Tay Valley Township

REPORT

COMMITTEE OF THE WHOLE
March 7th, 2017

Report #PW-2017-07
Stephen Keeley, Public Works Manager

LANDFILL MASTER PLAN – TRANSPORTATION AND CURBSIDE PICKUP

STAFF RECOMMENDATION(S)

It is recommended:

"THAT, staff be directed to plan for implementation of curbside pickup of waste and recycling with a target start date of Fall 2018;

AND THAT, staff report to Council at regular intervals with progress updates."

BACKGROUND

In 2016 staff prepared a draft Landfill Master Plan (the Plan) for Tay Valley Township. The Plan covered the Township landfill's operational aspects, their association with the Strategic Plan and an analysis of the regulatory framework that governs any landfill operation in Ontario. Additionally, a financial model was created to best describe the operation and provide estimates of the financial implications of any considered changes. As a result of this comprehensive model, operational cost savings were explored, considerable savings through capital acquisitions were identified and finally, a large, yet affordable, extension of service delivery was revealed.

The focus of this report is to establish the impact of the capital acquisitions to bring landfill transportation capabilities in house and to further explore the possible implementation of curbside pickup. For completeness, operational aspects, strategic plan and the regulatory framework will be covered briefly but the Discussion portion will primarily deal with capital acquisition aspects and curbside pickup.

Landfills

There are five waste sites. Noonan's and Christie Lake are closed and the 3 open depots,[1] Maberly, Stanleyville and Glen Tay that have estimated remaining capacities of 6,000, 154,000, and 177,000 m^3 respectively[2], although this is somewhat in question and is being re-examined. The present rate of fill equates to 30 to 40 years of remaining capacity in Tay

[1] A Depot is a term to describe a location where residents bring their waste and recyclables
[2] According to the numbers in the 2015 MOE report by McIntosh Perry

Valley even if the remaining capacities, cited above, are over estimates. The landfill waste tonnage estimation for 2015 is at, or near, 800t and the diverted tonnages were just over 800t, yielding a provincially enviable diversion rate of almost 50%.

Strategic Plan

The Strategic Plan, applicable at the time of writing the "Plan", had two main initiatives related to waste management. First, was to determine the remaining life of the sites and secondly to identify diversion strategies to maximize the sites remaining life. The remaining life of a site is calculated yearly in the mandated report to the Ministry of Environment and Climate Change (MOECC). Notably, and as directed in the Strategic Plan, and a result of admirable volunteer work to construct and then run a vibrant reuse centre Tay Valley diverts more than 20 to 30 tonnes per year into the hands of secondary users. A waste audit, again mentioned in the old Strategic Plan, determined that there is 9% to 16% organics in the waste stream that could go to backyard composters rather than the landfill. Finally, an action item to review user fees has led to several reports including the Plan to consider cost of Waste and the Blue Box and Non Blue Box diversion segments.

Regulatory Framework

The regulatory framework for landfills has two main branches, environmentally structured legislation covering operations, closure and water testing and policies for recycling and waste diversion. The Environmental Protection Act provides the legislative framework for waste management facilities. Ontario Regulation 232/98 provides the legislative details of operation, design, closure and monitoring. Monitoring is further supported by The Ministry of Environment (MOE) guidelines B-7 and B-9 that specify Provincial Water Quality Objectives for operating and non-operating sites respectively. It is important to know that monitoring and reporting costs that were $150,000/y in 2013 plummeted to $75,000/y by 2015. There may be further improvements in approach and savings that can be explored in the future.

The second branch of the regulatory framework, Bill 90, promotes reduction, reuse and recycling and created the Blue Box Program on February 1st, 2004. The Blue Box Program is no longer viable due to changing lifestyles creating what is termed the "evolving tonne" and the inherently unwieldy administration linking municipal funding to producers. Bill 151, that received Royal Assent in 2016, is structured to deal with the "evolving tonne" and puts the onus on the producers to look after the cost of recycling. However, it will be several years before the Bill is in full force and impacts municipalities. Therefore, due the unexpected changes of the Blue Box Program, details covered in the remainder of this report about capital investments will not include the Blue Box. This is not to say that we can ignore recycling in the near future. We must proceed with an RFP or Tender to have a process in place prior to 2018.

Baseline Model

The model, used to best describe the operation of Tay Valley Township Landfills, has three segments, waste, blue box diversion and non-blue box diversion. Each segment of the model has a labour component, site cost allocation, transportation costs, and associated revenue. Additionally, the waste segment includes compaction & cover as well as engineering and monitoring. Once assembled and tested for correctness the baseline for all segments yielded a landfill net cost of $548,067/y.

DISCUSSION

In order to focus on decisions best made by Council early in 2017 this portion of this report will deal first with operational changes, then with transportation considerations and subsequently explore the possibilities of curbside pickup. The changes are cumulative to some extent, both financially and operationally, but there are complications. For example, there is a financial advantage to more fully utilizing the compactor at Glen Tay but once the second compactor is implemented the yearly savings of full utilization is bypassed in favour of having all waste compacted and contained.[3] Also, it is important to note that any compactor would have to be amenable to accept top loading from curbside collection trucks.

Baseline Model Discussion

The three segments of the model are waste, blue box diversion and non-blue box diversion. Each segment has components of labour, site cost, transportation and revenue while the waste segment also has compaction and cover and MOECC reporting costs. Allocations of direct labour (attendants) are 40% to waste 36% to Blue Box Diversion and 24% to Non Blue Box Diversion; site costs were allocated accordingly. Allocation of indirect labour (Administrative Assistant and Manager) was 40% to landfills, of that 40% was then allocated to waste, 36% Blue Box and 24% to Non-Blue Box diversion.

Table 1

Landfill Cost	Gross $000/y	Net $000/y	$/t
Waste	342	310	379
Blue Box	205	130	494
Non Blue Box	160	108	193
Total	**707**	**548**	

Noteworthy, is that the cost of the blue box diversion at $494/t is actually higher than the cost of the waste at $379/t such that diversion from the waste stream to the blue box stream at, for example, 10% would cost the municipality an additional $15,000.

A component summary of the model segments net costs are as follows:

Table 2

Component / Segment	Waste (k$)	BB (k$)	NBB (k$)	Total (k$)
Labour	98	88	59	245
Site Costs	42	13	8	63
Cover	76			76
MOE Reports	75			75
Advertising		3		3
Transportation	50	101	92	243
Revenue	(32)	(75)	(52)	(159)
Total Net Costs	**310**	**130**	**108**	**548**

[3] With only one compactor at Glen Tay open bins are required reducing pre-landfill compaction and attracting vermin.

Once the baseline costs were established and verified the financial model was copied and the total net cost line was frozen and then compared to any changes that were considered. For example, shown below is the examination of a 25% increase in construction & demolition (C&D) revenue. In detail, as shown below, extracted from the model, the non-blue box diversion net cost has decreased by about $8,000 dollars due to potential revenue increases.

Table 3

	Waste $/y	BB $/y	NBB $/y	Total $/y	Impact $/y
Net Baseline Case	309,549	130,433	108,085	548,067	
Increase C&D Revenue	309,549	130,433	100,150	540,132	**-$7,935**

Driven to some extent by the strategic plan but also input from Council and staff the model was used to study numerous options. In each case the potential or indicated cost or savings was considered as the difference relative to the net total cost in the baseline, as shown, for example, in Table 3.

Operational Changes

In a very brief review of the operational changes, if C&D revenue can be increased by an achievable 25% this would equate to a savings of $7,900 per year, as outlined in Table 3 above. If the Glen Tay compactor is more fully utilized to the 90% level a savings of $8,800 per year would be realized and if the site could be compacted and covered only once per week and not two times per week an additional yearly savings of $8,800 would be possible. These three operational items were identified early in the summer of 2016 and have already been put into practice. We now only cover on Thursdays, the present compactor is being more fully utilized and C&D revenue has been steadily increasing[4] from $75/t from January to July and to $129/t in the last half of 2016. With the increase in C&D revenue the net savings for that change is now at $24,000/y far beyond the expected $7,900 shown above in Table 3. This is a good outcome, of course, and in future, moving to flat fees[5] for different loads, will continue to achieve fair revenue and will also eliminate the confusion and misunderstanding about the cost of loads.

Second Compactor at Glen Tay

As noted previously the changes are cumulative but with some exceptions. The first 3 operational changes actually have netted a total yearly savings of just over $41k shown in column 1 of Table 4. Once a second compactor is put in place the savings related to full utilization of the single compactor is negated and the cumulative savings moves to column 2, Capital Investment, of Table 4. Column 2 is the capital investment column and with the compactor in place yearly savings would sit at $44,000. With investment in the second compactor all waste is fully contained for the week and is compacted prior to taking it to the face of the landfill; a distinct advantage. It must be noted that although viable, we cannot implement the second compactor until the timeline for a new operational and development

[4] This has been made possible by training and the installation of bylaw signage indicating the fees to support the landfill attendant's assessment of the load costs. Further improvements can be made by using standard charges per load.

[5] Flat fees could be for example - $40 for a car load - $75 for a half ton - $120 for a single axle trailer.

report and the subsequent environmental compliance approval is established. [6]

Transportation of Waste and Non Blue Box Diverted Material
The transportation costs for the Waste, BB and NBB segments are $50,500, $101,000 and $92,500 respectively. As explored earlier in August 2016, transportation of BB material to a material recycling facility is not cost effective, at least at this time[7]. However, to transport the waste between our sites and within our sites can be cost effective. The purchase of a roll-off truck at $80,000 from reserves would be $20,600/y in depreciation, fuel and maintenance with a net savings of $17,000/y. Purchase of a new roll-off truck at $150,000, from reserves, still reflects savings of $10,000/y. If a new roll-off's use is extended to transportation of metal and C&D, then a further savings of $27,000 could be realized.

When a roll-off truck is purchased, in theory only one compactor would be needed at the site. However, the compactor could not be dumped on the face because it would immediately need to be covered according to the ECA and savings gained from covering only one day per week would be lost. Therefore, two compactors are required at Glen Tay to contain a full week of waste in order to empty only one day per week.

If the roll-off is only moving garbage about there is no significant increase in savings, as shown in column 2 of cumulative savings in Table 4. Savings is increased to $60k per year if C&D and metal are now transported with the roll-off trucks.

Curbside Pickup

Advantages of Curbside Pickup at Tay Valley
At this point in the report cost savings have been identified and can be realized but there has been no increase in actual service delivery to Tay Valley Township residents. There are still hundreds, perhaps thousands, of cars driving to the waste sites each week. Curbside pickup would increase the service delivery and decrease the carbon footprint associated with the landfill by replacing the numerous cars with only 2 trucks. Curbside pickup, along with clear bags also afford more control as to what is landfilled.

Curbside pickup can be implemented at Tay Valley Township relatively inexpensively. Personnel can be reallocated, levy revenues allocated for transportation can be re-directed and compactor assets can be re-located and reused.

As part of implementing curbside pickup, activity at Stanleyville and Maberly would be suspended allowing personnel at these sites to be redeployed as Glen Tay attendants or curbside truck drivers. Thus, no additional personnel need be hired and the number of hours upon redeployment is increased by only 1,700 h rather than an addition 4,200 h if two new personnel had to be hired. Suspending activity at the two depots adds a further advantage in that all the compactors can be moved to Glen Tay. Therefore, more compactors do not have to be purchased to handle a week of waste and in non-peak times they can go for 2 full weeks before moving the waste to the face of the landfill. This is provided that the compactors can be modified for top loading.

[6] Engineering firms Jp2g and McIntosh Perry are working together to finish these reports and apply for the approval.
[7] As bill 151 is implemented transfer to a regional Material Recycling Facility may be feasible.

In 2015 nearly $250,000 of revenue from the levy was directed toward paying for transportation costs, see Table 2. By bringing transportation in house saves a portion of the cost to further pave the way for curbside financially and operationally[8].

Curbside Cost Details

At this point with operational improvements, the purchase of a second compactor and a roll-off truck, total net savings is $55k/y. This includes the increase in C&D revenue, single day compaction and cover, a second compactor and a roll-off truck that is transporting waste, metal and C&D including additional fuel, maintenance, insurance and labour costs. Purchasing two collection trucks[9] costing approximately $130,000 each ($260,000 total) would be debentured over 10 years at Infrastructure Ontario rates with depreciation also set at 10 years. Cost of the loan repayment and depreciation would be $59,000/y for 10 years and after the debenture is paid off only $26,000 thereafter for depreciation[10]. With additional considerations of labour, insurance, maintenance and fuel the cost of implementation totals $106,000 the accumulated cost, considering previous savings, would be $53,000/y. The addition of ramp construction to allow for easy unloading of waste and recycling plus the purchase of enough bins to hold a week's waste or modify existing compactors for top loading moves the cost up to $82,700/y.

Curbside Revenue

With the consideration of a pay-as-you-go practice such that the more garbage a tax payer generates the more they contribute for curbside collection, affixing a cost per bag of garbage is not unreasonable and provides an incentive to reduce. For example, using the same per bag cost as Rideau Lakes at $2.50 per bag the cost for curbside would move from the annual net cost of $82,700/y to $182,000 in revenue as compared to the baseline. Other potential financial impacts of other bag tag prices is shown in Table 4.

FINANCIAL CONSIDERATIONS

Recent operational changes have netted savings of over $40,000/y thus far. Further improvements and simplifications are possible with the move to flat fees for C&D waste. The purchase of a new compactor makes sense as it continues to be a cost saving measure as a backup for the old compactor that is now in place. All the waste can be contained for a week eliminating open bins and thus exposed waste that attracts vermin to the site and reduces the frequency of covering.

The purchase of a roll-off truck at this time actually reduces the savings if only waste is to be transported. Savings are increased if the use can be extended to movement of C&D and metal bins. Any respondent to the aforementioned recycling tender will have to have a roll-off truck and it may make sense to include waste bin movement, as required, as part of the that tender especially if the municipality is moving to curbside pickup. In that case all bins are located only at one site.

[8] Possessing roll-off trucks allows, in addition to transporting metal and C&D, for movement of compactors within the Glen Tay site

[9] According to Rideau Lakes a truck can pick up between 300 and 400 stops per day.

[10] After 10 years the reserve is high enough to buy the truck outright without a debenture, depreciation might be increase due to the likely increase in truck cost.

Going to curbside pickup is quite possible for Tay Valley Twp. because of a number of intrinsic advantages mentioned earlier. To implement all the changes and curbside as well would cost approximately $80,000 (or 1.5% on the current levy). Plus, this relatively modest increase can be offset by user fees for bag tags, making the entire endeavour a rare increase in service delivery with a cost savings; see below Table 4 for details. Not shown below is the one-time cost[11] of an engineering student to help establish the routes, schedules, vehicles, mail-outs, site geometry and other details of the operation.

Table 4
Individual and Cumulative Cost - Savings of Changes and or Acquisitions for the Landfill Operation (any number preceded by a – is a savings)

Considerations:			**Impact $/y**	**Cumulative Cost/Savings ($/y)**		
				1	**2**	**3**
				Operational	**Capital**	**Curb-side**
Status Quo						
1	Full Utilization of Glen Tay Compactor		-8,805	**-8,805**		
2	Proven Increase of C&D		-23,805	**- 32,610**	**- 23,805**	**- 23,805**
3	One Day Cover of Waste		-8,800	**- 41,410**	**- 32,605**	**- 32,605**
Capital Acquisitions						
4 New Compactor ($40,000)						
		Depreciation	4,000			
		Savings	-14,786			
		Total	-10,786		**-43,091**	
5 New Roll-Off for Waste ($150,000)						
		Depreciation	15,000			
		Supplies	11,600			
		Labour	13,899			
		Savings	-32924			
		Total	7575		**-37,517**	
6 New Roll-Off for Waste, Metal and C&D						
		Depreciation	0			
		Supplies	6,960			
		Labour	11,912			
		Insurance	1,000			
		Savings	-36,092			
		Total	-16,220		**-54,736**	
7 Curbside Pickup						
		Depreciation	26,000			
		Loan	32,864			
		Supplies	20,000			
		Labour	26,903			
		Insurance	2,000			
		Savings	0			

[11] $5,000 to $10,000

		Total	105,767			**53,032**
8 Ancillary Costs						
		Ramps	13,463			**66,495**
		Bins	16,155			**82,651**
9 Bag Tags		$1.00	-105,300			**-22,302**
		$1.50	-157,950			**-74,952**
		$2.00	-210,600			**-127,602**
		$2.50	-263,250			**-180,358**

CONCLUSIONS

1. Curbside pickup for Tay Valley Township is considered a significant and important increase in service delivery for the community. Without user fees it can be accomplished for 2% to 3% on the levy on its own. With consideration of the improvements and cost savings thus far the impact on the levy is much less. And then with recommended bag tag charges for the users it can be a revenue neutral or better while providing a large increase in service delivery with environmental advantages.

2. Purchasing a roll-off truck at this juncture is premature. Although there are some cost savings and advantages to having one that would add to the flexibility of the operation through movement of waste bins it is easy to include as a provisional item on a Blue Box recycling tender or RFP as required. Also the use and requirement of a roll-off truck will be much more clear with the solidification of the Circular Economy Act, beginning late in 2017 with tires and ending 2020 to 2022 with full implementation. If, however, curbside pickup is implemented a mechanism is needed to move containers from the single compactor unit or weekly to the face. At this point it might be sensible to purchase a roll-off vehicle.

3. An RFP or tender for a 2 stream or 1 stream recycling process is required before May 2017. Provisional items for bin movement, as required, needs to be included.

4. Flat fees for the C&D at waste site should be introduced to streamline the operation and perhaps further increase revenue.

5. A second compactor should be purchased and implemented at the Glen Tay Site. The compactor should be able to accommodate top loading of waste. Completion of the updated Operational and Development Report and the ECA should be expedited to allow the implementation of the unit at the site.

6. Continue to pare costs of the regulatory framework MOECC monitoring the rationalization of the number and location of wells needs to continue to be scrutinized and improved.

7. There are economies of scale and if the timing is right several municipalities should work together on an RFP or hire their own shared professional hydrogeologist (P. Geo.).

8. Organic portions of the waste stream are still at nine to sixteen percent. The organic home composter program should be reinstated.

9. Reuse Centre: the reuse centre has been described as an icon of the community and it speaks to the ingenuity and the farsightedness and the quality of volunteers in the Tay Valley. It was hard work to get it open and to keep it running requires endurance and perseverance by the long lasting volunteers

OPTIONS CONSIDERED

The purpose of this report is to outline the draft Landfill Master Plan in order for Council to best determine the future direction of waste activity in the municipality. Clearly improvements have been made to the operation and the Municipality could stop at this point in a status quo position leaving three depots open and tendering a two stream or less recycling contract[12].

Any contractor that is awarded the RFP or tender will have a roll-off truck and could continue to transport waste bins for the municipality as part of the contract. The decision to purchase a roll-off truck is uncertain due in part to Bill 151 and the Circular Economy Act. What is clear are the intrinsic advantages that Tay Valley has naturally in place to allow a smooth move to curbside. Reallocation of personnel re-deployment of compactor assets and the levy already in place contributes to a relatively inexpensive move to curbside; 1.5 % on the levy.

Price setting for bag tags can make this a cost saving endeavour, yet still being more than competitive with neighbouring communities that have curbside pickup.

A Future consideration of the Circular Economy Act is that whatever the operation is when the Act is in full effect, in perhaps 4 to 6 years, the municipality has the option of having the producers take over that operation. If curbside is in effect they, in theory, would have to maintain curbside. If on the other hand curbside is not in effect it would be very difficult to ever then move to curbside pickup at Tay Valley.

Option 1 (Recommended) – Council direct staff to plan for curbside pickup with a target start date of fall 2018.

Option 2 – Continue with the status quo operation.

STRATEGIC PLAN LINK

3.1 Identify remaining useful life at the landfill sites
3.2 Develop a waste diversion strategy to maximize remaining landfill capacity

[12] Two stream recycling would be fiber and containers – similar to other municipalities including the Kingston MRF

Prepared and Submitted By:

Stephen Keeley
Public Works Manager

Approved for Submission By:

Larry Donaldson,
Chief Administrative Officer