohibitive. **STRATEGY 9. Amend Solid Waste Bylaw to Encourage Waste Diversion** ▪ 9D. Adjust the current fee schedule to allow agreements with stewards such as MARR.
Options for Residual Waste Management at Existing Facilities to Consider for Inclusion in the Solid Waste Management Plan (MH, March 2020)
STRATEGY 5. Close Selected Small Landfills and Replace with Transfer Stations ▪ 5A. Assess cost/benefit of closing Rosswood and Iskut landfills by determining community need for transfer stations, and implement if deemed feasible. ▪ 5B. Consider options to continue to operate the Iskut Landfill for demolition and land clearing waste. **STRATEGY 6. Effectively Use Landfill Airspace** *(indirect cost savings through efficient use of airspace)* ▪ 6A. Enforce existing bylaws to control the waste disposed and minimize unnecessary airspace consumption.

[9] Residual Waste Management at Existing Facilities to Consider for Inclusion in the Solid Waste Management Plan (MH, March 2020).

- 6B. Review the landfill operations, including the use of operational soil and alternative daily covers and waste placement and compaction. Based on findings, consider providing, recommending or requiring additional contractor training to improve operations.

STRATEGY 9. Deliver Operational Services In-House

- 9A. Assess the cost-benefit of using contractor vs. in-house staff to operate RDKS facilities, and transition to in-house service if determined to be beneficial.

Additional possible options to incorporate in the SWMP include:

2A. Complete detailed hauling analysis to assess the feasibility of alternative co-hauling and back-hauling options.

2B. Perform a cost-benefit analysis of baling and/or compacting recyclable materials hauled from the Hazelton and Highway 37 North Service Area.

2C. Regularly revisit agreements and operating procedures to explore options to reduce cost while maintaining level and quality of service.

2D. Develop long-term goals and strategies, including potential investment, with the purpose of reducing cost in the long term.

2E. Complete operational reviews for each facility, which would include a review of staffing, past operating performance, primary operating costs, and identification of areas for improvement.

STRATEGY 3. INCREASE REVENUE

The RDKS's main revenue sources include requisition through taxation, cost-sharing agreements with First Nation communities, tipping fees, and curbside collection fees. These revenue sources are aimed at covering the solid waste management operations, whereas loans and grants are used to pay for capital projects. Figure 4 illustrates the distribution of the operational revenue streams in 2019 in the Terrace and Hazelton and Highway 37 North Service Areas. Though both service areas experienced a surplus in 2018, the Terrace Service Area is estimated to have a surplus of $1,128,000 at the end of 2019, whereas the Hazelton and Highway 37 North Service Area is estimated to have a deficit of $1,224,000.

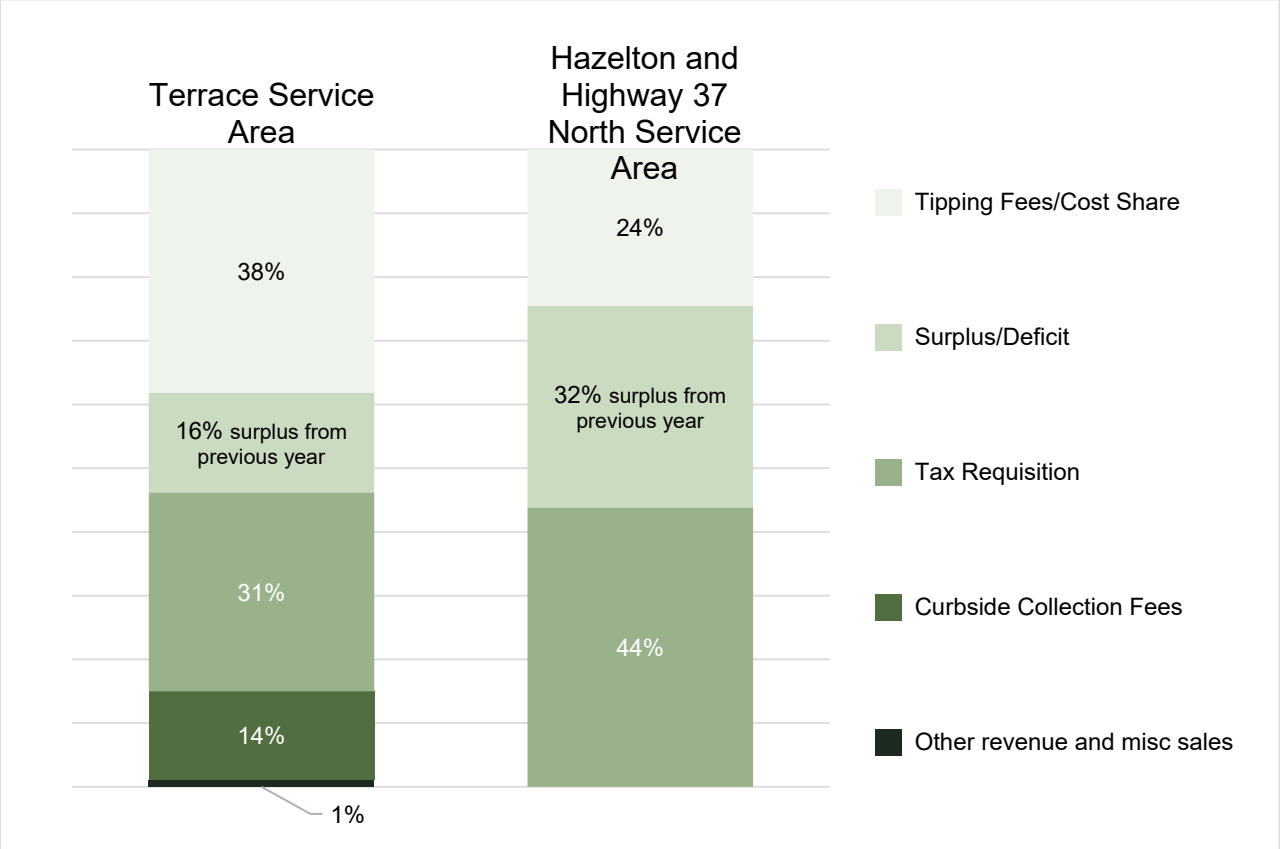

Figure 4. Distribution of revenue streams for each of the RDKS service areas Terrace Service Area and Hazelton and Highway 37 North Service Area in 2019.

Hazelton and Highway 37 North Service Area

The RDKS Board has voted to increase tax requisition to recover the 2019 deficit (and future anticipated deficits) over the next 5 years. Additional efforts to increase revenue, particularly for the Hazelton and Highway 37 North Service Area, should be considered to reduce the cost burden on residents and businesses.

Tipping fees have historically been opposed in the Hazelton and Highway 37 North Service Area; however, consideration thereof may be warranted at this time. In 2017, it was estimated that 5,900 tonnes of waste were disposed at the Landfill at Hazelton WMF and the Meziadin Landfill. Currently, there are no tipping fees charged at either facility (with the exception of select ICI loads). Assuming a tipping fee of $110/tonne, this represents an additional potential revenue stream of up to $650,000.

Introducing tipping fees in the Hazelton and Highway 37 North Service Area is consistent with a user-pay service delivery model. A user-pay model is based on the principle that users (residents and commercial customers) of the service should pay an amount that is proportional to the amount of waste they dispose. A user-pay system incentivizes residents to divert more material and reduce the amount of waste disposed.

A model could be set up where each household in the service area is given a set volume or number of visits for free (or for an annual fee) each year and waste beyond that would be subject to tipping fees. The communities of the District of Stewart, Village of Hazelton, District of New Hazelton, Gitanyow, Gitwangak, Gitsegukla, Witset, Gitanmaax, Glen Vowell, Hagwilget, and Kispiox currently receive

curbside pickup of garbage, and residents could be provided with a set number of self-haul visits for free. Alternatively, a cash or card-based system could be established that requires any resident using the facility to pay at the facility or pre-purchase disposal credits (card or coupons) at local retailers.

There are currently no scales at any facilities in the Hazelton and Highway 37 North Service Area. Therefore, tipping fees would be collected based on volume. An appropriate volume-based tipping fee structure would need to be established that is simple enough to enforce at all facilities yet of sufficient detail to allow for fair collection of fees from various users (residents and commercial users) with various load sizes and material types. One option is to allow a set number of bags per year free of charge, with an additional large load. This could be tracked using drivers' licenses and/or resident addresses.

It is recognized that tax requisition will likely need to be adjusted if tipping fees are introduced in the Hazelton and Highway 37 North Service Area. Communications related to the implementation of tipping fees should clearly indicate that the objective is to charge residents an amount that is more proportional to the amount of waste they are disposing (user-pay system). Communications should clearly explain the total cost to residents if revenues are collected through a combination of tipping fees and tax requisition and compare the proposed costs to the total costs that residents are paying now under current tax-based cost recovery model. It is understood that residents may feel like they are paying twice if tipping fees are introduced.

Terrace Service Area

The Terrace Service Area is currently funded through a combination of tipping fees and tax requisition. The cost recovery model for the Terrace Service Area was originally established assuming approximately 50% of the revenue would be generated from tipping fees and the 50% from tax requisition. As noted above, approximately 31% of the annual operating costs were covered by taxes in 2019, 53% by tipping fees and other user fees, and 16% by surplus from the previous year.

Since the Forceman Ridge WMF started accepting waste in 2017, the amount of industrial waste and soil accepted at the facility has increased substantially. In 2019, the industrial waste and soil accepted at the facility contributed to almost $700,000 in revenues, representing about half of the tipping fees collected in the Service Area. Under Bylaw No. 671, soil that is suitable for cover is charged a reduced rate of $55.00/tonne, whereas contaminated soil is charged $65-$78/tonne, depending on the level of contamination. Industrial waste and any waste generated outside the Service Area is charged a 25% surcharge, as prescribed under the same bylaw. In 2019, 1,821 tonnes of contaminated soil was accepted from industry at the Forceman Ridge WMF. An additional 2,441 tonnes of industrial waste (refuse; demolition, land clearing, and construction waste; and asbestos) was accepted for a total of 4,262 tonnes of soil and waste from industrial sources.

MH recommends that the RDKS review the surcharge applied industrial waste, out-of-service-area waste, as well as the reduced tipping fee charged for soil material. A revised surcharge for industrial waste and reduced rate for soil should be developed with consideration to the following:

- The full cost of the landfill, including planning, design, operations, closure and post-closure costs. As a best practice, the tipping fee should be established to cover all landfill costs over its entire lifespan (including the post-closure period). By considering the full cost of the landfill, the value of the remaining available airspace can be quantified.
- The tipping point at which it is more economical for industry to dispose of waste at another facility or construct their own landfill.

- The benefits and costs of accepting contaminated soil at a discounted tipping fee (compared to general garbage). The material management plan in the Design, Operating and Closure Plan (DOCP) for the Landfill at Forceman Ridge WMF relies on some imported material. The RDKS may want to regularly monitor the use of operational soil to ensure that appropriate waste to cover ratio is achieved at the site as discussed in the memo on existing facilities[10].

Possible options to incorporate in the SWMP include:
3A. Regularly review and update the current cost model for the landfill at Forceman Ridge WMF, and adjust tipping fees for industrial and out-of-service-area waste as needed.
3B. Assess the costs and benefits of introducing a "user-pay" cost recovery model in the Hazelton and Highway 37 North Service Area by introducing tipping fees and adjust tax requisition based on new tipping fee structure. Implement a "user-pay" cost recovery model if deemed beneficial to residents, businesses and the RDKS while following the Guiding Financial Principals.

STRATEGY 4. DIRECT OR INDIRECT COST SHARING BETWEEN SERVICE AREAS

Under the current bylaws and Local Government Act, cost and revenue sharing between the two service areas is not allowed. As discussed above, the Terrace Service Area is currently operating in a surplus and the Hazelton and Highway 37 North Service area is operating in a deficit. The following two sections explore the options for direct and indirect cost and revenue sharing between the two service areas.

Direct Cost Sharing

Bylaws No. 657 and 658 were established in 2015 based on the current and projected facility operating costs and revenues at that time. As discussed above, operating costs in both service areas have increased significantly over the last five years. Tax requisition in the Hazelton and Highway 37 North Service Area has recently been increased substantially in order to cover the increasing facility operating costs.

MH recommends that the RDKS review the feasibility of amending Bylaws No. 657 and 658 to combine service areas to allow for cost and revenue sharing. A challenge for the Hazelton and Highway 37 North Service Area is poor economies of scale. There are more solid waste facilities (transfer stations and landfills) in the Hazelton and Highway 37 North Service Area, resulting in higher operating costs as compared to the Terrace Service Area, yet the population in the Hazelton and Highway 37 North Service Area is less than half of the population in the Terrace Service Area.

Similar to the RDKS, there are several regional districts in BC that are challenged with providing solid waste management services to remote communities having high per-tonne disposal costs and poor economies of scale. However, the cost recovery model in several regional districts is based on the solid waste service area, including all communities within the regional district. This allows the regional districts to distribute the revenues from larger facilities (landfills servicing populations in larger communities) to cover the costs of operating smaller facilities with lower economies of scale.

Over $600,000, almost 40% of the tipping fees collected at Forceman Ridge WMF, were collected from industry or sources outside the Terrace Service Area in 2019. Almost $470,000 were collected from

[10] Residual Waste Management at Existing Facilities to Consider for Inclusion in the Solid Waste Management Plan (MH, March 2020).

industry at the Forceman Ridge WMF during the first four months of 2020 alone, which suggests this revenue stream likely is to increase as industry develops in the area. The industrial waste revenue stream would potentially benefit all RDKS residents if the two service areas were joined; reducing the financial burden on the Hazelton and Highway 37 North Service Area residents and businesses while limiting the effects experienced by those in the Terrace Service Area.

Indirect Cost Sharing

The Forceman Ridge WMF receives a significant quantity of waste from industrial sources. The Meziadin Landfill is located approximately 230 km north of Terrace, and the Hazelton WMF is located approximately 150 km northeast of Terrace.

The RDKS can consider the feasibility of redirecting waste to the Hazelton and Highway 37 North disposal facilities by providing incentives to industrial users to haul directly to the Meziadin Landfill or Hazelton WMF. Incentives may include reduced tipping fees for industrial users in the Hazelton and Highway 37 North Service Area. The hauling distance from the waste generation point to the disposal facility is one of the primary factors affecting the economics of waste disposal. The other factor is the tipping fee charged at the disposal facility. The round-trip hauling time from Terrace to the Hazelton WMF or Meziadin Landfill is a barrier to redirecting waste to these facilities. Even if industrial waste haulers are incentivized to dispose at these facilities (for example, through reduced tipping fees), the economics of hauling an additional four to six hours may be too much of a financial barrier.

Possible options to incorporate in the SWMP include:	
4A.	Review feasibility of amending bylaws to combine service areas to allow for direct cost and revenue sharing
4B.	Assess the feasibility of redirecting industrial waste to the Hazelton WMF and/or Meziadin Landfill to allow indirect cost sharing.

STRATEGY 5. EXPAND SERVICE AREA

The RDKS is currently exploring options for expanding its service areas or including new facilities. These options relate to the District of Kitimat, Dease Lake Landfill, and Telegraph Creek Landfill and transfer station and are discussed further below.

Assess the Financial Implications of District of Kitimat Participating in the Terrace Service Area

In 2019, the District of Kitimat (Kitimat) developed a Solid Waste Management Strategy and Action Plan with the objective of developing and selecting options to improve the District's diversion and disposal system. Following up on the Action Plan developed in April 2019, the District retained Maura Walker & Associates (MWA) to assist with developing a strategy and recommended actions for implementation in 2020 and beyond. Significant actions scheduled for 2020 include the preparation of a landfill upgrade plan and an assessment to evaluate the cost effectiveness of participating in the Terrace Service Area under the RDKS.

Waste currently generated in Kitimat and the Village of Kitimaat (Haisla First Nation) is disposed at the Kitimat Landfill. Kitimat is currently operating in Phase 2 of the Kitimat Landfill, which is estimated to have up to three years of remaining capacity (to be confirmed). MH understands that, based on a detailed landfill conformance assessment and comments from the Ministry, Kitimat will not have the

authority to expand into Phase 3 without significant capital investment in design and operational improvements. The Landfill Upgrade Plan scheduled for 2020 is expected to provide a conceptual cost estimate for the proposed upgrades, including weigh scales, additional drop-off areas, an organics processing facility, and an engineered liner and leachate collection system for Phase 3 of the landfill.

Considering that the capital investments associated with the Kitimat Landfill Upgrade Plan are expected to be significant, there is an opportunity at this time to evaluate the cost effectiveness of Kitimat participating in the Terrace Service Area. Given that the RDKS has landfill capacity and provides a similar service, there could be significant financial benefits to harmonizing services.

There are several options for the District of Kitimat to participate in the Terrace Service Area. Each option will require a different cost recovery model. Potential options include the following:

- **Full participation in the Terrace Service Area.** This would involve design and construction of a new Kitimat Transfer Station and the use of the Forceman Ridge WMF for disposal and composting. The RDKS may also offer curbside collection through the Greater Terrace Area curbside collection service. Kitimat would join the Terrace Service area and become part of the RDKS cost recovery model. Considerations associated with this option include the ownership and operating model of the transfer station and responsibilities for the Kitimat landfill liabilities, including closure activities.
- **Partial participation in the Terrace Service Area.** Under this option, Kitimat would proceed with establishing a transfer station and closing the Kitimat Landfill; however, it would remain outside of the Terrace Service Area and use the Forceman Ridge WMF as a user (i.e. pay tipping fees). Under current RDKS bylaws, waste from Kitimat would be charged the 25% surcharge for out-of-service-area waste.

Kitimat may decide to not join the RDKS and continue operating the Kitimat Landfill by expanding into Phase 3. The likelihood of this status quo scenario will need to be considered in the cost recovery model developed for the Terrace Service Area.

The RDKS can benefit from evaluating the pros and cons of Kitimat participating in the RDKS Terrace Service Area. Financial considerations and potential benefits will depend on the level of participation of Kitimat; however, these benefits may include the following:

- Assuming full participation by Kitimat, this would expand the population base of the Terrace Service Area, resulting in additional revenue from tax requisition (assuming the current cost recovery model remains the same).
- Additional tipping fee revenue from all garbage generated within Kitimat, which was previously being disposed at the Kitimat Landfill.

There would also be additional costs associated with Kitimat's participation in the Terrace Service Area, which may include additional curbside collection costs (if this option is preferred), additional education and outreach costs with an expanded service population, and additional facility operating costs (depending on preferred operating model of the transfer station in Kitimat).

Assess the Financial Implications of Including the Dease Lake in the Hazelton and Highway 37 North Service Area

The Dease Lake Landfill is currently owned by the Ministry of Transportation and Infrastructure (MOTI) and operated by a contractor hired by MOTI. The Dease Lake Landfill recently started receiving waste generated in Telegraph Creek, as the Telegraph Creek landfill was closed. A transfer station has been

constructed to replace the closed landfill. No tipping fees are currently charged at the Dease Lake Landfill, as there is no scale at the site. It is MH's understanding that MOTI does not have any plans to introduce tipping fees at the site.

The RDKS is considering assessing the options of either taking over operations of the Dease Lake Landfill, or assist in landfill closure and transfer station development and operation. The landfill liability and ownership would remain with MOTI. Either the landfill or transfer station facility would fall under the Hazelton and Highway 37 North Service Area and associated cost recovery model. The RDKS will need to consider the long-term capital and operating costs.

The RDKS should contact MOTI to get an update on the status of the Dease Lake Landfill and future plans for the site. MH understands that the RDKS and MOTI have a meeting scheduled with the Ministry to discuss future options for the site and the best path forward. Factors that should be considered in future discussions between RDKS, MOTI, and Ministry include the following:

- Current cost recovery model of the Dease Lake Landfill, including revenues streams and operating costs. Review of how the facility is currently being funded.
- Historic, current, and planned usage of the site. Estimates may be available on how much waste was disposed by each party, which may impact the operational cost contributions assigned to each party.
- Review of cost sharing agreements with Telegraph Creek First Nation, as well as usage by the RDKS Electoral Area F and residents of Dease Lake First Nation.

The RDKS is also considering including Telegraph Creek in the Hazelton and Highway 37 North Service Area, should Dease Lake become a part of the RDKS. The cost recovery model for the Service Area would then need adjustment and the operations of the Telegraph Creek transfer station and closed landfill would have to be negotiated.

Additional information and discussion around expansion of the RDKS service areas are presented in MH's memo on residual waste management at new facilities and service areas[11].

Possible options to incorporate in the SWMP include:	
5A.	Assess the financial implications of District of Kitimat participating in the Terrace Service Area. The SWMP could be structured to allow, but not require, the District of Kitimat to use the Forceman Ridge WMF.
5B.	Assess the financial implications of including Dease Lake in the Hazelton and Highway 37 North Service Area.
5C.	Assess the financial implications of including Telegraph Creek Landfill and future transfer station in the Hazelton and Highway 37 North Service Area.

IMPACTS OF POTENTIAL STRATEGIES ON COST RECOVERY

Table 4 shows which stakeholder groups are affected by the strategies outlined in this memo.

[11] Options for Waste Management at New Facilities or in New Service Areas to Consider for Inclusion in the Solid Waste Management Plan (MH, April 2020)

Table 4. Organizations and categories of individuals impacted by the identified strategies for cost recovery.

#	Strategy	Terrace SA	Hazelton & Hwy 37 North SA	Industrial customers	Residents and local businesses	District of Kitimat	MOTI	Telegraph Creek Band	Village of Kitimaat (Haisla First Nation)	Comments
1	**Review cost recovery model within the Service Areas to provide fair cost sharing**									
	1A. Develop KPIs to assist in evaluation of the current cost recovery models between service areas based a common factor (such as per capita or household). Adjust cost recovery models to facilitate a continued service delivery fair to all residents and businesses.									
	1B. Include messaging around waste management cost in RDKS's public education efforts.									Providing open and honest communication to gain the trust and buy in from the public.
2	**Reduce cost**									
	2A. Complete detailed hauling analysis to assess the feasibility of alternative co-hauling and back-hauling options.									
	2B. Perform a cost-benefit analysis of baling and/or compacting recyclable materials hauled from the Hazelton and Highway 37 North Service Area.									The RDKS has recently been successful in negotiating scaled hauling fees, where the cost per mega bag decreases with the increase number of bags being hauled.
	2C. Regularly revisit agreements and operating procedures to explore options to reduce cost while maintaining level and quality of service. Develop long-term goals and strategies, including potential investment, with the purpose of reducing cost in the long term.									
	2D. Complete operational reviews for each facility, which would include a review of staffing, past operating performance, primary operating costs, and identification of areas for improvement.									

#	Strategy	Terrace SA	Hazelton & Hwy 37 North SA	Industrial customers	Residents and local businesses	District of Kitimat	MOTI	Telegraph Creek Band	Village of Kitimaat (Haisla First Nation)	Comments
3	**Increase revenue**									
	3A. Review the cost model for the landfill at Forceman Ridge WMF, and adjust tipping fees for industrial and out-of-service-area waste based on the results of the model. Develop "what-if" scenarios to assess the potential for additional revenue through increasing tipping fees.									
	3B. Assess the costs and benefits of introducing a "user-pay" cost recovery model in the Hazelton and Highway 37 North Service Area by introducing tipping fees and adjust tax requisition based on new tipping fee structure. Implement a "user-pay" cost recovery model if deemed beneficial to residents, businesses and the RDKS while following the Guiding Financial Principals.									
4	**Direct or indirect cost sharing between service areas**									
	4A. Review feasibility of amending bylaws to combine service areas to allow for direct cost and revenue sharing									Focus should be given to ensure the combing of the services areas is fair to all, and that the Terrace Service Area residents and businesses don't feel they are carrying the cost for both the capital investment in the Thornhill Transfer Station and the Forceman Ridge WMF
	4B. Assess the feasibility of redirecting industrial waste to the Hazelton WMF and/or Meziadin Landfill to allow indirect cost sharing.									

#	Strategy	Terrace SA	Hazelton & Hwy 37 North SA	Industrial customers	Residents and local businesses	District of Kitimat	MOTI	Telegraph Creek Band	Village of Kitimaat (Haisla First Nation)	Comments
5	**Expand service area**									
	5A. Assess the financial implications of District of Kitimat participating in the Terrace Service Area. The SWMP could be structured to allow, but not require, the District of Kitimat to use the Forceman Ridge WMF.									
	5B. Assess the financial implications of including the Dease Lake Landfill in the Hazelton and Highway 37 North Service Area.									
	5C. Assess the financial implications of including Telegraph Creek Landfill and future transfer station in the Hazelton and Highway 37 North Service Area.									