
TOWNSHIP OF DAWN-EUPHEMIA

ASSET MANAGEMENT REPORT

2016



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October 21, 2016

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TOWNSHIP OF DAWN-EUPHEMIA ASSET MANAGEMENT PLAN

EXECUTIVE SUMMARY

This Asset Management Plan provides the Township of Dawn-Euphemia with a tactical plan to manage their infrastructure assets. If the Township's assets are maintained at an acceptable level of service, it will help support the economic development and quality of life for residents in the community. This plan has been prepared as per the requirements in the Province's Building Together Guide for Municipal Asset Management Plans.

The Township of Dawn-Euphemia has 16 bridges, 92 culverts, about 479 km of roads, about 147 km of watermain, 5 facilities with a value over \$150,000 and an 18 vehicle strong fleet. The replacement cost of these assets was estimated at \$197.10 million. With 894 tax paying households in the Township, the replacement cost is about \$220,470 per household.

This Asset Management Plan includes the following:

- Summary of the existing infrastructure
- Process to score the risks, level of service and theoretical priorities
- Outline of target risks and level of service scores
- Strategies that can help to efficiently manage the assets
- Assessment of available finances
- List of financing options

Information from the recently completed road and bridge needs studies were used to complete this plan. It was generally assumed that the Township wants to maintain the current average condition ratings of the road, bridge, watermain, facility and fleet assets so they can maintain the current level of service that is being provided by these assets. Within the road and bridge reports and through discussions with Township staff, an average annual cost to address the capital improvement needs for these two asset categories was calculated at \$1,036,300. This is about \$450,500 more than the anticipated average annual capital budget available for the roads and bridges in the Township.

A detailed outline of the Asset Management Strategy to help efficiently manage each major asset class has been included in the report appendices. These may need to be updated in the future to reflect changes in the Township's circumstances, regulatory changes, advances in technology, and asset condition assessments.

Overall grades that take into account the condition ratings, level of services scores, risk scores and financial sustainability scores for the evaluated asset group were calculated as per the procedure and targets outline in the plan. They are shown in the following table.

Asset Type	Asset Letter Grade
Bridge	B-
Gravel Road	D
Surface Treated Roads	E
Asphalt Roads	D
Watermains	D
Facilities	A+
Fleet	E

The above summary table suggests that the level of service and/or financing being provided for surface treated roads and bridges are less than the Township's target levels. To address the surface treated roads, additional funds should be directed toward this asset type to improve the condition of these roads. With the bridges, the scheduled work in 2016 helped to improve the bridge letter grade. The tables within the report show that all asset types are slightly underfunded, but generally have acceptable scores in the level of service and risk categories.

To address the financial shortfall, we recommend the Township implement the management strategies presented in this report, take advantage of grant programs and, if necessary, increase tax revenues slightly. If the recommended strategies are not adequate, and other savings or grants are not obtained, a tax increase will be necessary. To provide a balanced capital funding program within five years, it is estimated a total tax increase of 17% above inflation or an average annual increase of about 3.5% in each of the next 5 years will be required.

The Township prefers to follow a pay as you go financing strategy and maintain some money in reserves for emergencies. With the changes proposed, this strategy should be able to maintain the Township's assets at a level of service similar to their current state without drastically reducing the amount of money held in reserves. Alternatively, some of the debt financing or project financing options presented in this plan can be implemented, as required, in place of the pay as you go strategy.

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TOWNSHIP OF DAWN-EUPHEMIA ASSET MANAGEMENT PLAN

1.0 INTRODUCTION

The Province of Ontario, Ministry of Infrastructure, want municipalities to prepare an Asset Management plan and in their guide *Building Together-Guide for Municipal Asset Management Plans*, they list the core municipal assets as roads, bridges, water and wastewater systems and social housing. The Township of Dawn-Euphemia is a lower-tier municipality within the region of Lambton County. The focus of the Township economy is agriculture, with 7 Settlement Areas at Florence, Shetland, Oakdale, Edys Mills, Rutherford, Cairo and Bentpath. At this time, a municipal sanitary system does not exist within the Township, and social housing is the responsibility of the County. The Township owns a water distribution system and purchases its water from the neighbouring Township of Enniskillen. Therefore, this plan includes roads, bridges and watermains located on local roads and collectors within the Township, arterial roads being the responsibility of the County. Also included in this plan are Township owned building facilities and Township maintenance fleet vehicles.

The Township of Dawn-Euphemia is primarily agriculturally based with a large natural gas compressor station located in the Township.

The Township of Dawn-Euphemia created a Strategic Plan in 2012. Among other items, the plan establishes that the Township's corporate mission is to "...provide the highest standards of integrity and responsible community leadership through sound financial management, the delivery of the most efficient and effective level of services possible and the promotion of a healthy and sustainable quality of life.¹" The plan also identifies features of the community that are highly valued and that the Township wishes to maintain. These include²:

1. Affordability - including lifestyles, housing and taxes
2. Sense of Community – small town feel
3. Natural Environment – access to natural areas throughout the Township that offer a variety of activities
4. Leadership – moving the community forward
5. Quality of Life – maintaining an enjoyable rural lifestyle welcoming for children

¹ *Township of Dawn-Euphemia Strategic Plan, 2012-2014.*

² *Ibid.*

6. Quality of Municipal Services – maintaining services offered to the public
7. Rural Based Community –maintain a strong agricultural sector
8. Diversified Assessment Base – integrate a strong industrial assessment into the community

The Strategic Plan also identifies goals for the Township. Two of which will be directly supported by this asset management plan. The first goal is ensuring long term financial sustainability which includes in its strategic actions *creating 5 to 10-year capital budget and developing a capital asset management plan*³. The second goal is addressing the Township's municipal infrastructure and facility needs which includes in its strategic actions *completing a comprehensive infrastructure needs study and undertake road, culvert and bridge improvements as required and financially feasible as well as developing a water main replacement program*⁴.

The Asset Management Plan will be referenced during the annual budget process to determine how proposed funding levels will address the recommended asset work. Any identified budget shortfalls will require a decision by the Township as to whether the work can and will be delayed, and whether alternate funding options will need to be pursued. In the long term the Asset Management Plan will be referenced when deciding taxation and user rates.

The purpose of the Asset Management Plan is to preserve the infrastructure, manage risk and provide satisfactory levels of service to the public in the most cost-effective manner over the asset life-cycle for all assets owned by the Township. The plan considers required integration between different asset groups (i.e. roads and bridges) to minimize duplication of cost and effort for a given location. For example, if a road requires re-paving which is expected to last 30 years but a bridge deck is not expected to require work for 2 years the bridge deck repair may be moved up or the road work delayed in order to avoid having to remove new pavement when repairing the bridge deck.

Since the Asset Management Plan includes projected expenses for the 10-year period, it improves the Township's understanding of future budget pressures and assists in predicting future infrastructure funding gaps and provides targets to close the gaps which exist. It also provides the opportunity to achieve cost savings by identifying deterioration early on and taking appropriate action to rehabilitate the asset. This information can then be used by Council when deliberating on budget matters and Township staff when developing capital and maintenance work plans.

The Asset Management Plan contains detailed recommended work lists for the next 10 years. The Township assets included in this plan were last assessed within the years listed in Table 1. The assets and Asset Management Plan will be reviewed and updated about every 5 years at which time the Township will evaluate whether other assets merit inclusion in the plan. Safety reviews of the bridges will occur every 2 years, in accordance with provincial regulations.

³ Township of Dawn-Euphemia Strategic Plan, 2012-2014.

⁴ Ibid.

Table 1 – Asset Condition Assessments

Asset	Last year Assessed
Bridges	2013
Roads	2013
Watermains	2015
Facilities	2015
Fleet	2015

Once per year, the capital and key maintenance work completed by the Township should be recorded in order to maintain the accuracy of the current asset inventory.

This plan provides information on the implementation of Asset Management in the Township of Dawn-Euphemia including an overview of the current state of local infrastructure, explanation of the target levels of service or goals, strategies to help maintain the target level of service and track the performance of this plan, explanation of the Township’s Financial strategies and a list of current and future work needs identified. However, while this document and appendices include some detail, references to external documents that contain additional information should be referred to when making decisions about a particular asset.

2.0 STATE OF LOCAL INFRASTRUCTURE

The asset groups included in this plan are the bridges, roads, watermains, facilities and fleet owned and maintained by the Township. A summary of these components and description of the state of the local infrastructure follows.

2.1 Bridges

Table 2 below summarizes the bridge assets as of September of 2016. This information was taken from the Township Bridge Needs Study dated July 2013, with updates for work completed since that time. In 2012, all the structures with spans of 3.0m or more, were reviewed and the observations were documented in general accordance with the *Ontario Structure Inspection Manual (OSIM)*. Within Appendix A is a more detailed table listing the relevant support documents, goals and strategies to be used with this asset type.

Table 2 – State of Local Bridge Infrastructure

Asset Group	Inventory Summary by Structure Type	Condition Summary Average BCI	Replacement Value of Assets (2016 Dollars)
Bridges	16 Bridges	Bridges – 75.4	Bridges – \$11.16M
	<u>92 Culverts</u>	<u>Culverts – 73.6</u>	<u>Culverts – \$21.72M</u>
	Total Structures - 108	Total Average – 73.8	Total - \$32.87M

To provide a common point of reference for the replacement values provided in Table 2, the total replacement value of the bridge assets is approximately \$18,445 per person based on a Township population of 1,782.

2.2 Roads

Table 3 below has been prepared to quantify the centerline kms of road owned and maintained by the Township and indicate the relative condition of these assets. The condition score is out of 10, with 10 being a new road, and 5 being a road ready for reconstruction. The methodology used to evaluate the roads is in general accordance with that outlined in the Ministry of Transportation’s Method and Inventory Manual for Small Lower Tier Municipalities. Within Appendix B is a more detailed table listing the relevant support documents, goals and strategies to be used with this asset type.

Table 3 – State of Local Road Infrastructure

Asset Group	Inventory Summary by Road Surface Type	Condition Summary Average Condition Rating (Length Weighted)	Replacement Value of Assets (2016 Dollars)
Roads	Gravel – 412.7 km Asphalt – 38.7 km Surface Treated – 25.9 km <u>Earth – 1.5 km</u> Total – 478.8 km	Gravel – 6.8 Surface Treated – 6.6 <u>Asphalt – 7.6</u> Total Average – 6.8	Gravel -\$111.41 Surface Treated -\$13.60 <u>Asphalt -\$13.34M</u> Total -\$138.38M

To provide a common point of reference for the replacement values provided in Table 3, the total replacement value of the road assets is approximately \$77,655 per person based on a Township population of 1,782.

2.3 Watermains

Table 4 below has been prepared to summarize the watermains included in this Asset Management Plan. The methodology used to evaluate the watermains is in general accordance with that outlined in the Guide for Municipal Asset Management Plans. An age-based condition score out of 5, with 1 being a new asset, and 5 having exceeded 70% of its life expectancy. A further description of the methodology used and the watermain network is outlined in Appendix C. Within Appendix C is a more detailed table listing the relevant support documents, goals and strategies to be used with this asset type.

Table 4 – State of Local Watermain Infrastructure

Asset Group	Inventory Summary by Location	Condition Summary Average Condition Rating (Length Weighted)	Replacement Value of Assets (2016 Dollars)
Drinking Water	Watermains – 147.1 km Master Meters & Pits - 5 Service Meters - 360	Watermains – 1 Master Meters – 2.2 Service Meters - 5	Watermains – \$19.13M Master Meters – \$39,800 <u>Service Meters - \$142,500</u> Total - \$19.31M

To provide a common point of reference for the replacement values provided in Table 4, the total replacement value of the watermain assets is approximately \$10,836 per person based on a Township population of 1,782.

2.4 Facilities

Table 5 below has been prepared to summarize the facilities included in this Asset Management Plan. Within this study only sizable buildings or other facilities with an estimated value greater than \$150,000 has been listed as a facility. The other smaller facilities will be maintained under the operating budget, as required. These facilities have been reviewed by Township staff and based on the needs identified and estimated replacement value, a Facility Condition Index score out of 10 was calculated. Within Appendix D is a more detail table listing the relevant support documents, goals and strategies to be used with this asset type.

Table 5 – State of Local Facility Infrastructure

Asset Group	Inventory Summary by Location	Condition Summary Average FCI	Replacement Value of Assets (2013 Dollars)
Facilities	Municipal Office	9.5	\$ 322,000
	Dawn Fire Hall	9.3	\$ 242,000
	Rutherford PW Depot	9.2	\$ 210,000
	Cairo PW Depot	9.2	\$ 195,000
	Community Centre	<u>10.0</u>	<u>\$ 1,834,000</u>
		Average FCI – 9.4	Total – \$ 2.803M

To provide a common point of reference for the replacement values provided in Table 5, the total replacement value of the facility assets is approximately \$1,575 per person based on a Township population of 1,782.

2.5 Fleet

Table 6 below has been prepared to summarize the facilities included in this Asset Management Plan. This information was taken from the Township’s Cash Requirements Budget 2016. Individual vehicles have been assigned an age based condition score out of 10, with 10 being a newer vehicle, and 1 being a vehicle which has exceeded its life expectancy. Within Appendix E is a more detail table listing the relevant support documents, goals and strategies to be used with this asset type.

Table 6 – State of Local Fleet Infrastructure

Asset Group	Inventory Summary by Vehicle Type	Avg. Condition Summary (Age Based Score)	Replacement Value of Assets (2016 Dollars)
Fleet	Light Duty – 3 Fire – 3 Heavy Duty – 5 Graders – 4 Tractors – 2 Backhoe - 1	Light Duty – 4 Fire – 5 Heavy Duty – 4 Graders – 1 Tractors – 9 <u>Backhoe – 8</u> Total Average – 4.3/10	Light Duty - \$0.1M Fire – \$0.775M Heavy Duty - \$1.14M Graders – \$1.40M Tractors - \$0.21M <u>Backhoe - \$0.1M</u> Total – \$3.74M

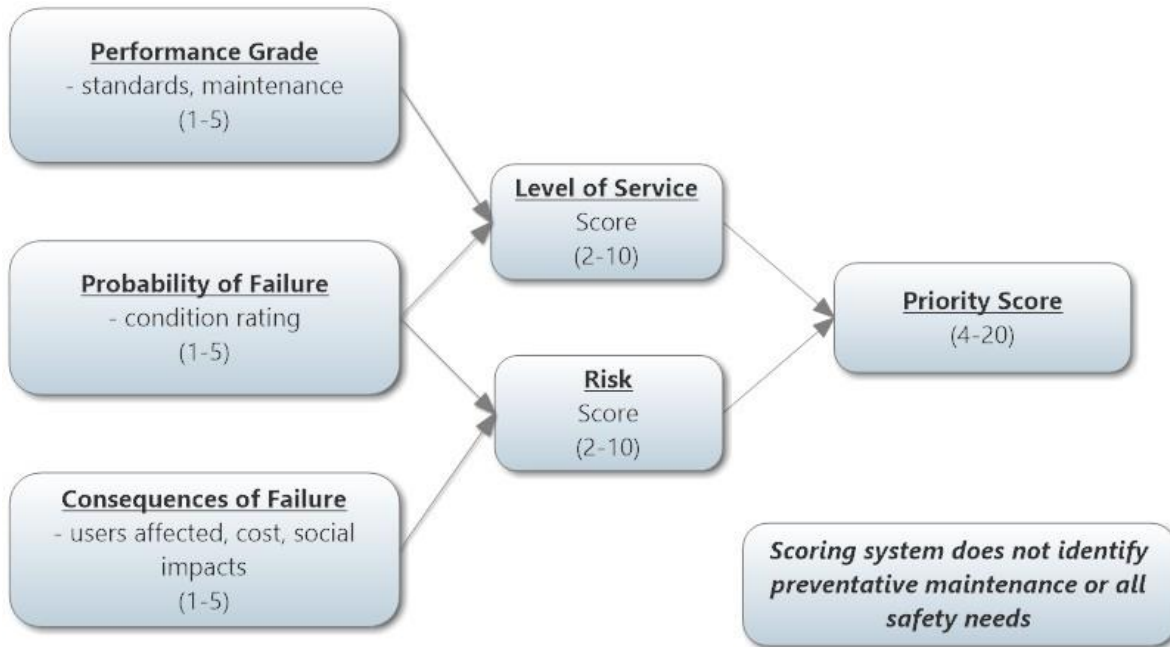
To provide a common point of reference for the replacement values provided in Table 6, the total replacement value of the fleet assets is approximately \$2,100 per person based on a Township population of 1,782.

3.0 LEVEL OF SERVICE SCORING METHOD

It is the goal of the Township to ensure their assets provide an acceptable level of service to residents while they are minimizing the risks and costs associated with maintaining that asset. To track the performance of the service being provided by an asset over time, a method to evaluate the level of service being provided and the associated risks is necessary.

When evaluating the performance of individual assets in comparison to the target level of service, we believe there are three key factors that should be taken into consideration; the probability of failure, the consequence of failure and the performance grade. While these factors can include many components, the **probability of failure** factor is generally represented by the condition rating or age of an asset. The **consequence of failure** is a score based on the number of users affected if the asset fails or other social impacts and the cost of the asset. The **performance grade** should incorporate the relative maintenance requirements of the asset and a comparison of how the asset was built versus the appropriate design standard for that particular asset. In a simplified way these components can be used as illustrated in Figure 1 to develop a Level of Service Score, a Risk Score and theoretical Priority Score for the improvements.

Figure 1
Relationship Between Data Collected and Tracked Parameter Scores



To explain how the table works, the road assets have been used. When evaluating the roads, the platform width of the road surface and the drainage condition score was used to calculate a performance grade for each road section. A score between 1 and 5 was assigned for each individual road section or asset. If the platform width of a road section is adequate for its application a score of 1 was applied. If the width was somewhat narrow, a score of 3 was applied and if the road was significantly narrower than it should be, a score of 5 was applied. Similarly, the good, fair and poor drainage condition ratings were assigned a score of 1, 3 and 5. The average of the platform width score and drainage score were used as the performance grade in the evaluation.

The condition rating was used to assign the probability of failure factor for each asset. When combining the condition rating with the other components as per Figure 1 prioritize the work, the condition ratings are changed to a score from 1 to 5 where a road section with a condition rating of 1 is in good condition and 5 is ready for reconstruction.

The consequence of failure value has been calculated based on the assumed or supplied traffic volumes on each road section. A score of 1 means it has an average annual daily traffic value of less than 50 and a road with greater than a 1000 vehicles per day would have a score of 5.

Figure 1 suggests that combining the probability of failure rating with the performance standard gives a level of service score and combining the probability of failure and consequence of failure value yields the risk score for each asset. These scores are established by simply adding the two scores together. Although these are just relative numbers, they may be used to define a level of

service score or risk score for each road section. The individual scores or the average scores can be monitored and tracked over time for future comparison purposes. With this Asset Management Plan, some suggested target values for different types of roads and other asset types have been provided.

According to the figure, the priority score for each asset is the combined level of service score and the risk score. The theoretical priority score should only be used as a guide to help prioritize improvement work to the assets. As explained in the road and bridge needs studies, there are other factors that should be taken in account when prioritizing asset improvements. Factors including preventative maintenance activities, scheduling tasks to coincide with integrated assets within the same area, financial and timing restraints and other activities taking place within the locale must be considered by staff. It is impossible to take into account all these other factors in a simplified scoring system. For this reason, the calculated theoretical priority score for the individual assets should only be used as a guide and the best sequence for improvements should be established by the Township staff responsible for those asset types. This priority score is not discussed further in this report as prioritizing the individual asset needs is beyond the scope of this plan.

Note, it is important to realize that according to this scoring system, it is desirable to minimize the risk score and minimize the level of service score. In other words, an asset with a low level of service score is in good condition and is able to perform as desired.

Also, while this process could also be used for the Facilities and the Fleet, it was felt that it would make the evaluation of these assets unnecessarily complicated. For these two assets, only a condition rating was used to assess the status of these assets. The condition rating for the fleet is based on age and the condition rating for the facilities is based on the needs to rehabilitate the facility relative to its replacement cost.

4.0 TARGET LEVELS OF SERVICE

The target levels of service outlined below for the various asset groups are statements of what the Township intends to provide to users of the Township's assets in order to support the Township's goals in a cost efficient manner. These targets are not intended to be binding or unalterable as it is understood that the target levels of service may need to be adjusted as circumstances change in order to deliver a more reasonable and efficient asset system.

In order to measure the applicable condition rating, levels of service and risk scores, each asset group has defined performance indicators which, going forward, will be used to monitor an asset group's performance over a set period of time. The Preventative Maintenance targets will be evaluated as a judgment call by Township staff. It is anticipated that every 5 years the condition ratings and other scores will be updated. These performance indicators are meant to be a simple measurable guide of whether Township asset decisions are having the desired effect on the overall asset inventory. Trends indicating that the performance is not matching the targets can then be examined in more detail to assess possible causes for the deviation.

Where applicable, the target levels of service will include meeting all regulatory requirements for safety, inspection schedules and maintenance. Where assets do not currently meet requirements due to original design; appropriate signage, or possibly appropriate barricades, should be placed until replacement occurs.

The data collected with the bridge and road study and information gathered pertaining to watermains, and the facility and fleet review by Township staff were assembled and reviewed to develop targets and evaluate how the assets within the Township compare with the proposed Target Levels shown in Table 7. The targets are presented here and the current performance level scores and letter grade for all assets are as shown in Section 7.

Table 7 – Target Asset Performance Levels

Asset Type	Condition Rating	Level of Service Score	Risk Score	Financial Sustainability Score
Bridge	Average BCI > 60 & Less than 15% with BCI below 40	Average LOS < 5 & Less than 15% above 6	Average Risk < 5 & Less than 15% above 6	Anticipated Costs = or < Available Budget
Roads Gravel	Average CR > 6 & Less than 25% below 5	Average LOS < 5 & Less than 15% above 6	Average Risk < 5 & Less than 15% above 6	Anticipated Costs = or < Available Budget
Roads Surface Treatment	Average CR > 6 & Less than 25% below 6	Average LOS < 5 & Less than 15% above 6	Average Risk < 5 & Less than 15% above 6	Anticipated Costs = or < Available Budget
Roads Asphalt	Average CR > 8 & Less than 25% below 8	Average LOS < 5 & Less than 15% above 6	Average Risk < 5 & Less than 15% above 6	Anticipated Costs = or < Available Budget
Watermains	Average CR <= 3 & Less than 25% above 4	Average LOS < 5 & Less than 15% above 6	Average Risk < 5 & Less than 15% above 6	Anticipated Costs = or < Available Budget
Facilities	Average FCI > 9 & 0% with FCI under 7	N/A	N/A	Anticipated Costs = or < Available Budget
Fleet	Average CR > 5 & 10% of Vehicle with CR <= 0	N/A	N/A	Anticipated Costs = or < Available Budget

Definitions:

- BCI, Bridge Condition Index as defined by the Ontario Structural Inspection Manual. Score ranges from 0 to 100, a higher score implies a better condition.
- Road Condition Score as defined in the Ministry of Transportation’s Method and Inventory Manual for Small Lower Tier Municipalities. Score ranges from 0 to 10, a higher score implies a better condition.
- Road scores are all weighted based on the length of the road section when calculating averages.
- Watermain Condition Score is based on the number of recorded breaks per pipe length and the age of the pipe.
- Watermain scores are all weighted based on the length of the watermain section when calculating averages.

- FCI is the Facility Condition Index. Score ranges from 0 to 10 and is based on the relation between the anticipated 5-year rehabilitation needs and the replacement cost of the building. A score of 10 implies the facility is in good condition and there are no needs while a score of 7 implies that the rehabilitation costs are equal to thirty percent of the replacement costs.
- LOS is Level of Service score as defined and described in Section 2 of this report, a lower score implies a higher level of service, Score ranges from 2 to 10.
- Risk Score as defined and described in Section 2 of this report, a higher score implies a higher risk. Score ranges from 2 to 10.
- The evaluation of the financial sustainability is a score out of 10 as outline in Appendix F where 10 implies good financial sustainability.
- Fleet condition rating ranges from 0 to 10. A score of 10 implies the vehicle is new and has its entire useful life remaining. A score of 5 implies the vehicle has used up have of its expected useful life.

External factors such as changes to existing and new legislation requirements, and environmental changes may also have an impact on performance level targets. Adjustments should be made to the performance level targets, as required, in future revisions of the plan if external factors dictate or there is a desire to improve or an acceptance a decrease to one or more target levels.

5.0 ASSET MANAGEMENT STRATEGY

The asset management strategy for each asset group is outlined in Appendices A, B, C, D and E. The Township strategy for all asset groups includes a preventative maintenance program that enables planned reaction to minor repairs rather than a delayed reaction resulting in a more significant repair and a higher cost. Integration of asset repairs over the various assets is also included in the strategies for the different asset groups, this will reduce duplication of effort at the same geographic location for the different groups. Complete elimination or duplication may not be possible in all cases, such as in the case of emergency repairs.

Disposal of assets will generally take place as part of a rehabilitation or replacement project. Costs for this aspect of the project will be included in cost projections for the work. Where disposal of the asset involves the sale of the asset to a third party or the exchange of assets with an upper tier of government, the asset will be removed from the Township inventory. The change will be noted wherever the removal of the asset may cause confusion in the asset management report (ie in comparison tables or graphs which may be affected by the assets removal).

Asset repair or rehabilitation projects will be fulfilled in accordance with the Township procurement policy as outlined in Bylaw 2016-29. Completion of a repair or rehabilitation of an asset with a high priority score will generally have the desired effect of decreasing the level of service score and reducing the risk score; however, sometimes there are other factors that should be used to help prioritize the asset improvement schedule within the Township. When there are recommendations within the asset inventory studies, the Township staff will review those recommendations, other needs of the Township and budget restraints, to establish the priorities of the Township. Should the performance of one asset type appear to be falling further behind the

targeted level of service, Township staff will consider applying more funds towards addressing the needs of that asset type. This will be discussed further in section 7.

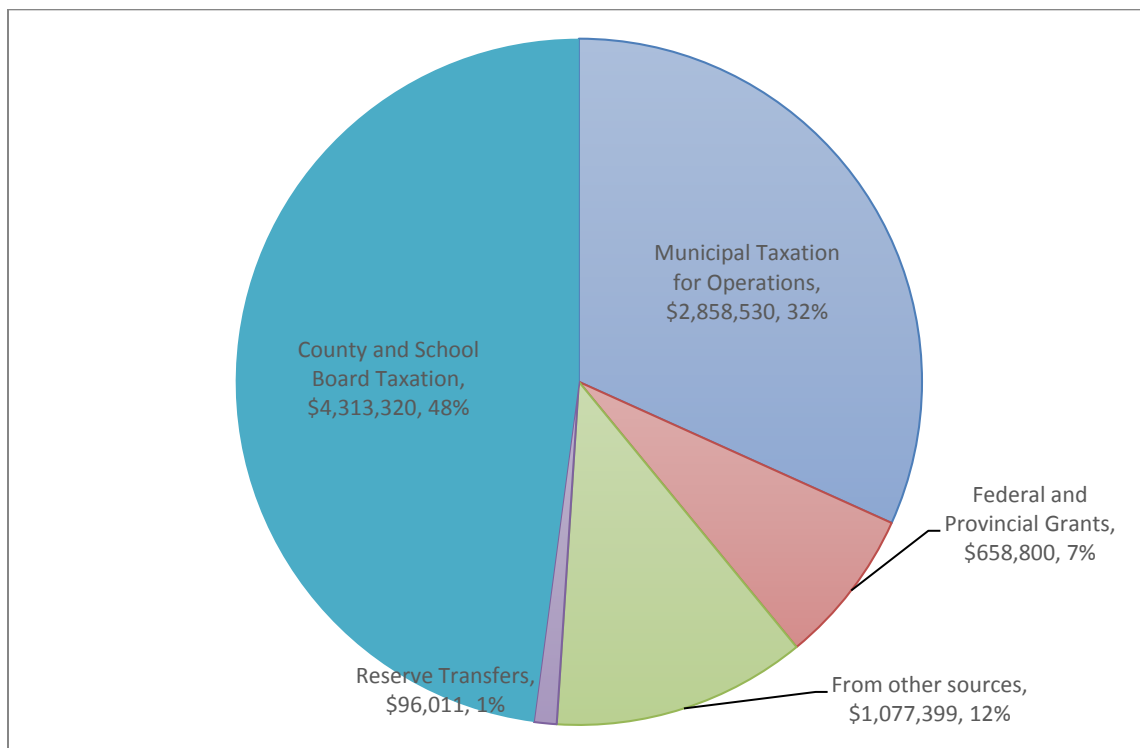
The asset group strategies will be re-evaluated on the same 5-year cycle as the Asset Management Plan or sooner if one asset strategy is found to require significant adjustment. Efficacy of the strategy will be measured by the comparison of future performance target scores to the scores calculated for past versions of the report.

6.0 FINANCING STRATEGY

Financial information, used in this section, was extracted from the Township's 2016 budget and the 2015 year-end financial report. Given there remains to be numerous unknown factors, the financial projections are considered to be only rough estimates of the available funds to address the capital needs. Through discussion with Township staff, it is their opinion the numbers presented are typical and suitable for use in this plan.

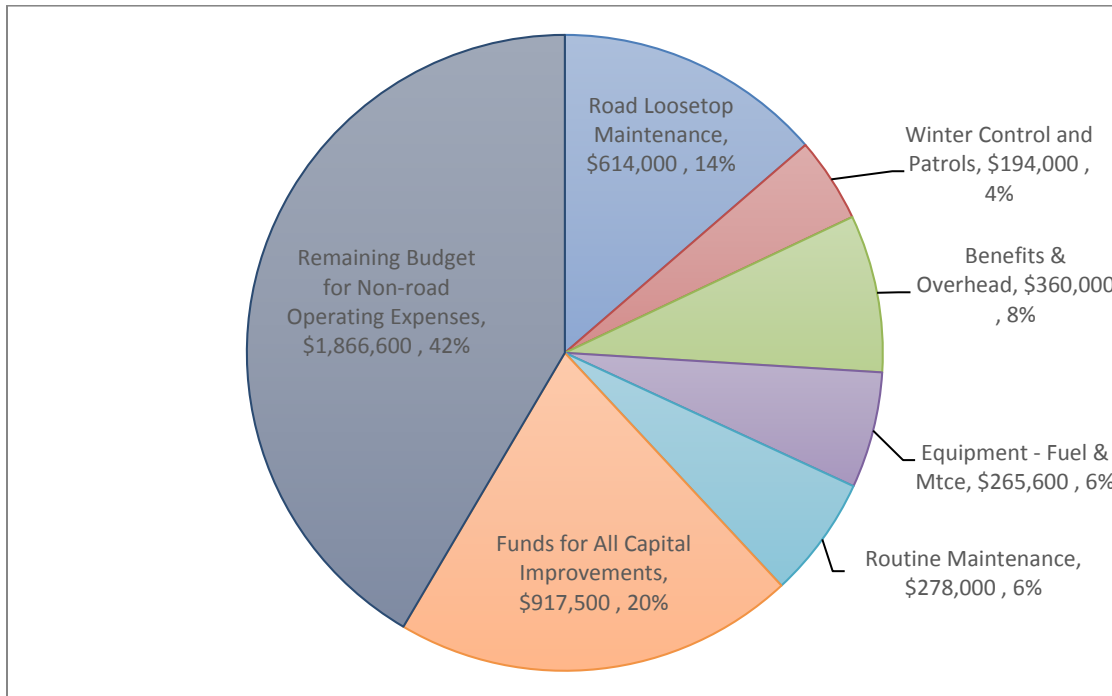
Figure 2 shows the Township's sources of revenue in 2016. The funds included in the miscellaneous revenue includes such things as the user fees, licenses, permits, and other all other revenues. The Federal and Provincial Grant amounts listed in this figure includes asset specific grants such as the Gas Tax Rebate. In 2016 the Township collected about \$7,171,850 in property taxes which includes the amount used for operations and the amount transferred directly to the County and School Boards.

Figure 2 – 2016 Distribution of Revenue Sources



An illustration of how the Township expenses were distributed in 2016 is shown in Figure 3. Note, the values presented in Figure 3 only include the operational revenue.

Figure 3 – 2016 Distribution of Operating Expenses



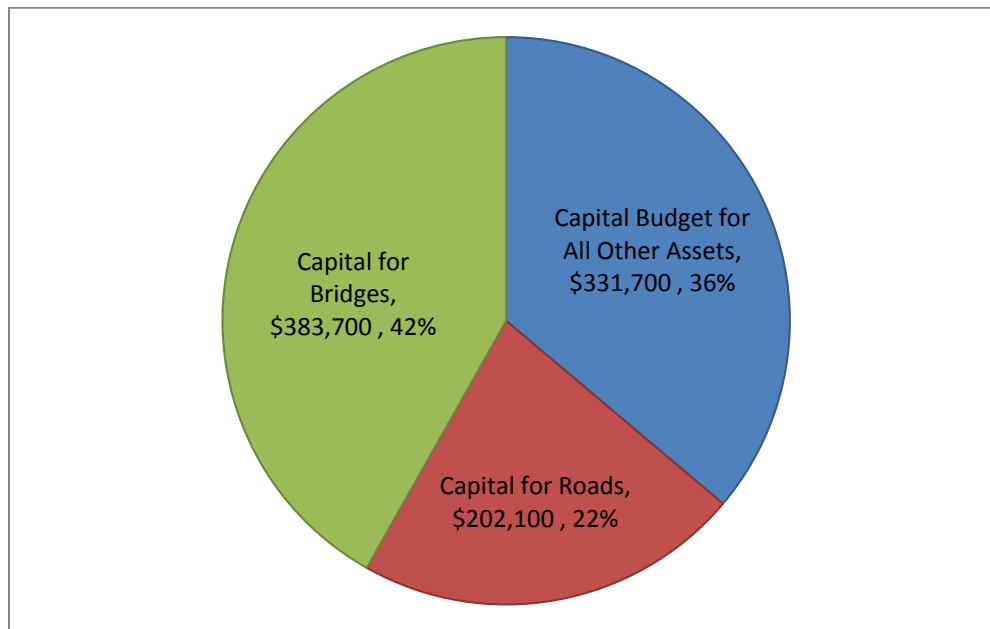
The financial records from the Township were also reviewed to determine how much money is available for capital improvements and the total number of assets owned by the Township. In 2016 there was \$917,500 available for capital improvements, including any dedicated grants.

The book value of the Roads and Bridges equaled 22% and 42% respectively of the assets owned by the Township that are maintained (funded) with property tax revenues. To determine the funds available for capital improvements of the roads and bridges, it was assumed that these same percentages (22% and 42%) of the money available for capital improvements would be used for the roads and bridges, respectively. Based on these assumptions, the amount of money from tax revenues available for capital improvements is presented in Figure 4.

The Township has several reserves for the renewal of Roads, Bridges and Fleet. The projected 2016 balances for Fleet and Equipment are: Roads - \$737,300, Fire - \$177,700; for Roads Capital - \$80,000; and for Water System renewals - \$639,800.

The 2016 Budget included funding from taxation to the Roads Fleet Reserve of \$130,000 and \$80,000 to the Roads Capital Reserve. These funding levels are projected to continue throughout the forecast period.

Figure 4 – 2016 Assumed Distribution of Capital Budget



A summary of the typical annual maintenance and capital budget for the roads and bridges is presented in Table 8. The table also shows that the anticipated Gas Tax Rebate, which must be spent on capital improvements of the roads and bridges, is \$59,330. To calculate the total amount of capital funds available, it was split up proportionally to the book value of each asset type and added to the taxation revenue available for capital improvements.

Table 8 – Typical Annual Operating and Available Capital Budget for the Roads and Bridges

Asset Group	Annual Operating Budget	Annual Taxation Revenue for Capital	Annual Gas Tax Rebate	Annual Capital Funds Available
Bridges	\$65,000	\$383,700		\$383,700
Roads	\$1,446,000	\$142,770	\$59,330	\$202,100
Fleet	\$280,000	\$135,700		\$135,700
Facilities	\$62,000	\$137,600		\$137,600
All Others		\$58,400		\$58,400
Water System	\$290,000			
Total	\$2,143,000	\$858,170	\$59,330	\$917,500

* The typical annual operating and capital budget values were calculated using the assumptions presented earlier. All the benefits and overhead costs were assigned to the roads operating budget.

Table 9, summarizes the replacement costs and the anticipated annual capital improvement costs for the asset groups listed. The replacement costs calculated were based on 2016 dollars and include probable design and construction costs. Typically, the costs are based on the existing bridge size and assume it is constructed to current standards. With the road replacement costs, it has been assumed the road would be reconstructed to the current municipal road section for that class of road.

Table 9 – Annual Capital Replacement Cost and Budget Summary

Asset Group	Replacement Cost ¹	2016 TCA Amortization ²	Anticipated Average Annual Expenditure ³	Anticipated Average Annual Available Capital Budget ⁴	Annual Surplus (Shortfall)
Bridges	\$32.87M	\$116,360	\$461,800	\$383,700	(\$78,100)
Roads	\$138.38M	\$26,580	\$574,500	\$202,100	(\$372,400)
Facilities	\$2.80M	\$62,900	\$15,000	\$137,600	\$122,600
Fleet	\$3.74M	\$96,810	\$263,000	\$135,700	(\$127,300)
All Other		\$49,580		\$58,400	\$58,400
Watermains	\$19.31M	\$115,450	\$101,915		(\$101,915)
Total	\$197.10M	\$467,680	\$1,416,215	\$917,500	(\$498,715)

¹ The replacement cost estimate assumes components are generally reconstructed as per municipal standard road sections and current bridge code standards.

² The amortization charges of the Tangible Capital Asset book values were taken from the 2016 municipal budget.

³ The anticipated average annual expenditure for bridges is based on the projected required work for the next 40 years. For the roads, it was based on the average projected needs over the next 10 years. For watermain, it was based on setting aside money each year to fund 75% of the future watermain replacement cost.

⁴ The anticipated annual average capital budget available was calculated using the 2016 budget figures and the assumptions presented earlier.

The Anticipated Average Annual Expenditure listed in Table 8 comes from the road and bridge studies and from discussions with Township staff for the other assets. The anticipated cost for the roads was generated using condition ratings, anticipated deterioration rates and probable cost estimates for the assumed type of improvement work required. The cost provided for the bridges take into consideration costs further into the future and were generated using the assumed service life for the asset indicated in Appendix A and B. Maintenance work on the assets is required to ensure the asset is able to achieve its anticipated life expectancy. Should the capital budget for 2016 be different than the recommended average annual expenditure, it may be necessary to adjust the budget in future years, use money from reserves or rely on using grant money to address the needs and maintain the assets at the Target Levels.

Table 9 shows that there is currently a calculated funding **deficit of \$498,715** per year over the next ten years. As the total tax revenue is approximately \$2,858,530 a tax increase of approximately 17% above inflation would be needed to avoid the deficit if no other strategies are employed. It is recommended this increase be phased in over 5 years to minimize the impact on the tax base.

Figure 5 – Anticipated Revenue and Capital Expenditure Forecasts

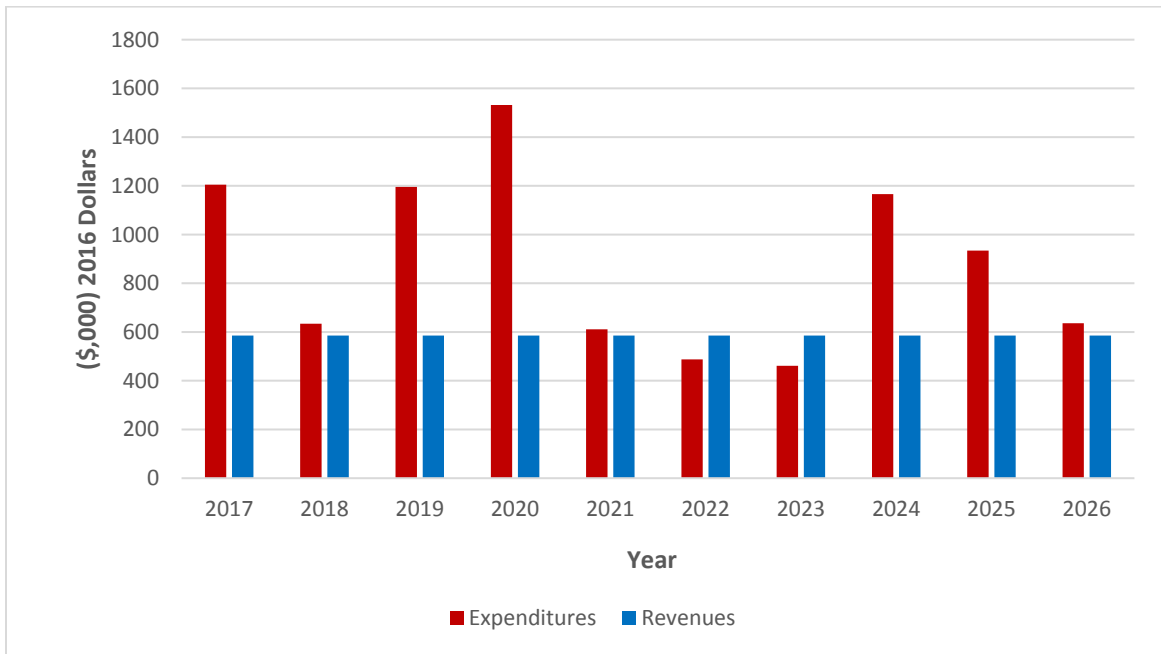


Figure 5 shows the anticipated revenue and capital expenditure forecasts in non-inflated 2016 dollars. To help simplify how the two are compared, it has been assumed that the inflation rate applied to the capital improvements, will be same as the inflation rate that affects the tax revenues. With this assumption applied, all comparisons are made in 2016 dollars and it is assumed that the increases applied to each will cancel each other out.

In September 2012, the Federation of Canadian Municipalities released the first *Canadian Infrastructure Report Card*. The *Canadian Infrastructure Report Card* does not distinguish between roads and bridges, and does not include utilities. It identified that the cost to replace all road sections in Canada that are in fair to very poor condition is \$7,325 per household in Canada. In comparison, the Township of Dawn-Euphemia road and bridge infrastructure costs to complete the anticipated work for the next 10 years is \$9,913 per tax paying household based on 894 tax paying households in the Township.

The construction of the vast majority of the Township’s hardtop roads, watermains, bridges, graders, and facilities was funded by significant contributions from the historical grant programs of the Provincial and Federal governments. Those grant programs provided in general 75% to 90% funding of the total costs. It would be fair to say that these assets would not have been acquired without those historical funding levels. The Township’s experience is similar to most of the small rural municipalities in Ontario.

The Township principally uses a pay-as-you go system to finance capital and maintenance expenditures. They have also taken advantage of grants to help complete larger capital improvement projects. This has historically allowed the Township to complete asset replacements and improvements when necessary; however, as the number of grants appears to be decreasing, while the service level expectations are increasing and assets age this may become more challenging. The Township plans to continue this strategy into the future for standard capital and maintenance work.

Occasionally the cost for large projects may exceed the capacity of the pay-as-you go strategy. The following strategies are occasionally used by municipalities when they require additional funding:

- applying for grants
- obtaining a loan
- issuing long term bonds
- setting up a public private partnership
- implement a user pay system to help fund the project

It is difficult for the Township of Dawn-Euphemia to implement some of these options given its size and the type of capital improvements typically required. The Township will continue applying for grants when they become available and, if necessary, use money from reserves or debt financing to address emergencies. If the opportunity presents itself and it is in the Township's best interest, the Township would consider a public private partnership or implement a user pay system. It is not expected to be cost effective for the Township to issue bonds.

For emergency repairs, it was explained that the Township will use reserves or debt financing to complete the repairs, where warranted, and adjust their following capital budgets as required to cover this repair. The Township has set a new debt financing target of a maximum of **5 %** of capital budgets in any 5-year period. This amount will be checked on a yearly basis to ensure that the Township continues to comply with the debt and financial obligation limit of a municipality outlined in the *Municipal Act, Ontario Reg. 799/94 as amended by O. Reg. 403/02 – Debt and Financial Obligation Limits*. If this target would cause the Township to exceed the amount allowed by the regulation it shall be adjusted downward.

For special projects, which lend themselves to public-private partnerships, the Township will entertain prospective partners to complete the work. However, this option is not expected to be practical for most infrastructure assets currently owned or expected to be owned by the Township in the near future.

7.0 SUMMARY

The Tables in this section summarize the current state of the infrastructure and financial budgets of the Township in comparison to the Targets presented in Section 4.0. The table has been colour coded to illustrate how well the asset groups are meeting their performance targets. Green implies the asset is meeting or exceeding that target, yellow implies it is close to meeting that target and red implies it is not achieving that target.

Table 10 – 2016 Infrastructure Report Card

Asset Type	Condition Rating	Level of Service Score	Risk Score	Financial Sustainability Score	Asset Letter Grade	
Bridge	Average BCI = 73.8	Average LOS = 3.9	Average Risk = 4.5	83%	B-	
	5.6% with BCI below 40	2.8% above 6	13.9% above 6			
Roads Gravel	Average CR = 6.8	Average LOS = 3.8	Average Risk = 4.0	35%	D	
	6.0% with CR below 5	5.1% above 6	0.3% above 6			
Roads Surface Treatment	Average CR = 6.6	Average LOS = 3.9	Average Risk = 5.8		35%	E
	23.8% with CR below 6	0% above 6	47.5% above 6			
Roads Asphalt	Average CR = 7.6	Average LOS = 3.1	Average Risk = 5.1			35%
	47.0% with CR below 8	0% above 6	25.7% above 6			
Watermains	Average CR = 1.0	Average LOS = 2.0	Average Risk = 3.1	0%		
	0% with CR below 4	0% above 6	0% above 6			
Facilities	Average FCI = 9.4	N/A	N/A	100%	A+	
	0% with FCI under 7					
Fleet	Average CR = 4.3	N/A	N/A	52%	E	
	44.4% with CR below 1					

- Note:
1. Refer to Table 6 for definitions of targets and scoring system.
 2. When reviewing the Level of Service, and the Risk Score, a value out of 10 is applied with a lower score implying the average score for that asset is in relatively good condition and a high score implying it is in poor condition or it represents a higher risk.
 3. The Asset Letter Grade is a number out of 100 calculated and converted to a letter grade as outlined in Appendix F.

8.0 CONCLUSION

The Asset Management Plan, as presented in this report, outlines the strategies that will be employed to meet the target levels of service for the different asset groups in a cost-effective manner. The target levels of service were set to meet the principal Township goal of maintaining the targets as defined in the plan. These include factors such as level of service provided, level of risk, condition and financial target.

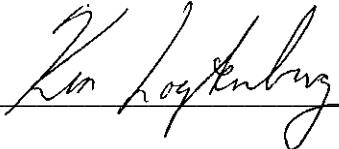
The asset groups included in this report are roads, bridges, watermains, facilities and fleet. The asset inventories for the five groups were completed in 2013 and 2015. Bridges are scheduled to be reviewed every 2 years as per the provincial regulations, all other asset groups will be formally reviewed on a 5-year cycle, and informally reviewed during regular maintenance activities. The Asset Management Plan will be updated about every 5 years and will include a review of the target levels of service and whether they are still supporting the goals of the Township or whether they require adjustment.

Each asset group in the Township has been assigned an overall letter grade, going forward this grade will be referenced in future reports. This comparison will help to determine whether the strategies are having a positive effect on the Township's assets or if more resources need to be allocated to a particular asset type.

Strategies are outlined for the rehabilitation and repair for each asset group along with the expected cost per year for the next 10 years. Based on the costs presented in the 2016 budget and the anticipated grant funds, it is estimated the Township can apply \$917,500 towards capital renewals and capital maintenance. This represents about 20% of their operating budget. It is estimated that the Township will encounter an annual financial shortfall of \$498,715 to address the projected capital improvement needs of the assets analyzed in this plan. To address this shortfall, the Township will either have to find cost savings, obtain grant funding or implement a tax increase. If no savings or additional grants are found, it is calculated that the Township would have to increase the taxation revenues by about 17% above inflation over the next five years to match the anticipated annual capital improvement needs and avoid deviating from the target service levels.

All of which is respectfully submitted for your approval.

B. M. ROSS AND ASSOCIATES LIMITED

Per  _____

Ken D. Logtenberg, P. Eng

Per  _____

Rick Steele, GISP

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