



Options Analysis – New Municipal Garage Location

Municipal Garage
855 Main St. East
Hawkesbury, Ontario

Prepared for:



Attention:

Jonathan Wilson

LRL File No.: 220264

August 19th, 2022



EXECUTIVE SUMMARY

LRL Associates Ltd. was retained by the town of Hawkesbury to prepare a 5 year building condition assessment for the existing municipal garage building at 855 Main St. East in Hawkesbury Ontario. The existing municipal garage site is no longer adequate to carry out the required needs. Subsequent to the BCA prepared for the existing site, we have prepared the enclosed options analysis to explore two options for a new municipal garage site. The options include:

- Option 1 - Construct a New Site (Adjacent to the existing municipal snow dump)
- Option 2 - Renovate the existing Hydro Hawkesbury building

This review includes an assessment of the feasibility of both options from the perspective of several disciplines involved and the required scope of work involved (Civil, Architectural, Structural, Mechanical, Electrical), advantages & disadvantages of each option, high level preliminary site plans of each location, and preliminary cost and schedule estimates.

In preparing this report, plans for a similar municipal garage for the Nation Municipality were shared with us. We understand that the design for this garage located in Limoges, ON fulfills many of the requirements for the Hawkesbury garage. The plans provided for this garage have been used throughout this report as a reference and concept for the new Hawkesbury location.

Ultimately, it's our recommendation that option 1 be pursued to construct a new municipal garage adjacent to the existing snow dump. This option presents the best option which can centralize municipal services by constructing a completely custom design specifically tailored to the requirements of the municipality.



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1 BACKGROUND

The purpose of this report is to outline the functional needs, and requirements of the municipal garage for the Town of Hawkesbury and explore two options of two proposed new sites, their associated costs, advantages, disadvantages and determine the best option moving forward.

We performed a visual inspection of the existing municipal garage located at 855 Main St. East, as well as the two proposed new sites at 850 Tupper St., currently occupied by Hydro Hawkesbury, and the existing snow dump site and adjacent plot of land at the corner of Tupper St. and Spence Ave. All inspections were performed on May 20th, 2022.

You have shared with us several drawings from various disciplines of a similar municipal garage that was recently constructed in Limoges, Ontario for the Nation Municipality. We understand that the desire is for a new Hawkesbury municipal garage to follow much of the design used on the Nation Municipal garage.

Existing Municipal Garage

The Town of Hawkesbury currently operates a municipal garage at 855 Main St. East in Hawkesbury, Ontario. This site serves to facilitate the operation and repair of trucks and other equipment involved in maintenance, road repairs, winter operations and others. The current construction is old, and the site has gone through several renovations and additions to expand the capacity of operations over the past few decades. The building is showing its age, is falling into disrepair and would require significant investment to demolish and reconstruct. Furthermore, the current site is located adjacent to residential areas, is too small, is too close to the Ottawa River, and the site is contaminated so reconstruction on this existing site is not cost effective nor feasible. A new site must be determined.

Reference Documentation

In preparation of this report, we reviewed the following reference documentation:

1. A Site Plan, Elevations, and various Architectural, Structural, Electrical, & Mechanical plans, sections, and details for the existing Hydro Hawkesbury building prepared by McNeely Engineering Consulting Engineers, dated June 1990
2. A 90% design review Site Grading Plan for the existing Municipal Snow Dump prepared by GHD Limited, dated November 9, 2017
3. Site Servicing, Grading, & Drainage Plan, Structural, Mechanical, & Electrical drawings for the Nation Municipality Garage prepared by Dreesen Cardinal Architects and EXP Services Inc., dated March 17, 2017
4. Building Structural and Foundation drawings for a 72'-2" x 132'-5" dome structure at the Nation Municipality Garage site prepared by Calhoun & Catlow Consulting LLC respectively, dated June 21, 2017 & July 10, 2017



Design Constraints & Performance Requirements

We interviewed representatives from the city to gain insight into the functional needs, design constraints, and performance requirements for the new municipal garage site. Constraints, requirements, and needs are listed below:

- Capacity for 20 employees (16 maintenance staff and 4 office staff)
- (4) Drive-thru maintenance bays with 16' wide overhead garage doors
- (2) Additional drive-in/drive-out maintenance bays
- 2nd Floor Office Space
- 1st Floor change rooms and lunch room for maintenance staff
- Onsite salt dome
- Separate entrance and exit driveways
- Gravel turn around area
- Sufficient staff and visitor parking
- Water, sewer, and electrical services
- High ceilings in garage area to allow for full indoor truck maintenance (ability to raise and lower truck blades, box, etc..)
- Proper environmental controls (oil/grit separator, etc..)
- Onsite fuel storage

The Nation Municipality Garage

We understand that representatives from the Municipality of Hawkesbury visited a recently constructed municipal garage occupied by the Nation Municipality. This site is located at the Innovation Commercial Park in Limoges, ON near the intersection of Pomainville Road and Concession Road 3. Construction at the site began in June of 2017 and the garage was opened in September of 2018 at a total cost of \$2,500,000. Due to increases in construction costs, inflation, and uncertainty, the estimated cost for either renovation of the Hydro Hawkesbury location or the vacant lot will far exceed the cost for the Nation Municipal garage.

Civil, structural, mechanical, and electrical drawings for this municipal garage have been shared with us and reviewed as part of this report. The drawings for the salt shed and associated foundation plans have also been shared with us.

We understand that the design presented in these drawings reflects many of the same requirements as are being considered for the new Hawkesbury Municipal garage. For the purposes of this report, the same building size and footprint have been considered. A similar site development plan, layout and salt shed have been considered. The Nation building has (4) drive-thru maintenance bays comprising a total area of 9,800 sqft and each with 16' wide overhead doors at the front and rear. The secondary garage with (2) bays of drive-in/out doors makes up 2,500 sqft with the remaining 4,000 sqft being devoted to office space.

Based on our conversations with the Municipality of Hawkesbury, we understand that the secondary drive-in/drive-out garage shown on the Nation garage drawings would be enlarged by reducing the size and number of offices. Offices would be located on the second floor with the main floor space below being used for change rooms and a lunchroom for the maintenance staff. The septic bed required for the Nation garage would not be required for a new Hawkesbury location as each site has sanitary services.



2 OPTIONS ANALYSIS

There are two options being considered for the new municipal garage site – renovation of an existing maintenance garage currently occupied by Hydro Hawkesbury, and construction of a new site in a vacant plot of land adjacent to the municipal snow dump. A description of these options, their pros/cons, construction timelines and estimates are included in the section below.

1. Option 1 - Construct a New Site

The existing municipal snow dump is located at the South-West corner of the intersection of Tupper St. and Spence Ave. There is an empty plot of forested land adjacent to the snow dump located to the West with an approximate size of 9885m² (~1.0 ha). This option would involve constructing a new municipal garage site in the empty plot West of the existing snow dump. The plot of land for the snow dump is approximately 2.5 ha in size. The general configuration of both plots of land are shown below.



Figure 1 - General configuration of the snow dump & adjacent site.

Description of New Site

The vacant plot of land to the West of the existing snow dump could be developed into the new location for the municipal garage and offices.

A new single building measuring 160'x110' (48.2m x 32.9m) could be constructed in the North-West corner of the lot with the short edge parallel to Spence Ave. Two accesses could be provided from Spence Ave. to allow trucks to drive onsite, through the drive-thru garage and exit the site without having to turn around onsite. The maintenance garage would be located towards the North with offices at the South of the building to facilitate easiest access for large trucks. Parking could be at the South-West corner of the building. A 130'x65' (40m x 20m) salt shed would be located in the South-East of the property adjacent to the newly constructed Harden St. which runs parallel to Spence Ave. behind the snow dump and vacant lot. There is existing water and sanitary services running North-South along the West edge of the property.

We have prepared a preliminary Site Development Plan to illustrate this option. It is included in the appendix at the end of this report.

The structure of the municipal garage could be a typical steel beam, column, and joist system throughout or could utilize a pre-eng portal frame building over the maintenance garage portion to eliminate the need for any interior columns. This structure would be founded on a typical cast-in-place shallow foundation. The salt shed could be a light-gauge steel or aluminum structure founded on a cast-in-place foundation or concrete block foundation. Considerations should be taken to account for the corrosive nature of the stored materials.

The new municipal garage drainage and plumbing could be constructed as per the client needs and consider the heavy equipment, type of work completed in the garage and materials going down the drains. As mentioned above, city services are provided on Spence street which means they can be brought directly to the municipal garage.

The garage HVAC system would be comprised of electric or natural gas radiant tube heaters, exhaust fan and intake louver interlocked with a CO/NO system and air curtains if wanted. This simple system would keep employees comfortable and safe from hazardous contaminations. The office HVAC system would be an energy recovery ventilator with furnace (amount of units may vary depending on office configuration).

Lighting and power requirements can be designed as per the client needs. A generator for the fuel station, emergency lighting, and basic building services can be designed as per required needs. An emergency generator capable of powering the above and all other systems could also be designed but is not recommended for how often that would be required.

In terms of civil works, the pavement structure was considered as consisting of 350mm Granular B, 150mm Granular A & 100mm asphalt. The vehicle parking was considered as being asphalt, while the remainder of driving surfaces is considered at this time as gravel. Storm sewers were considered as part of the civil estimate and are based on similar sized developments. It's been assumed that storm water management will be needed for quality and quantity control, furthermore, a control device along with an oil/grit separator have been included in the civil cost estimate. Line painting and signage have also been included.

A considerable grade change is expected on the East extent of this property; therefore a retaining wall has been included. At this stage, no excavation or backfill have been included in the cost estimate.

Other possibilities not shown on the provided site plan are:

- a. Create access between the new municipal garage site and the snow dump to facilitate easy access between each site.
- b. Create an access at the back of the property onto the newly constructed Harden St.
- c. Utilize the 34m x 48m space to the East of the maintenance building as a gravel turn around area, fuel storage, accessway or a combination thereof.
- d. Other options yet to be explored.



An estimate of the cost and timeline to construct a new site is included in the following tables.

Cost Estimate

	Cost
Basic Building Cost (Including basic structural, mechanical, electrical, & architectural systems) Based on a building footprint of approximately 16,000 sqft	\$6,520,000
Custom Systems (Allowance for municipal specific custom systems)	\$250,000
Site Development (Civil Works)	\$475,000
Total Cost	\$7,245,000

Schedule Estimate

	Months
Design	6-8
Tender	2
Construction	8
Total Timeline	16 - 18

Advantages

- Developing a new site provides ultimate flexibility to tailor the site to the required needs.
- Ability to consolidate municipal services by developing adjacent to the existing snow dump.
- No requirement to share space or allocate space to Hydro Hawkesbury storage.
- New structural, mechanical, electrical, architectural systems can be selected to best suit the required needs
- This site is closer to the existing municipal offices
- Potential for access to site on three edges of the property.
- A new build is much more straightforward than an addition/renovation project, it will likely be easier to acquire high quality contractors.

Disadvantages

- Higher total cost as compared to option 2.
- Longer construction timeline as compared to option 2.
- The vacant lot has a smaller land area than the Hydro Hawkesbury location.



2. Option 2 - Renovation of 850 Tupper St. Site

There is an existing maintenance garage with attached office spaces at 850 Tupper St. which is currently occupied by Hydro Hawkesbury. This building could be renovated to suite the needs of a new municipal garage. The location and general configuration of the building is shown below.



Figure 2 - General configuration of the Hydro Hawkesbury site.

Description of Existing Building

The existing Hydro Hawkesbury building sits on a plot of land approximately 13075m² (~1.3 ha) in size and is composed of a rectangular section to the West where the maintenance garage is located with plan dimensions of 40'x100'. The office section abuts the East wall of the maintenance garage, is roughly triangular in plan, and measures 62'x62'.

We assess that both sections are founded on typical cast in place shallow foundations. The maintenance area is a steel portal frame pre-eng building with frames spanning North-South between overhead doors. The office area is typical steel column and beam construction with joists spanning throughout. The maintenance garage has (4) drive-in/drive-out maintenance bays with 14' wide overhead doors. There is an existing mezzanine in the Eastern most 20' of the garage area where the 12' wide overhead door is located.

Based on the record drawings available to us, the air and electrical distributions appear to be separate between the maintenance and office areas. There are 4 electrical panels, one on the first and 2nd levels of the office area and mezzanines.

North of the building, there is a fenced equipment yard measuring approximately 280'x150', apart from the paved access from Tupper St. this area is unpaved. The paved section of the site stretches from an access on Tupper St. along the front of the office section, along the front of the maintenance garage (where the overhead doors are) and around to the back of the maintenance garage. There is a second access from Tessier St., parking across from the front of the office area and behind the maintenance garage.



Figure 3 – (Left) General configuration of the Hydro Hawkesbury maintenance garage, note the lack of space in front and behind an example truck. (Right) The existing equipment yard to the North.

To suite the required needs stated above, extensive renovations would need to be undertaken to expand the building size and footprint, extend or upgrade building systems, and redevelop the site. Proposed renovations are described below.

Scope of Renovations

Major renovations will be required to make this site fulfill the design constraints, requirements and needs listed above, this could involve the following scope of work:

- a. Expand the maintenance area by (1) or (2) bays to the West, if by (1) bay only the mezzanine area would have to be demolished to allow for the minimum (6) maintenance bays required.
- b. Expand the maintenance area to the North to allow for proper length bays when working on larger modern trucks. Install new overhead doors in the new North exterior wall.



- c. Replace the existing 12' & 14' wide overhead doors with 16' wide doors. Although bay and portal frame spacing is 20', this may entail further modifications to facilitate the required width doors which could involve structural modifications.
- d. With the amount of modifications required to the portal frame pre-eng section, it would make more sense to demolish this section and replace with an entirely new portal frame building. This would also require demolition of the foundation as the new structure would be larger than the existing foundation.
- e. With the addition of bays, sanitary drains would have to be extended up to the new bays and a new trench drain should be installed. Sanitary inverts would have to be confirmed via scanning of the slab or CCTV inspection before adding a new trench drain. A sanitary sump pit and pump would have to be added for the new trench drain if the existing slopping doesn't allow a further connection to a new trench drain.
- f. Additional parking could be added along Tessier St. for an additional 4 parking spots
- g. An oil interceptor was not observed on site and as per OBC 7.4.4.3. (2) (a), oil interceptor must be provided for a repair shop. An oil interceptor must thus be installed on the sanitary drain after all the trench drains complete with venting.
- h. Interior and exterior hose bib were also not observed in the garage area thus cold and possibly hot water piping should be installed in the garage complete with insulation and if needed heat trace.
- i. An additional electric furnace would have to be installed in the new bays to provide required heating and cooling which includes wall penetrations, equipment support and electrical feed.
- j. As per OBC 6.2.2.3. a CO/NO system is required in a repair shop thus an exhaust fan and intake louver should be interconnected with a CO/NO detection system to maintain CO and NO concentration below required levels.
- k. Construction of a new fueling station would be required near the building. This includes pads for each fuel tanks and enough room to fuel the trucks.
- l. Additional normal and emergency lighting would be required in the new bays and for the new salt dome.
- m. Additional power in the new bay would be required for the new furnace, sanitary sump pump and all repair mechanical equipment.
- n. Interior fit-up of the main floor office level to facilitate 1st floor change rooms and a lunchroom. The 2nd floor may require small modifications but is largely already configured as office spaces.
- o. Extend the paved area around the building expansions by removing a portion of the forested area to the West and a portion of the equipment yard to the North. The paved area could then connect to the Tupper St. access on the East end of the equipment yard.
- p. Construction of a new salt shed, or dome structure in a portion of the existing equipment yard.
- q. The existing equipment yard would be reduced in size dramatically to account for the above changes and to facilitate a gravel turn around area.



An estimate of the cost and timeline to complete the renovation of the Hydro Hawkesbury location is included below.

Cost Estimate

	Cost
Basic Building Renovation Cost (Includes structural – New portal frame building, basic mechanical, electrical, & architectural systems)	\$4,890,000
Custom Systems (Allowance for municipal specific custom systems)	\$250,000
Site Development (Civil Works)	\$355,000
Total Cost	\$5,495,000

Schedule Estimate

	Months
Design	4-6
Tender	1
Construction	6
Total Timeline	11 - 13

Advantages

- Reuse of an existing building.
- Ample existing office space.
- Cost of this option is lower
- Construction timeline will be shorter
- Plot of land has a greater land area as compared to the snow dump site.
- Some of the mechanical and electrical equipment is already in place.

Disadvantages

- The existing office space is much larger than what's needed and so some would likely be wasted. Mechanical and electrical operational cost are thus superfluous.
- Complicated additions/modifications to the existing maintenance garage or the need to completely demolish and reconstruct this area.
- The installation of cold and hot water piping in the garage might be tricky due to possibility of freezing pipes.
- The current repair shop HVAC system is not ideal for winter and summer conditions as the electric furnaces do not provide a proper barrier when the garage doors are open thus loss of cooling and heating will drastically change the room temperature.
- Additional wall penetrations are needed for the new CO/NO system.
- The equipment yard area would be reduced dramatically to facilitate the salt storage, and other modifications. We foresee the site becoming very cramped, to fit all requirements and maintain storage space for Hydro Hawkesbury.
- The solution would not be tailor made to the needs of the new maintenance garage.



3 RECOMMENDATIONS

Based on the above, and in consideration of the advantages, disadvantages, costs, and timelines of each option, it's our professional opinion that Option 1 – Construct a New Site is pursued.

Although construction of a new site will likely be more costly, require more construction time and does not take advantage of an existing building we believe it to be the best option. It allows the municipality the ability to centralize services by combining the municipal garage and existing snow dump. Furthermore, 2nd floor office space can be reserved to move municipal offices onsite later if desired to further centralize services. By constructing on a completely new, vacant site, a completely custom design approach can be used. The functional needs, day to day requirements and future use of the maintenance garage can be completely addressed and the site can be developed as efficiently as possible.

A renovation to 850 Tupper St. would be complex and costly, largely amounting to a similar cost as development of a new site, representing exposure to more risks during design and construction, while not fully addressing all needs. Due to the small footprint of the existing garage and small bay spacing at Hydro Hawkesbury, the existing portal frame building would need to be demolished and a new building designed and constructed. Essentially, only the office portion of this building could be reused which presents much more office space than will ultimately be used.

Finally, maintaining the existing site at 855 Main St. E is not a viable option and so a new site must be determined.

4 NEXT STEPS

The first step is to identify which of the two options will be pursued. Then produce a complete and detailed site plan. Once that is approved, move to involve all disciplines (Structural, Mechanical, Electrical, Architectural) and begin working on building designs. At that point, suppliers for pre-eng buildings, a salt dome, and other elements can begin.

Should you decide to proceed we would be please to provide further guidance and designs under a new mandate.

If you should have any immediate questions or comments about the contents of this report, please no not hesitate to contact the undersigned.

Yours truly,

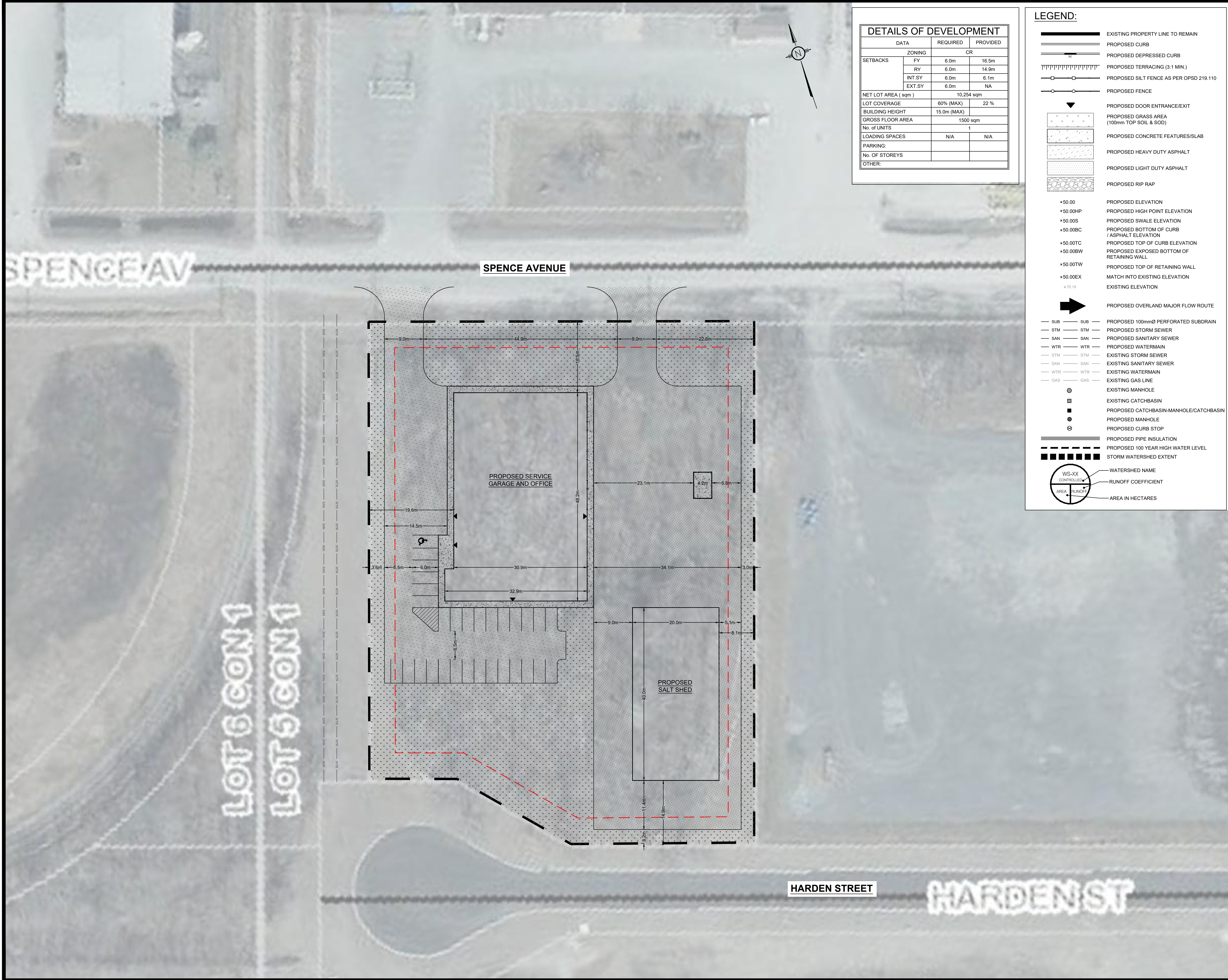
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CLIENT: TOWN OF HAWKESBURY

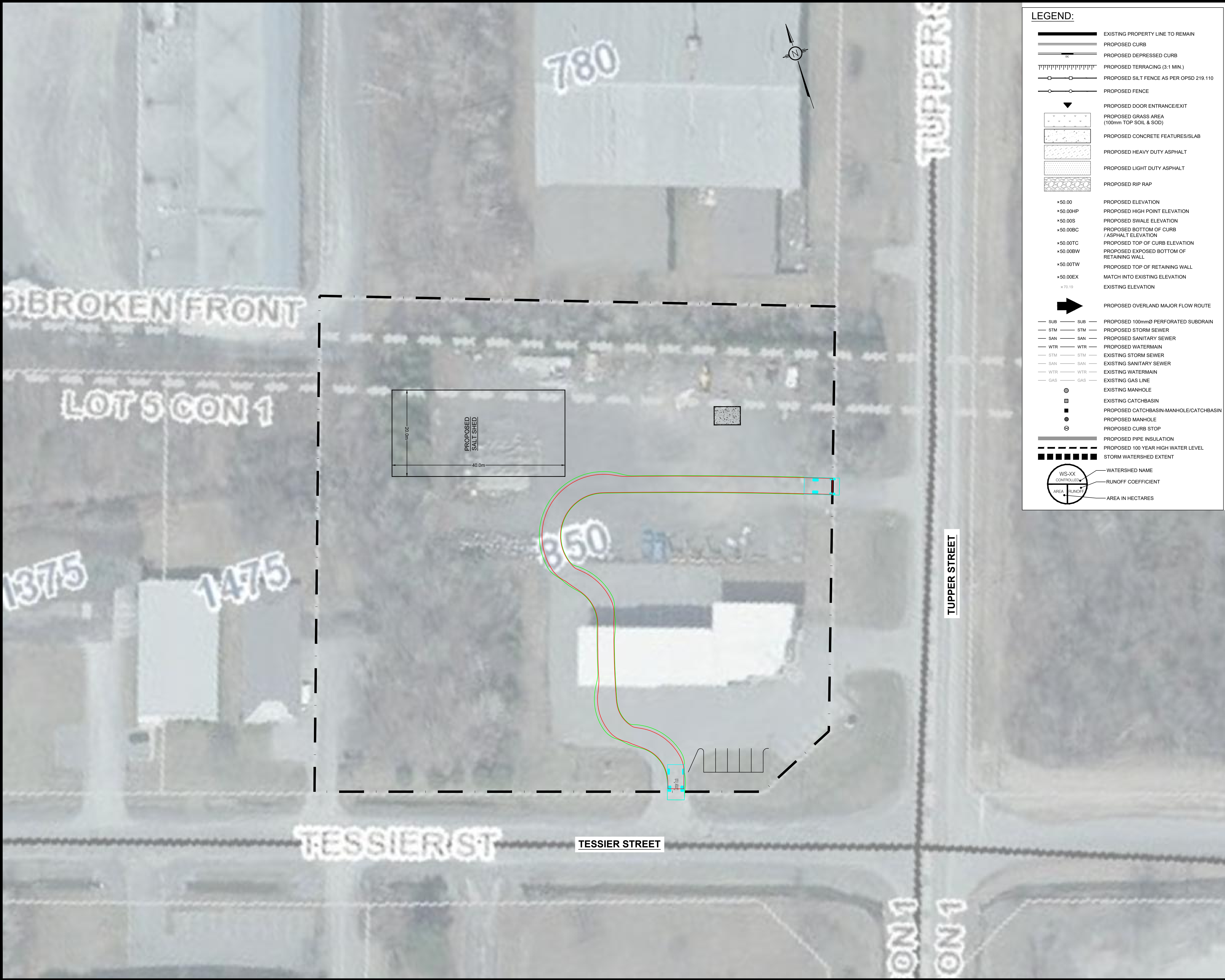
DESIGNED BY: M.L. DRAWN BY: M.L. APPROVED BY: V.J.

PROJECT: OPTION ANALYSIS
SPENCE AVENUE, HAWKESBURY (ON)

DRAWING TITLE: OPTION 1
SITE DEVELOPMENT PLAN

PROJECT NO: 220264
DATE: JULY 2022

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IN ADDITION, THE CLIENT AGREES TO INCLUDE IN ANY CONTRACTS FOR CONSTRUCTION APPROPRIATE LANGUAGE THAT PROHIBITS THE CONTRACTOR OR ANY SUBCONTRACTORS OF ANY TIER FROM MAKING ANY CHANGES OR MODIFICATIONS TO LRL'S CONSTRUCTION DOCUMENTS WITHOUT THE PRIOR WRITTEN APPROVAL OF LRL AND THAT FURTHER REQUIRES THE CONTRACTOR TO INDEMNIFY BOTH LRL AND THE CLIENT FROM ANY LIABILITY OR COST ARISING FROM SUCH CHANGES MADE WITHOUT SUCH PROPER AUTHORIZATION.

GENERAL NOTES:

EXISTING SERVICES AND UTILITIES SHOWN ON THESE DRAWINGS ARE TAKEN FROM THE BEST AVAILABLE RECORDS, BUT MAY NOT BE COMPLETE OR TO DATE. CONTRACTOR SHALL VERIFY IN FIELD FOR LOCATION AND ELEVATION OF PIPES AND CHECK WITH THE UTILITY COMPANIES BEFORE DIGGING OR PERFORMING WORK.

CONTRACTOR IS ADVISED TO COLLECT INFORMATION ON SOIL CONDITIONS BEFORE START OF CONSTRUCTION.

THE ENGINEER WAIVES ANY AND ALL RESPONSIBILITY AND LIABILITY FOR PROBLEMS WHICH ARISE FROM FAILURE TO FOLLOW THESE PLANS, SPECIFICATIONS AND THE DESIGN INTENT THEY CONVEY, OR FOR PROBLEMS WHICH ARISE FROM OTHERS' FAILURE TO OBTAIN AND/OR FOLLOW THE ENGINEER'S GUIDANCE WITH RESPECT TO ANY ERRORS, OMISSIONS, INCONSISTENCIES, AMBIGUITIES OR CONFLICTS WHICH ARE ALLEGED.

CONTRACTOR TO VERIFY ALL DIMENSIONS AND NOTIFY THE ENGINEER OF ANY DISCREPANCIES BEFORE WORK COMMENCES. DO NOT SCALE DRAWINGS.

SCALE: 1:400

NOT FOR CONSTRUCTION TENDER OR PERMIT

01	ISSUED FOR CLIENT APPROVAL	X.X.	XX XXX 2020
No.	REVISIONS	BY	DATE

NOT AUTHENTIC UNLESS SIGNED AND DATED

LRL
ENGINEERING | INGÉNIERIE
5430 Canotek Road | Ottawa, ON, K1J 9G2
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CLIENT

TOWN OF HAWKESBURY

DESIGNED BY:	DRAWN BY:	APPROVED BY:
M.L.	M.L.	V.J.

PROJECT

OPTION ANALYSIS
SPENCE AVENUE, HAWKESBURY (ON)

DRAWING TITLE

OPTION 2
SITE DEVELOPMENT PLAN

PROJECT NO.	C202
220264	
DATE	
JULY 2022	