

Asset Management Plan



Ensuring long-term financial sustainability
by providing essential services that meet
approved standards at minimum cost

April 18, 2011

STAFF REPORT: Financial & Information Services



REPORT TO: Council
MEETING DATE: April 18, 2011
REPORT NO.: FIS.11.10
SUBJECT: Asset Management Plan
PREPARED BY: Darcy Chapman, Capital Accountant

A. Recommendations

THAT Council receive Staff Report FIS.11.10 “Asset Management Plan”; and,

THAT Council adopt the plan as an input into the annual budget process necessary to facilitate Council in their decision making process: and,

THAT the Asset Management Strategies as attached be updated from time to time in accordance with changes to best management practices, technology, financial constraints and the outcome of asset condition assessments.

B. Executive Summary

The Town of The Blue Mountains’ (the Town’s) existing infrastructure is aging and deteriorating while demand grows for better infrastructure facilities. This demand is in response to higher standards of safety, accessibility, health, environmental protection, and regulations. The solution to this issue is to examine the way the Town plans, designs and manages infrastructure to meet changing demands.

One proven way of doing this is to apply Long Range Infrastructure Planning (LRIP). LRIP is not a new concept. It has been widely used for many years and has evolved into what is now more commonly known as “Asset Management”. Staff have reviewed long range infrastructure strategies, current technical and financial practices and consolidated them into an Asset Management Plan.

The Asset Management Plan as presented in this report is comprised of the following two components:

1. An overview of the fundamentals of an Asset Management Plan based upon best management practices obtained from;
 - Other municipalities
 - Federation of Canadian Municipalities
 - Ontario Good Roads Association
 - American Water Works Association
 - Ontario Recreation Facilities Association
 - Association of Municipal Clerks and Treasurers of Ontario
 - Municipal Finance Officers Association

2. An Asset Management Strategy for each major asset class.

This format was selected to ensure that the asset management strategies as attached in Appendix A could be updated from time to time according to changes in best management practices, advances in technology, financial constraints or changes to the condition assessments.

The Asset Management Plan as presented in this report is a systematic process that allows for the operating, maintenance, and upgrading of the Town's physical assets in a cost effective manner.

Implementing an Asset Management Plan will ensure the Town can meet new demands in a fiscally responsible and environmentally sustainable framework while preserving the Town's quality of life.

C. Background

Asset Management Plan – What is it?

An Asset Management Plan is a plan developed for the management of one or more infrastructure assets within the municipality that combines multi-disciplinary management techniques, including technical and financial, over the lifecycle of the asset(s) to a specified level of service in the most cost-effective manner.

Integrated asset management plans are similar to the description provided above. The integration refers to the infrastructure that shares a common location within the utility corridor such as roads, curbs, gutters, streetlights and sewer and water systems. Each asset has a different lifecycle which results in the need for the technical and financial experts to consult and determine, based upon the condition of each asset, the need for replacement or rehabilitation. A road that requires resurfacing drives the need to review the condition of the water and wastewater system resulting in an overall strategy. A water system may require rehabilitation hence it drives the need to renew the road and determine if a trench (asphalt patch) or the entire asphalt surface is replaced.

Buildings have various components with differing lifecycles. The same concerns need to be determined when heating, plumbing, electrical, flooring and windows and doors need to be replaced and how that may affect the other systems within the structure.

The following associations that the Town is a member of promote cooperation between various stakeholders, and through the exchange of information, facilitate asset management practices and activities within the utility, transportation, recreation and construction industries;

- Ontario Good Roads Association (OGRA)
- Municipal Engineers Association (MEA)
- Ontario Municipal Administrators Association (OMAA)
- Ontario Water Works Association (OWWA)

- American Water Works Association (AWWA)
- Water Environmental Association (WEAO)
- Ontario Recreation Facilities Association (ORFA)
- Ontario Trails Counsel (OTC)
- Association of Municipal Clerks and Treasurers of Ontario (AMCTO)
- Municipal Finance Officers Association (MFOA).

An Asset Management Plan also incorporates the existing preventative maintenance and risk management programs to preclude the risk of failure. The preventative maintenance component ensures that the day-to-day wear and tear on the asset is dealt with to ensure that the asset can reach its expected lifecycle. The risk management component ensures that Staff manages the risk through due diligence.

Asset Management Plan – Why does the Town want one?

Asset Management Plans enhance budgeting and planning processes by modelling future capital costs beyond the Town's current five year planning practice. This will aid in the Town understanding future budget pressures and assist in providing options on closing any infrastructure gaps. As well, a fully implemented plan will provide real life Town specific data on maintenance and operations costs allowing Staff to generate tools to develop life cycle costing and long-term performance measures. The plan will also give direction on proactive preventative maintenance and rehabilitation which will ultimately lower costs. This information is important to Council when deliberating on budget matters.

Asset Management Plan – What are the benefits?

Specific benefits associated with an Asset Management Plan are:

- Allows for better decision making regarding resource allocation;
- Leads to more effective communications with ratepayers, elected officials, financial rating organizations and regulatory agencies;
- Provides consistent levels of service to the public;
- Better management of risk to the municipality;
- Allows for more effective financial planning;
- Reduces lifecycle costs;
- Leads to more efficient data management;
- Facilitates the establishment and subsequent implementation of policy objectives and the related measurement of performance;
- Avoids problems and potential crises;
- Results in positive institutional change.

Asset Management Plan – What are the key principles?

Asset management can be characterized by the following key principles:

- A strategic and proactive approach that places a premium on data, information, collaboration and interdisciplinary management;
- A comprehensive long-term view of infrastructure performance and cost;
- An explicit, visible and transparent approach that requires effective communication among all stakeholders;
- A business case involving investment choices that are policy driven with tradeoffs among competing priorities.

Asset Management Plan – What are the essential components?

In order for an Asset Management Plan to fulfill the principles of asset management, the following essential components must be contained in the overall plan:

1. Asset Value:

All municipal infrastructure assets have a monetary value. Staff has determined the actual capital value for some of the assets and for others provided an estimate. This was completed through the Tangible Capital Asset processes using PSAB 3150 Guidelines.

2. Lifecycle Management:

All assets have a limited life expectancy. To some degree the rate of deterioration can be estimated. A decision made at any point in time in the lifecycle of an asset has an effect on the remaining life and may have operational implications and related costs. The lifecycle for each asset as presented in this report is contained in the attachments and is based on report FIS.10.13 Tangible Capital Asset Accounting Guidelines as approved by Council on April 26, 2010.

3. Sustainability:

In terms of asset management, sustainable development has been defined as “meeting the needs of the present generation without compromising the ability of the future generations to meet their own needs”. This definition has been extracted from the “National Guide to Sustainable Municipal Infrastructure”. The Asset Management Plan needs to identify a financial plan over the long term to ensure that sufficient monies are available. These monies provide the resources required to operate, rehabilitate, dispose and ultimately replace the asset at the optimal time with the intention of achieving the lowest lifecycle cost. The plan helps make sure that current users pay a fair share for the service they receive and that future users pay a similar cost for the same level of service which ensures multigenerational equity and fairness.

4. Integration of Technical and Financial Plans:

The technical plan must minimize lifecycle costs for the infrastructure while maintaining an adequate level of service at the lowest possible level of risk. The financial plan must identify the financial investment required per year for each asset over the long term, including any larger than normal expenditures to meet the requirements of the technical plan. Ideally, the two plans should be integrated so the relationship between the level of service and the cost can be quantified. The plans attached to this report integrate the financial investment level required to the level of service. The technical and financial relationship may change from time to time depending on the outcome of asset condition assessments.

5. Risk Assessment:

Risk should be managed in any decision making process. The owner of the assets should analyze and document acceptable risk tolerance. In the Towns' case, the probability of failure is taken into account while the condition of the asset is being analyzed. The condition survey leads to determining the rate of failure and the consequences of such failure. Risk factors can include financial, environmental, regulatory/legal and public health and safety.

6. Performance Measurement:

To optimize an Asset Management Plan, performance of the assets and rehabilitation strategies should be monitored regularly and adjustments made at the appropriate stage in the asset lifecycle to achieve an acceptable balance between cost and the performance (level of service). The Town can take advantage of tools provided by various organizations including OGRA, OWWA, ORFA and will be able to utilize performance measurements established as part of the Ontario Municipal Benchmarking Initiative (OMBI). These benchmarks (for some of the assets) have been compiled into a comprehensive database that can be easily accessible and can be used to determine the performance of the asset.

Other Initiatives

As a member of OGRA, the Town has taken advantage of providing road and bridge asset data to the association to help with the construction of a province wide database through OGRA's Municipal Data Works (MDW) program. MDW is a data collection point for all roads related assets of member municipalities in Ontario. OGRA uses the data as an illustrative tool to understand the infrastructure gap in the province. This is then used for demonstrative purposes when the association lobbies the Ontario Government for increased grant funding to provide for asset renewal and rehabilitation of roads and bridges. More importantly the data is used to establish asset management best practices and performance measures for the municipal sector.

Another undertaking of the Town to support the Asset Management Plan is the purchase of budgeting software in 2011. It is anticipated that the software will include an integrated infrastructure asset management software program. The asset management tool will assist with the overall administration of the asset management plans described within this report. The system should help staff to monitor scheduled and unscheduled maintenance, and to record and monitor inspection results and work order schedules. The common database will also ensure that everyone is working from the same page to ensure coordination of projects. The end result is that capital projects can be better planned, and the long term planning associated with the asset management plan can be better managed with the intention of maximizing the life of the asset.

The Town's current Capital Asset inventory and subsequent estimated annual depreciation is highlighted below in Table 1. The 2011 budgeted capital expenditures and reserve contributions for replacement of these assets are also shown. It should be noted that there currently is a funding deficit of \$2.68M. This however does not fully illustrate the annual needs, as funding the depreciation only considers the replacement of assets at the historical (original) purchase price and not the current replacement value. A full understanding of the requirements will be better understood after all asset classes have been analyzed.

TABLE 1

	Historical (Original) Cost	Annual Depreciation	2011 Budget	Annual Shortfall
Water	\$ 51,500,000	\$ 882,000	\$ 602,000	\$ 280,000
Wastewater	\$ 69,400,000	\$ 1,095,000	\$ 585,000	\$ 510,000
Transportation	\$ 75,900,000	\$ 2,290,000	\$ 700,000	\$ 1,590,000
All other Town Services	\$ 25,200,000	\$ 1,033,000	\$ 730,000	\$ 303,000
TOTAL	\$ 222,000,000	\$ 5,300,000	\$ 2,617,000	\$ 2,683,000

D. Conclusion

The Asset Management Plan as presented in this report is a systematic process that allows for the maintenance, upgrading and the operating of our physical assets in a cost effective manner. The implementation of an Asset Management Plan provides the Town with a decision making tool to analyze new demands and deliver fiscally responsible options in an environmentally sustainable framework that supports preserving our quality of life.

E. The Blue Mountains' Strategic Plan

Strategic Goal #2

Addressing the Town's municipal infrastructure needs

2.1 Identifying existing deficiencies in the current municipal infrastructure.

Strategic Goal #5

Ensuring long-term financial sustainability

5.4 Develop a capital asset management plan

F. Financial Impact

The Financial implications (estimated cost per year for strategy described) are presented in the attachments to this report. It is important to recognize that based upon the Plan, the amount of funds available through the current five year Capital Budget process may not be sufficient to sustain the current level of service. Staff will continue to collectively work together to accommodate the financial and technical requirements of this plan, including taking advantage of any grant funding programs that may be available today or in the future.

G. Attached

Appendix A – Asset Management Strategy

1. Water Treatment and Distribution
2. Wastewater Treatment and Collection
3. Storm Sewers and Storm Water Management Facilities
4. Paved Roads
5. Unpaved Roads
6. Sidewalks
7. Bridges
8. Streetlights and Traffic Signals
9. Fleet
10. Facilities

Respectfully submitted,

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water treatment
and distribution

Asset Management Strategy

Asset:	Water Treatment and Distribution System
Inventory:	1 Water Treatment Plant, 5 water storage facilities, 8 water pumping stations, 120 km. of watermain, 669 hydrants, 2800 valves, 41 chambers, 6900 water services.
Anticipated Asset Life Cycle:	Life Cycles can vary from 25 years to 100 years. Valve replacement varies from 25 to 50 years. Water plant and pump stations from 30 to 50 years. Hydrant life cycles are estimated at 40 years, chambers at 50 years. Water storage is estimated at 75 years and watermains have a cycle between 50 and 100 years. These life cycles assume adequate maintenance is provided through the course of the components life.
Integrated:	May be integrated with road resurfacing, road reconstruction work and other utilities such as wastewater, hydro, telephone, natural gas and cable. It may also be a standalone replacement with a trench cut and repair if the Roads & Drainage Division is not planning repair and the watermain is required to be replaced.
Rehabilitation and Replacement Criteria:	The criteria for prioritizing the replacement schedule for watermains is the break history of the pipe, age of pipe, material type of pipe, size of pipe, soil conditions surrounding the pipe, pressure related issues and hydrant spacing. The road rehab program may bump up the replacement of a pipe segment if replacement is scheduled in the near future. The replacement criteria is difficult to define but studying break histories and failure trends can determine when maintenance costs are increasing at a high enough rate that economically it makes sense to simply replace or rehab the pipe.
Rehabilitation and Replacement Strategies:	Watermain rehabilitation is based on the current condition of the pipe. It is difficult to determine the condition since it is buried and the Town may use high pressure cleaning and videotaping to determine condition. For this reason, the replacement strategy mainly relies on the break history, age/size and material type of pipe and hydraulic requirements plus keeping up with current road projects. There are numerous methods of rehabilitation for watermains such as complete replacement, cleaning and re-lining and potential pipe bursting. Cathodic protection also helps prolong the life expectancy of the pipe.
Life Cycle Consequences:	The results will be catastrophic failures at undetermined and unexpected times. Some pipe materials with 100 year life expectancies are in need of replacement after 30 years whereas some 100 year old pipe can be simply maintained or rehabilitated to gain 50 years plus of additional service life.

Integrated Asset Priorities:	A deteriorated watermain is replaced because of the level of risk that can be absorbed. Some problem areas are less of a priority and disruption to service and repairing the mains is tolerable. Replacement is a high priority where fire protection, water quality and disrupted service can result in water loss and collateral damage. Other utilities such as wastewater, hydro, telephone, gas and cable may be integrated into the work as well. Often road rehab projects help accelerate the project priority.
Corporate/Consulting Reports on subject:	Town of The Blue Mountains Water and Wastewater Rate Study (Hemson Consulting, 2007), 20 Year Capital Plan - Water Division (April 18, 2011), Town of The Blue Mountains Water Financial Plan (May 9, 2011), Comprehensive Hydraulic Water Modeling Study (GHD Inc., anticipated completion spring 2012)
Estimated Cost per year for Strategy described:	\$1.288 million per year
Other information or reference materials:	N/A



wastewater treatment and collection

Asset Management Strategy

Asset:	Wastewater Treatment and Collection
Inventory:	2 wastewater treatment plants, 12 sewage pumping stations, 78 km sanitary sewers, 851 sanitary manholes, 5800 sanitary sewer service connections
Anticipated Asset Life Cycle:	Life cycles can vary from 15 years to 100 years. Wastewater plant and sewage pump stations from 30 to 50 years. Wastewater plant equipment, pumps, blowers and SCADA systems from 15 to 50 years. Manhole life cycles are estimated from 30 to 75 years and wastewater trunks have a cycle between 50 and 100 years. These life cycles assume adequate maintenance is provided through the course of the components life.
Integrated:	May be integrated with road resurfacing, road reconstruction work and other utilities such as water, hydro, telephone, natural gas and cable. It may also be a standalone replacement with a trench cut and repair if the roads department is not planning repair and the sanitary trunk is required to be replaced.
Rehabilitation and Replacement Criteria:	The criteria for prioritizing the replacement schedule for sewers are based upon an assessment through a CCTV inspection. The camera work will allow staff to rate the condition of the infrastructure. Other factors affecting the criteria will include localized collapses, material type, upsizing requirements as well as the coordination with the roads replacement program.
Rehabilitation and Replacement Strategies:	Sanitary sewer rehabilitation will be based on the condition rating of the infrastructure. In most cases, once the pipe has been inspected and given a condition rating, town staff can determine the best method or rehabilitation. Replacement will be the most common method for collapsed or heavily deteriorating pipe. Other methods include Cured In Place Pipe (CIPP), spot repairs and joint sealing.
Life Cycle Consequences:	Sanitary sewers will deteriorate in much the same manner as storm sewers although the consequences of failure for sanitary sewers are usually much more significant. The structural deterioration can result in infiltration of groundwater into the sewer that results in an accumulation of debris and sediment therefore lessening the amount of waste water that can flow. Another big consequence of groundwater infiltration is the added volume of sewage to be treated at the wastewater treatment plants which result in added costs. As with any buried infrastructure, maintenance and rehabilitation is key to the longevity of the system.
Integrated Asset Priorities:	A deteriorated sanitary sewer is replaced or rehabilitated depending on the condition. Should replacement be the method used, then other assets such as sidewalks, road trench cuts or full pavement may become part of the project. Other utilities such as hydro, telephone, natural gas and cable may be integrated into the work as well. Often road rehabilitation projects help to dictate the project priority.

Corporate/Consulting Reports on subject:	Town of The Blue Mountains Water and Wastewater Rate Study (Hemson Consulting, 2007)
Estimated Cost per year for Strategy described:	To be determined (under review)
Other information or reference materials:	N/A



storm sewers and storm water management facilities

Asset Management Strategy

Asset:	Storm Sewers & Storm Water Management Facilities
Inventory:	X km storm sewers, X storm manholes, X catch basins, X storm water management facilities, X municipal drains (to be determined)
Anticipated Asset Life Cycle:	100 to 150 years
Integrated:	May be integrated with road resurfacing, road reconstruction work and other utilities such as hydro, telephone, natural gas and cable. It may also be a standalone replacement with a trench cut and repair.
Rehabilitation and Replacement Criteria:	The criteria for prioritizing the replacement schedule for storm sewers are based upon an assessment through a CCTV inspection. The camera work will allow staff to rate the condition of the infrastructure. Other factors affecting the criteria will include localized collapses, material type, upsizing requirements as well as the coordination with the roads replacement program. As well, localized storm sewer facilities required through new development is forcing the growth of the system. Climate change has also increased the frequency and intensity of storms creating potential storm water management issues in the future.
Rehabilitation and Replacement Strategies:	Storm sewer rehabilitation will be based on the condition rating of the infrastructure. In most cases, once the pipe has been inspected and given a condition rating, Town Staff can determine the best method or rehabilitation. Replacement will be the most common method for collapsed or heavily deteriorating pipe.
Life Cycle Consequences:	Storm sewers will deteriorate in much the same manner as sanitary sewers although the consequences of failure for storm sewers are not usually as significant as those of a sanitary system. The structural deterioration can result in infiltration of groundwater into the sewer that results in an accumulation of debris and sediment therefore lessening the amount of water that can flow. As with any buried infrastructure, maintenance and rehabilitation is key to the longevity of the system.
Integrated Asset Priorities:	A deteriorated storm sewer is replaced or rehabilitated depending on the condition. Should replacement be the method used, then other assets such as sidewalks, curb/gutter, road trench cuts or full pavement may become part of the project. Other utilities such as hydro, telephone, natural gas and cable may be integrated into the work as well. Often road rehabilitation projects help to dictate the project priority.
Corporate/Consulting Reports on subject:	N/A
Estimated Cost per year for Strategy described:	To be determined (under review)
Other information or reference materials:	N/A



paved roads

Asset Management Strategy

Asset:	Paved Roads
Inventory:	120.1 lane km of paved lane surface - ditched, 33.9 lane km of paved lane surface - curbed, 114.25 lane km of surface treated lane surface
Anticipated Asset Life Cycle:	Pavement life of a newly constructed road is affected by design, traffic volumes and loads, construction quality and climate but generally the end of its useful life is: paved with curb - 30 years, paved with open ditch - 25 years, surface treated - 10 years.
Integrated:	With other buried assets located in the utility corridor such as water, sewer, storm sewers, hydro, telephone, natural gas and cable. May also affect street lighting, traffic signals and sidewalks.
Rehabilitation and Replacement Criteria:	Pavement Condition Index (PCI) is a pavement condition rating between zero and 100 which measures defects in the pavement. A PCI equal to 100 is new pavement and a PCI equal to zero is pavement that is impassable. PCI threshold point of rehabilitation or reconstruction for Town roads: between 60 and 80 - rehabilitation, below 60 - reconstruction. As of March 2010 the average PCI was 92 for paved curbed roads, 83 for paved ditched roads and 74 for surface treated roads.
Rehabilitation and Replacement Strategies:	Based on the PCI index, road classification (arterial, collector, local), rural or urban, curbed or ditched, benefit/cost ratio one of the following rehabilitation strategies is selected: Total reconstruction of pavement with 80mm to 120mm of hot mix asphalt. Mill and resurface pavement with 50mm to 75mm of hot mix asphalt. Strip and resurface pavement with 50mm to 75mm of hot mix asphalt. Pulverize and remix with 50mm to 75mm of hot mix asphalt. Mill and resurface patches of pavement with 50mm of hot mix asphalt. Routing and crack sealing pavements.
Life Cycle Consequences:	Under funding pavement rehabilitation results in more pavement falling below a PCI of 60 and results in escalating construction costs. Pavement falling below a PCI of 25 affects level of service, and increases risk and liabilities.
Integrated Asset Priorities:	Pavement rehabilitation forecast is compared to underground utility forecasts. The integration of projects occurs internally within the Engineering & Public Works Department and externally with hydro, natural gas and telephone utilities. In general a pavement rehabilitation project drives the replacement of underground water and sewer infrastructure if the infrastructure is near the end of its life cycle.
Corporate/Consulting Reports on subject:	Roads Needs Study - 2009 to 2013 (R.J. Burnside & Associates, March 2010), Tangible Capital Assets Project Report (R.J. Burnside & Associates Ltd, November 2008) - established 2008 current value for all paved and surface treated roads.
Estimated Cost per year for Strategy described:	To be determined (under review)
Other information or reference materials:	N/A



unpaved roads

Asset Management Strategy

Asset:	Unpaved Roads
Inventory:	251.9 lane km of gravel lane surface, 2.4 lane km of earth lane surface
Anticipated Asset Life Cycle:	Life of a newly constructed road is affected by design, traffic volumes and loads, construction quality and climate but generally the end of its useful life is: gravel with open ditch - 30 years, earth with open ditch - 10 years.
Integrated:	With other buried assets located in the utility corridor such as water, sewer, storm sewers, hydro, telephone, natural gas and cable. May also affect street lighting, and sidewalks.
Rehabilitation and Replacement Criteria:	Gravel Condition Index (GCI) is a condition rating between zero and 100 which measures defects in the road. A GCI equal to 100 is a newly constructed road and a GCI equal to zero is a road that is impassable. GCI threshold point of rehabilitation or reconstruction for Town roads: between 60 and 80 - rehabilitation, below 60 - reconstruction. As of March 2010 the average GCI was 77 for gravel ditched roads and 10 for earth ditched roads.
Rehabilitation and Replacement Strategies:	Based on the GCI index, road classification (collector, local), rural or urban, benefit/cost ratio one of the following rehabilitation strategies are selected: Total reconstruction of road including 450mm of B gravel sub base and 150mm of A gravel. Rehabilitation would include between 50mm and 75mm of A gravel.
Life Cycle Consequences:	Under funding gravel rehabilitation results in more roads falling below a GCI of 60 and results in escalating construction costs. Roads falling below a GCI of 25 affect level of service, and increases risk and liabilities.
Integrated Asset Priorities:	Gravel road rehabilitation forecasts are compared to underground utility forecasts. The integration of projects occurs internally within the Engineering & Public Works Department and externally with hydro, natural gas and telephone utilities. In general a gravel road rehabilitation project drives the replacement of underground water and sewer infrastructure if the infrastructure is near the end of its life cycle.
Corporate/Consulting Reports on subject:	Roads Needs Study - 2009 to 2013 (R.J. Burnside & Associates, March 2010), Tangible Capital Assets Project Report (R.J. Burnside & Associates Ltd, November 2008) - established 2008 current value for all paved and surface treated roads.
Estimated Cost per year for Strategy described:	To be determined (under review)
Other information or reference materials:	N/A



bridges

Asset Management Strategy

Asset:	Bridges
Inventory:	33 bridges and large culverts (over 3m span), 109 concrete or steel culverts (between 1.2m and 3m span)
Anticipated Asset Life Cycle:	Depending on construction practices and materials, bridges and culverts have varying assumed lives. The life cycle can also be affected by traffic volumes and loads, climate and salt exposure. Bridges and concrete culverts constructed before 1980 have an assumed life of 60 years. Those built after 1980 are expected to last 75 years. Large corrugated steel culverts have an expected life of 40 years.
Integrated:	May be integrated with road resurfacing or road widening projects however generally not integrated with other infrastructure.
Rehabilitation and Replacement Criteria:	Criteria for prioritizing include level of service and traffic volumes, safety and to preserve infrastructure. Bi-annual visual inspections of bridges are completed and detailed bridge construction surveys are completed as required. Bridge components are evaluated and tested providing severity and extent of deterioration and overall condition. An overall Bridge Condition Index is provided for each bridge. A value of 100 indicates that the bridge is in excellent condition and a value of zero indicates that the bridge is in extremely poor condition.
Rehabilitation and Replacement Strategies:	Bridge rehabilitation or replacement is based on bridge age and assumed life spans and result of condition surveys: Asphalt deck resurfacing - 25 years, joint replacement - 40 years, patching or waterproofing of concrete deck - 40 years.
Life Cycle Consequences:	Bridge and culvert life cycles will be reduced, level of service is lowered and safety is compromised.
Integrated Asset Priorities:	N/A
Corporate/Consulting Reports on subject:	Bridge Assessment Report (G.P. Jewell Engineering Inc., 2009), Tangible Capital Assets Project Report (R.J. Burnside & Associates Ltd, November 2008) - established 2008 current value for all bridges and culverts
Estimated Cost per year for Strategy described:	To be determined (under review)
Other information or reference materials:	N/A



sidewalks and trails

Asset Management Strategy

Asset:	Sidewalks and Trails
Inventory:	24.2 km concrete sidewalks, 12.1 km asphalt sidewalks, 0.5 km concrete brick sidewalks, 37.5 km limestone/gravel trails, 12.4 km natural trails, 1.9 km other trails (wood, loose stone, etc.), 3 pedestrian bridges
Anticipated Asset Life Cycle:	Life of newly constructed sidewalks can be affected by traffic loads, construction quality and climate but generally the end of its useful life is 50 years for concrete and concrete brick sidewalks and 30 years for asphalt sidewalks. Trail life expectancy varies between 20 years for wood and loose stone trails and 30 years for limestone, gravel and natural trails.
Integrated:	With other buried assets located in the utility corridor under the sidewalk such as hydro, gas, telephone and cable.
Rehabilitation and Replacement Criteria:	Sidewalk Condition Index (SCI) is a rating between zero (0) and ten (10) which measures defects in the concrete or asphalt and the number of panels damaged or cracked within a block. Visual inspections are performed annually and a full SCI should be completed every five years. The threshold point of replacement is less than 4. Limestone and natural trails will be maintained on an annual basis and will be rehabilitated as required do to safety issues from weather events or increased use.
Rehabilitation and Replacement Strategies:	Based on the SCI index and road classification (arterial, collector, local) the following rehabilitation and replacement strategies are selected: total sidewalk replacement, lift & level sidewalk panels, removal of trip edges. Trails will be replaced or rehabilitated as required due to safety issues, public concern or increased foot traffic.
Life Cycle Consequences:	Risk and liability from trip and falls.
Integrated Asset Priorities:	Generally underground utilities are the priority and individual sidewalk panels are replaced as required by the utility affected.
Corporate/Consulting Reports on subject:	Tangible Capital Assets Project Report (R.J. Burnside & Associates Ltd, November 2008) - established base SCI index and 2008 current value for all sidewalks
Estimated Cost per year for Strategy described:	To be determined (under review)
Other information or reference materials:	N/A



streetlights and traffic signals

Asset Management Strategy

Asset:	Street Lights and Traffic Signals
Inventory:	293 Decorative Streetlights (concrete or cast aluminum poles), 196 Cobra Streetlights (concrete, cast aluminum or wood poles), 434 Cobra Streetlights (Collus Power Corp. poles), 2 sets of traffic signals, 1 set of pedestrian crossing signals
Anticipated Asset Life Cycle:	Expected life cycle for all decorative and cobra lights and concrete, cast aluminum and wood poles is 30 years. Traffic signal life cycle is 25 years.
Integrated:	This asset is integrated above and below ground with Collus Power Corp. (Thornbury) and Ontario Hydro for electricity.
Rehabilitation and Replacement Criteria:	Based on Collus Power Corp. pole line rebuilds, updated component technologies, life cycle requirements and roadway infrastructure reconstruction in order to maintain recommended illumination levels as per Town Engineering Standards. Traffic Signals based on improvements required to meet the level of service due to changing vehicular and/or pedestrian volumes, roadway infrastructure reconstruction programs, Collus Power Corp. pole removals, updated technologies and lifecycle requirements.
Rehabilitation and Replacement Strategies:	Reconstruction of roadways will determine required rehabilitation of existing streetlight infrastructure in order to ensure proper illumination. As well, streetlights and traffic signals will be replaced when necessary due to changing technologies. Lastly, a streetlight conversion program may include the eventual replacement of lighting with Dark Sky compliant luminaries and lamps in order to reduce annual electricity costs and light pollution.
Life Cycle Consequences:	Existing street lighting systems removed as part of road reconstruction projects and or Collus Power Corp. pole line reconstruction projects would not be replaced resulting in no illumination. The existing street lighting system would continue to deteriorate resulting in increased outages, unsafe poles, public concern for safety and increased maintenance costs. Outdated traffic signals will not provide the recommended level of service based on changing traffic volumes and vehicular/pedestrian movements, resulting in traffic congestion, delays, public concerns for traffic safety and increased maintenance costs.
Integrated Asset Priorities:	Streetlights are based on roadway reconstruction and Collus Power Corp. pole line rebuilds in order to maintain recommended illumination levels as per Town Engineering Standards or changes to best practice standards. Traffic signal priorities are based on maintaining acceptable levels of service due to changing traffic volumes and pedestrian movements.
Corporate/Consulting Reports on subject:	Tangible Capital Assets Project Report (R.J. Burnside & Associates Ltd, November 2008) - established GIS coordinates and 2008 current value for all streetlights and traffic signals

Estimated Cost per year for Strategy described:	To be determined (under review)
Other information or reference materials:	The Blue Mountains Engineering Standards, April 2009



fleet

Asset Management Strategy

Asset:	Vehicles and Equipment
Inventory:	21 light duty vehicles, 4 heavy duty vehicles, 9 fire vehicles, 5 non road use vehicles, 5 light duty equipment, 7 heavy duty equipment
Anticipated Asset Life Cycle:	Varies depending on service area and vehicle/equipment type. Pickups and cars - 8-10 years, heavy duty trucks - 10 years, graders - 20 years, fire vehicles - 20-25 years, ice resurfacer - 12 years, loaders, backhoes and tractors - 10-15 years.
Integrated:	With technical advances and financial plans, environmental regulations, operational changes, service increases or decreases.
Rehabilitation and Replacement Criteria:	Lifecycle cost analysis considering depreciation, fuel, repairs, insurance, downtime costs, etc. will identify optimal replacement year for vehicle classes.
Rehabilitation and Replacement Strategies:	Review usage to warrant replacement, repair costs should not exceed 40% of replacement costs. Review lease, seasonal rental opportunities, refurbishing strategies and possibility of contracting services to third party.
Life Cycle Consequences:	Cost per km increases, increased downtime requiring more spare units or work schedules to be lengthened increasing manpower costs, loss of production.
Integrated Asset Priorities:	N/A
Corporate/Consulting Reports on subject:	N/A
Estimated Cost per year for Strategy described:	To be determined (under review)
Other information or reference materials:	N/A



facilities

Asset Management Strategy

Asset:	Corporate Facilities
Inventory:	31 facilities, 22 parks and recreation sites
Anticipated Asset Life Cycle:	Life cycles can vary from 15 years to 50 years. Carpeting or a hot water boiler replacement cycle would be in the 15 year range, a roof in the 25-30 year range, HVAC in the 25 year range and a building super structure upwards of 50 years. These life cycles assume adequate maintenance is provided throughout the course of the components life.
Integrated:	Individual asset components are reviewed; projects are lumped together per asset to take advantage of the "economies of scale" principle. Consideration is given to minimize the disruption of operations to a given asset over time.
Rehabilitation and Replacement Criteria:	Use of a Facility Condition Index (FCI) Ratio of total deferred maintenance costs/current replacement value of the asset. FCI is a standard ratio recognized throughout North America. The FCI can be associated with individual assets or grouping of assets.
Rehabilitation and Replacement Strategies:	An FCI will provide asset condition summaries and identify percentage used of individual components and prioritize replacement based on actual condition, and its point in time of its life cycle. Facility roof and HVAC system inventories are generally the most important components to manage and as such annual inspections should be completed. These assets will be replaced or upgraded to meet life cycle, industry, technological and safety standards. Upgrading of ingress/egress points may also be required for many facilities as new requirements under the Accessibility for Ontarians with Disabilities Act (AODA) have set minimum accessibility standards. Along with maintaining and protecting the Town's facility assets, any upgrade program will also include the implementation of energy efficient systems and equipment. The Town has undergone a comprehensive overview of the L.E. Shore Public Library and has also completed various assessments on roof, HVAC and electrical assets for various facilities such as the Beaver Valley Community Centre, Thornbury Harbour and both Fire halls.
Life Cycle Consequences:	Increased deterioration of building and properties, health and safety concerns, inefficient operation, higher operating costs, accelerated depreciation of Town assets.
Integrated Asset Priorities:	Replacement is based on actual condition, the point in time within its life cycle and the availability to complete the replacement with minimal disruption to the program/service delivery within the asset.

Corporate/Consulting Reports on subject:	The Blue Mountains Partners for Climate Protection (Staff report, October 2007), L.E. Shore Public Library Enerplan (Enerplan Building Consultants, December 2004), Beaver Valley Roof Assessment (Tri-Tech Weatherproofing, November 2009), Harbour Financing Plan (Staff Report DOR.07.38, August 23, 2007)
Estimated Cost per year for Strategy described:	To be determined (under review)
Other information or reference materials:	Accessibility for Ontarians with Disabilities Act - Ministry of Community and Social Services http://www.mcass.gov.on.ca/en/mcass/programs/accessibility/index.aspx