



THE CORPORATION OF THE TOWN OF AMHERSTBURG

OFFICE OF THE CAO

MISSION STATEMENT: Committed to delivering cost-effective and efficient services for the residents of the Town of Amherstburg with a view to improve and enhance their quality of life.

Author's Name: Bruce Montone	Report Date: July 16, 2021
Author's Phone: 519 736-6500 ext. 2241	Date to Council: August 9, 2021
Author's E-mail: bmontone@amherstburg.ca	Resolution #: N/A

To: Mayor and Members of Town Council

Subject: Fire Department Deployment – Fire Station Options

1. RECOMMENDATION:

It is recommended that:

1. Administration **BE DIRECTED** to proceed with Implementation of the requirements for one of the following options for fire services facilities and deployment, as outlined in the Fire Master Plan and the Fire Department Deployment – Fire Station Options report from the Fire Chief dated July 16, 2021:

Option A – Two Fire Station Model as outlined in the report from the Fire Chief dated July 16, 2021;

OR;

Option B – Three Fire Station Model as outlined in the report from the Fire Chief dated July 16, 2021.

2. EXECUTIVE SUMMARY:

Fire Services along with support from Administration have undertaken a review and provided recommendations to update the Fire - Master Plan for the years 2020-2025, with an outlook to 2030. This review was necessitated in part because of the anticipated development that will occur in the Town within the next few years together with the challenges of aging infrastructure. As with any successful master plan there should be an ongoing review of the plan to keep it current and focused on the direction of the Fire Service.

The Town's levels of fire service was established by Council in 2017 with the adoption of By-law 2017- 67. (**Attached as Appendix "A"**)

The previous Fire Master Plan was adopted in part by Council in 2007 and directed the department and an established working committee to further consider the goals and report back to Council. The 2007 Master Fire Plan was at its end of usefulness and a current review of the Fire Master Plan was requested by the Chief Administrative Officer. This update was produced in partnership with multiple Town of Amherstburg partner departments, external consulting and members of the Amherstburg Fire Department. The final update was presented to Council on July 13, 2020.

The following scope was utilized to update the Fire - Master Plan:

- Conduct a current gap analysis on the risks identified;
- Determine the current effectiveness and efficiency of the department against the risks identified and present options to mitigate, respond and manage the risks;
- Evaluate the current and anticipated infrastructure and asset renewal challenges, and the station locations by measuring the risk and anticipated growth.
- Consult with the Public regarding expectations and satisfaction with respect to levels of service.
- Matching the above with deployment standards to arrive at future facility, site, spatial and infrastructure requirements, asset renewal, and;
- Make recommendations to reflect accomplishments during the evaluation process, as well as short, intermediate and long term program objectives with an outlook to 2030.

There are two basic risks that are considered in the fire service, operational risk and organizational risk. Operational risk is the responsibility of the department to determine the risk associated with the varying aspects and responsibilities within the department. Operational risk streams from the Fire Chief down, following the organizational chart. Organizational risk is the responsibility of the CAO and Council to determine. Consideration should include the disciplines, level of service, staffing, number of fire stations and business planning requests based on the risk assessment of the community as recommended by the Fire Chief.

Ultimately consideration should be given to **"what is best for the residents we serve"**. As the evaluation processes neared completion and the analysis of existing service levels were completed a better understanding of the fire service's existing capability to provide operational services was realized. It then became abundantly clear to staff that changes were required in order to improve initial response capabilities of the service; however, the capability to provide even the lowest level of effective response for concurrent emergencies or major incidents involving high or extreme risk properties presents a significant threat to the Town.

During the evaluation of response capabilities in various parts of the Town it was found that there were **deficiencies** in the ability of the town to provide 15 firefighters in 9 minutes and 10 firefighters in 10 minutes coverage targets in specific areas of the Town.

The department has studied and evaluated many redeployments and station relocation scenarios in an effort to determine the most appropriate method to minimize this risk should this be the will of Council. Scenarios reviewed included a one (1) station and a four (4) station model with the additional resources necessary 50 firefighters (FF)). The one station model could not provide the current level of service from a single location. A four station model proved to be more than adequate, however an analysis of the costs associated to provide such a model would be unreasonable. As a result a one station and four station model were therefore eliminated from further consideration.

Several scenarios were investigated and mapped out to evaluate a 3 station model in optimal locations based on the geographical make up of the town, giving consideration for risks, location of firefighters and future growth as established in the Town's Official Plan. A three station model was considered the most expensive option and includes construction of two new fire stations, a major upgrade to the third station and the need for twenty (20) additional Volunteer Fire Fighters (VFF).

Station consolidation scenario models are the optimal solution to meet service levels as established by Council. Such an undertaking will provide the best long term option for fire service in the Town; however, this option requires significant capital investment by the Town in order to re-construct two seriously aging stations..

A two (2) station consolidation model, would utilize the current number of VFFs with no related increases to staff or vehicles. This seems to present the least expensive option of those considered, with the lowest operating cost and as fire stations when newly built, are expected to last 40 plus years.

The updated Fire Master Plan includes detailed information on the two options, (3 Stations or Consolidation to 2 Stations). This detailed information is **included as (Appendix "B")** to this report for Council's convenience. Either Option A or B under consideration will produce significant improvements to achieving the established service level targets of Council.

In an effort to plan and move forward Council should decide which option is best for the long term organizational considerations as this decision will impact the future completion of outstanding recommendations contained in the Fire Master Plan. Further there is a cascading impact to several other corporate decisions required in strategic documents already approved or under consideration, including: Libro Secondary Plan, Asset Management Plan, accessibility considerations and the pending Facility Needs and Condition Assessment of all Town facilities. Balancing the competing priorities of the Town will be a challenge for Council to consider.

3. BACKGROUND:

There are many factors that are increasing the level of risk facing the community and the Town, but several are especially important over the period of the updated Fire Master Protection Plan period 2020-2025. They include:

- The increasing stock of residential homes being built and rise in population together with types of construction materials and methods used in the building process

- The stock of commercial, industrial and institutional facilities both occupied and unoccupied
- Increasing volumes of traffic on Town streets, roadways and highways
- Increasing density requests in all areas of town (ie secondary units)
- Increased density requests in new developments (i.e. semi's, townhomes) as well as vertical growth
- Aging infrastructure including 2 fire stations in excess of 60 years of age that may be unable to meet the needs for the Town's fire service in future.
- Climate change, emergency preparedness and business continuity planning

There are several aspects of the current resources available that require continued monitoring for effectiveness and efficiencies. They include:

- The need to ensure that the communications systems utilized, are a major component of enhancing the life safety of responders/citizens, and reducing property loss, and that the communications infrastructure remains current to rapid technological change.
- Monitor and adjust staffing levels consistent with the service delivery targets and needs based on growth, intensification and balancing the needs with the business planning process annually.
- With major staff turnover in the past five years, a significant lack of operational experience exists due to approximately 50% of the staff complement, being low seniority VFFs.
- Ensure training, policies, standard operating guidelines are kept to current legislated, mandated and best practice standards to enhance safety and increase efficiency and effectiveness in the department.
- Apparatus must meet the strenuous conditions required to respond and mitigate incidents in a safe and timely fashion. Apparatus should be reviewed for condition on an ongoing basis and replacement scheduling should be formalized to ensure efficiencies and that it meets current standards and meets the needs of the Town.
- Unique deployment challenges relative to services delivery throughout the Town including on Boblo Island.
- Administration of fire services to meet the direction of Council through the establishing and regulating bylaw 2017-67.
- The provision of services with consideration to public expectations identified through public consultation.
- To ensure that changes, improvements and objectives reflect the challenges faced by the Town now and through 2030, and the enhancements regarding safety in the workplace and the recommendations of the oversight body, the Office of the Fire Marshal.
- Alternative service delivery considerations should also be a focus.

Public consultation sessions were conducted during the month of August 2019. The attendance at these sessions was very low, but an on-line survey was also advertised and we received 90 returns of the survey. The community input provided confirmation of the direction recommended in the Fire Master Plan report.

The majority of respondents and attendees indicated they understand the type of fire response and services provided by the Town, approximately 20% have actually received fire services. Of the core services delivered, fire fighting, medical response and motor vehicle accident response and rescue were the most important to respondents.

Response time was an important factor to survey respondents.

4. DISCUSSION:

Results, Impacts and Options for Consideration

Ultimately consideration should be given to **“what is best for the residents we serve”**.

As the evaluation processes neared completion and the analysis of existing service levels were completed a better understanding of the Town’s existing capability to provide fire services was obtained.

It then became clear that changes should be made in order to improve initial response capabilities; however, the capability to provide even the lowest level of effective response for concurrent emergencies or major incidents involving high or extreme risk properties presents a significant threat.

During the evaluation of response capabilities in various parts of the Town it was found that there were deficiencies in meeting the 15 firefighters in 9 minutes and 10 firefighters in 10 minutes coverage service level targets in specific areas of the Town.

It was also identified that the Bois Blanc Island (Boblo Island) has significant fire protection challenges which will be intensified with additional planned development. A series of recommendations were included in the Fire Master Plan to be considered at a future time and are not included in this report.

After careful evaluation and using the available technology, it has become apparent that in order to maintain the established level of service, changes in deployment are required.

Administration has studied many redeployments and station relocation scenarios in an effort to determine the most appropriate method to minimize this risk. Scenarios reviewed included a one station and a four station model with the additional resources necessary (50 VFF). A one station model could not provide the current level of service from a single location. A four station model proved to be more than adequate, but the costs associated would be unreasonable. Both the one station and four station options were therefore eliminated from consideration.

Several scenarios utilizing the Town’s corporate GIS system and a specialized analyst tool were built to evaluate a three station model in optimal locations, giving consideration for risks, location of firefighters’ residences and future growth of the Town. This was considered the most expensive option, including construction of two (2) new fire stations to replace aging infrastructure, a major upgrade to the third station and 20 additional VFFs. This option is further considered below as **Option B**.

Station consolidation scenario models showed promise, and may provide the best long term solution for fire services in the Town; however, this solution also requires the re-construction of the two seriously aging fire stations resulting in the need for significant capital funding.

A two (2) station consolidation model, would utilize the current number of volunteer staff with no related increases to staff or vehicles. This seems to present the least expensive option, of the options considered, with the lowest operating cost, as fire stations when newly built are expected to last 40 plus years. This option is further considered below as **Option A**.

Simply erecting new fire stations and consolidating/closing old ones, does not solve the response target problem, it just moves the gap from one area of the Town to another. Careful study and planning are required to ensure that any money spent on these projects is spent wisely. The Fire Management Team has examined current operating practices and possible operational change options including location and response protocols.

Also identified during the review was the undeniable positive impact of a composite staffing approach to deployment. (Composite staffing combines fulltime fire staff together with paid on call VFFs responding to both the stations and the scene directly)

Both response time performance and assembly times subsequently drive resource distribution and concentration. If response times and firefighter assembly times are low, it is an indicator that sufficient resources have been deployed and outcomes from risk events are more likely to be positive. Conversely, if response times and firefighter assembly times are high, it is an indicator of insufficient resources and outcomes from risk events are more likely to be negative

Fire Department operational performance is a function of three considerations; resource availability/reliability, department capability and overall operational effectiveness.

- **Resource Availability/Reliability** is the degree to which the resources are ready and available to respond.
- **Department Capability** is the ability of the resources deployed to manage an incident.
- **Operational Effectiveness** is the product of availability and capability. It is the outcome achieved by the deployed resources or a measure of the ability to match resources deployed to the risk level to which they are responding.

The probability of any given unit's availability (or unavailability) is one indicator of the Fire Department's response reliability. Response reliability is defined as the probability that the required number of competently prepared staff and properly equipped apparatus will be available when a fire or emergency call is received. This has in part been addressed in the past with the inclusion of full-time on duty firefighters.

As the number of emergency calls per day increases, the probability that a needed piece of apparatus will be busy when a call is received also increases. Consequently, if the right

amount of redundancy is not built into the system so that timely and adequate response to emergency calls can be maintained, the department's response reliability decreases.

To measure response reliability, all types of calls for service must be taken into account. Today, medical calls have an impact on the availability of Fire Department resources and should be considered in the overall evaluation of department reliability. Response reliability can be determined from historical run data and is typically expressed as a per-company statistic as well as an agency-wide statistic.

Fire Department capability, as a measure of the ability of firefighters to respond, mitigate and recover from each emergency call, often depends on the time of dispatch, arrival of first responders and the assembly of an effective force of attack in relation to the magnitude of the risk event when they arrive. For example, some fires will be at an early stage and others may already have spread throughout an entire building. Therefore, when determining fire station location, apparatus placement and staffing levels, fire service leaders target a particular point of a fire's growth that marks a significant shift in its threat to life and property. This point is known as "flashover".

On Scene Risk Escalation

During the growth stages of a fire, flashover is a significant event. Preventing this stage of fire behavior is a factor in establishing fire department resource needs. When flashover occurs, in that instant, everything in the room breaks into open flame. This eruption of flame generates a tremendous amount of heat, smoke and pressure with enough force to push the fire through doors and windows and beyond the room of origin. Flashover is a significant stage of fire growth for several reasons. First, the likelihood of survival and the chance of saving any occupants trapped in the room of origin drops dramatically. Second, flashover creates an exponential increase in the rate of combustion as well as the risk to the health and safety of firefighters. Third, a considerably greater amount of water is needed to extinguish the burning material. Fourth, a greater number of firefighters are required to handle the fire spread to different locations in the structure and the larger hose streams now necessary to extinguish the fire. Finally, science shows that a post flashover fire burns hotter and grows faster as time progresses thus compounding the search and rescue task in the remainder of the structure again requiring a greater number of firefighters to mitigate the incident.

The dynamics of fire growth and the associated potential for risk escalation dictate various configurations of fire station locations and firefighter staffing patterns. Understanding fire behavior, particularly flashover, is key to designing an emergency response system so that a sufficient number of firefighters and equipment are strategically located throughout the community to assure that the minimum acceptable force of attack can be assembled to engage in a fire before flashover or substantial risk escalation occurs.

Therefore, to save lives and limit property damage, firefighters must arrive at the right time, with adequate resources to do the job. This has been in part addressed by the inclusion of a full-time on duty firefighter. The geography of the municipality (185.61 Sq. Km.) extends intervention time (Time of Call to Water on the fire) and therefore has its limitations.

In emergency medical response, there is a similar perspective. The same need to intervene early to stop the progression or escalation of a risk event can be noted in

firefighter and paramedic response to cardiac or traumatic emergencies. For example in a heart attack that progresses to a cardiac arrest where a victim becomes pulseless and stops breathing, there is a six minute window of opportunity to intervene. Without intervention from bystanders or first responders arriving in a timely manner, irreversible brain damage and/or death will ensue. The same is true for badly injured victims of trauma where blood loss is significant, without appropriate intervention, the emergency continues to escalate to a point of irreparable damage.

The inclusion of a full-time on duty firefighter (24/7) addresses both quick attack to prevent flashover, medical response to life threatening emergencies and most importantly provides the entire municipality with a guaranteed response regardless of time of day.

Fire Department Response Capability

Fire department response capability and capacity is a function of the community's resource allocation and is a significant determinant in the degree of vulnerability of a community to unwanted fires and other emergencies. Naturally, a community with a sizeable and effective firefighting force, for example, would be less vulnerable to the large negative consequences of an unwanted fire than would a community with fewer resources allocated.

Recognizing this phenomenon, the team examined the best practices for minimizing the consequences of unwanted fires and other emergencies in our community by matching the allocation of fire department resources to the risk profile of our community.

Administration feels that either option under consideration will produce improvements to achieving service level targets.

	Option A or B – Service Level Targets (properties) Achieved		
Time	9 Minutes/15 VFF	10 Minutes/10 VFF	14 Minutes/6 VFF
Target (Properties)	2881	3501	3111
Option A or B	2881	3501	3111

Options for Council Consideration:

Option A – Two Fire Station Model

This option includes:

- Construction of two new fire stations, based on consolidation of fire stations 1 and 3, with:
 - demolition and reconstruction of fire station 2 at its current location;

- decommissioning of fire station 3, which could be repurposed by the Town or disposed of;
- construction of a new fire station at the Amherstburg Libro Centre (Libro) site; and,
- discontinued operations at the current fire station 1 facility, which could be repurposed by the Town or disposed of if the municipal office were relocated.
- Redeployment of staff and equipment between the two new stations, with thirty (30) VFFs deployed from each site and relocation of full-time fire fighters to the fire station at the Libro site.

The relocation of existing full time firefighters to the new fire station on the Libro site would complete the improvement of response capabilities utilizing existing resources. The Town's ability to meet at least the lower effective response level for emergencies occurring in high risk and extreme risk occupancies, as identified earlier in this report and improving the level of guaranteed response to the whole municipality may result.

Option B – Three Fire Station Model:

This option includes:

- Demolition and reconstruction of two fire stations (2 and 3) at their current locations;
- Capital upgrades to fire station #1 including the replacement of the roof and the 6 bay (overhead) doors (front and rear) of the station;
- Implementation of any capital improvements recommended in the pending Facility Needs & Condition Assessment;
- Increase staff complement by 20 volunteer fire fighters, including ten (10) per station at stations #1 and #2 to meet response targets. Increase staff complement by ## full-time fire fighters.

Additional FTE's and fulltime firefighters to be located at upgraded Station# 1 improving response capabilities to meet at least the lower effective response level for emergencies occurring in high risk and extreme risk occupancies, as identified in this report and improving the level of guaranteed response to the whole municipality.

Summary of costs of each option is highlighted in the Financial Matters section of this report.

Boblo Island Fire Service Challenges

In February of 2017 the Municipal Clerk provided a report to Council, outlining Boblo Island (Boblo) access challenges for a variety of emergencies. The report included information and both short and long term solutions to the fire protection needs of Boblo. The solutions were included in the Fire Master Plan for Council's future considerations. . The short-term solution has been implemented to ensure that fire protection service demands are being met on Boblo; however, consideration of a long-term solution is

needed to support the additional development that is to occur on Boblo. Those considerations **have not been addressed in this report.**

5. RISK ANALYSIS:

There are many risk considerations for Council to be aware of, as they decide which option is preferred for the long term organizational considerations. This decision will impact the future completion of outstanding recommendations contained in the Fire Master Plan.

Most importantly it should be noted that there is a further cascading impact to several other corporate decisions that hang in the balance outlined in several strategic documents already approved by Council or under consideration. They include the Asset Management Plan, Libro Secondary Plan, accessibility legislation compliance considerations, Emergency Response Plan, the pending Facility Needs & Condition Assessment of all Town facilities, and the future financial planning strategy for the Town. Balancing the competing priorities is a challenge for Council to consider but a decision on the two options presented in this report is paramount, for other programs to move forward.



Other existing operational challenges and considerations by location exist including significant capital improvements needed at the current fire stations. The pending facilities conditions assessment report the will be brought to Council in the near future will further highlight the condition and needs of the stations once completed. Administration has deferred budget requests for capital project funding pending direction from Council on implementation of the Fire Master Plan (fire station and deployment model); however, further delay in direction may necessitate investment in improvements and repairs at the current fire stations, the value of which many not be fully realized if a decision to replace the fire stations is then made at a later date.

6. **FINANCIAL MATTERS:**

The Fire Chief has estimated capital project cost (2019\$) for the options under consideration as below; however, a project plan including design and construction estimates would be provided to Council in further reports and incorporated into the Town's recommended budget at the appropriate time in the context of municipal capital priorities.

Option	Estimated Cost (2019\$) including net HST
A – Two Fire Station Model	
Capital Expense (1)	\$8,000,000
Operating	Unknown (2)
B – Three Fire Station Model (5)	
Capital Expense (1)	\$8,860,000 (4)
Operating	150,000 (3)

Notes:

- (1) Capital Expense: An updated capital cost estimate for the option selected by Council would be obtained closer to the time of planned construction, subject to future Council approval of design standards to be applied and inclusive of all considerations for demolition, construction, site specific impacts, etc.
- (2) Operating cost impact (annual) under Option A may include cost reductions for the Town, depending on the planned use of the current fire station one facility, possible financing and debt service costs, service level required by legislation and adopted by Council, and other impacts of implementing the model in a future year.
- (3) Operating cost impact (annual) under Option B is estimated to increase operating costs for the Town in relation to additional staffing requirements. Overall operating cost impacts would be considered in future budget recommendations for implementation of the model in a future year.
- (4) The Federal government has renamed the Gas Tax and changed criteria to Canada Community Building Fund which makes Fire Halls eligible for funding.
- (5) Selecting a Three Station model will negate any potential revenue realized of a possible sale of Station 1

The Town's 2021 Budget considered some impact of fire station redevelopment in the Five-Year Capital Outlook (Outlook), including estimates of \$6 million for consolidation of fire stations, of which \$2 million was estimated to be incurred in 2025 and \$4 million was estimated to be incurred beyond five years. The Outlook also includes a capital estimate for fire servicing on Boblo Island in the amount of \$675,000, estimated to be incurred beyond five years. That said, the Outlook is a rough plan to identify possible future budget priorities, is subject to change based on change in priority recommendations and updated estimates to cost. Further, it does not identify funding sources for the noted projects.

According to the Town's Tangible Capital Asset Inventory, the estimated useful lives (40 years) of fire stations 2 and 3 have been surpassed by fifteen (15) years, and fire station one has a remaining estimated useful life of 11 years.

Council's direction of the fire facility and deployment model to be implemented would be considered in the context of the Town's operational, financial and asset management demands. Further reports and budget recommendations would then be brought forward at the appropriate time for Council's further consideration.

7. CONSULTATIONS:

CAO – John Miceli

Director of Community and Protective Services – Heidi Baillargeon

Director of Corporate Services – Cheryl Horrobin

Treasurer – J. Rousseau

GIS Coordinator/Business Analyst – A. Marra

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8. **CONCLUSION:**

As identified in the Fire Master Plan, strategic planning decisions are the responsibility of Council. Consideration should include the disciplines, level of service, staffing, number of fire stations and business planning recommendations based on the risk assessment of providing fire services for the community as recommended by the Fire Chief.

Ultimately consideration should be given to **“what is best for the residents we serve”**.

A better understanding of the fire service’s existing capability to provide operational services has been identified. It is clear that changes should be made in order to improve response capabilities. During the evaluation of response capabilities in various parts of the Town it was found that there were deficiencies in the 15 firefighters in 9 minutes and 10 firefighters in 10 minutes coverage targets in specific areas of the Town.

Council should direct Administration to implement one of the two options (Option A or Option B) outlined in this report to reduce the deficiencies in meeting the Town’s fire service levels established by Council. Balancing the competing priorities is a challenge for Council to consider but a decision on the two options presented in this report is paramount, for other programs to move forward.



Bruce Montone
Fire Chief

Report Approval Details

Document Title:	Fire Department Deployment – Fire Station Options.docx
Attachments:	- Appendix A -2017 - 67 Establish and Regulate the Fire Department.pdf - Appendix B - Support for Station Options report.pdf
Final Approval Date:	Aug 6, 2021

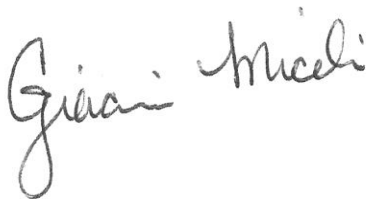
This report and all of its attachments were approved and signed as outlined below:



Cheryl Horrobin



Susan Hirota



John Miceli

Task assigned to Paula Parker was completed by Tammy Fowkes



Tammy Fowkes