

Giaimo

NET-ZERO CULTURAL CENTRE AND ARCHIVE FEASIBILITY STUDY

Final Report

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Prepared for:
The City of Kawartha Lakes
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1 - Executive Summary

This feasibility study was undertaken by Giaimo + Associates Architects, with support from Loring Consulting Engineers, to assess the viability of developing a net-zero Cultural Centre and Archive for the City of Kawartha Lakes. Funded in part through the Federation of Canadian Municipalities' Green Municipal Fund (GMF), the report is intended to guide future investment in sustainable civic infrastructure by evaluating the technical and financial feasibility of constructing a high-performance, low-carbon public facility.

The language of the three building typologies that have been selected for analysis, explores one in greater detail; redevelopment/ rebuild from a formally industrial building. This site is being used, for the purpose of this report, as a representative site.

The study included program development, site analysis, preliminary schematic design, and whole-building energy modeling. The design proposes an approximately 61,000 square foot multifunctional centre that would accommodate archival storage, arts education, exhibition space, artist studios, and community gathering areas—responding to long-identified cultural infrastructure needs in the region. Three distinct sites were assessed using design, sustainability, and programmatic criteria, with the expanded site selected as the preferred location due to its location, scale, and adaptive reuse potential.

The energy model was developed using eQUEST (DOE2.3) software in accordance with NECB 2020, Chapter 8 (Performance Path), and ASHRAE 90.1-2022 standards. Three scenarios were developed: a NECB 2020-compliant baseline; a proposed design that integrates high-efficiency systems and improved envelope components; and a proposed upgraded design with additional insulation and energy-saving features. Both proposed options exceed GMF performance thresholds, with the upgraded scenario achieving a 48.4% reduction in energy use intensity (EUI) and a 77.0% reduction in thermal energy demand intensity (TEDI) compared to the baseline. A rooftop solar photovoltaic system would enable the building to achieve net-zero or net-positive performance.

Together, the results confirm that a net-zero cultural facility is both technically and operationally achievable, allowing for the City to move forward with decisions on detailed design, site planning, and future funding applications.

2 - Introduction

Spanning vast stretches of farmland, waterways, and historic towns, the City of Kawartha Lakes ranks among the largest municipalities in Canada by geographic area. This rich and varied landscape is home to a deep cultural legacy rooted in agriculture, natural heritage, and early industrial settlement. Across the region, a diverse network of cultural producers—artists, performers, craftspeople, and heritage stewards—continue to shape a dynamic local arts scene through institutions, grassroots initiatives, and community-led programs.

Over the years, the Kawartha Lakes have attracted both year-round residents and seasonal visitors drawn to its scenic environment and creative energy. Despite a wealth of local talent and existing cultural venues, the community has voiced a clear and consistent need for a centralized cultural facility: a shared space where creativity can flourish through collaboration, learning, and public engagement. Such a centre would provide a much-needed anchor for cultural life in the municipality—supporting practitioners, strengthening networks, and opening up new opportunities for participation in the arts.

This report follows an earlier feasibility phase led by Giaimo and Nordicity, which explored community needs, programmatic opportunities, and site strategies for a new cultural facility. Building on that foundation, the current phase was made possible through successful funding from the Federation of Canadian Municipalities (FCM), under the Green Municipal Fund (GMF). The GMF supports municipalities in accelerating the transition to sustainable practices through high-performance buildings. Specifically, this study was funded to assess the feasibility of a net-zero cultural centre and archive facility in the City of Kawartha Lakes, advancing the municipality's climate and sustainability goals through capacity-building, and the construction a high-performance building.

The proposed Kawartha Lakes Culture Centre aims to serve as a transformational piece of civic infrastructure. It will support emerging and established artists, performers, makers, and culture professionals, while offering inclusive and accessible cultural programming to the broader public. The Centre will reflect local heritage, enable cultural innovation, and foster community engagement. Designed with a strong emphasis on energy performance, sustainability, and long-term adaptability, the Culture Centre will not only meet present-day needs but also model a low-carbon, resilient future for public cultural facilities across Canada.

2.1 Report Scope

This Feasibility Study has been prepared by Giaimo + Associates Architects ("Giaimo") for the City of Kawartha Lakes (the "Owner"), and considers the design and construction of a net-zero cultural centre and archive facility within the city.

This phase of the Kawartha Lakes Culture Centre project builds on the findings of an earlier feasibility study led by Giaimo and Nordicity, which identified community needs, recommended program components, and explored preliminary site opportunities. The current scope, representing Phase 2B of the overall project, recommends attributes, and advances the design work through schematic development, with a targeted focus on sustainable building performance and technical feasibility.

Funded in part by the Federation of Canadian Municipalities' Green Municipal Fund (GMF), this phase specifically investigates the viability of achieving net-zero energy performance for the proposed cultural centre. The Green Municipal Fund is a national program designed to build local capacity for sustainable development by enabling innovative, high-performance municipal infrastructure. As such, this study integrates architectural and energy modeling workstreams to assess how a purpose-built cultural facility can meet or exceed current energy standards and align with national and municipal climate goals.
The project scope includes:

- Preliminary development of room data for program components, for use in energy modelling;
- Refining site selection and a site recommendation for the purposes of the feasibility study;
- Developing a schematic design for the cultural centre on the selected site that integrates functional program requirements, accessibility, and heritage considerations, and the high performance building requirements;
- Undertaking a whole-building energy simulation to evaluate reductios in comparison with a NECB 2020 baseline model, including analysis of Energy Use Intensity (EUI) and Thermal Energy Demand Intensity (TEDI);
- Testing energy conservation measures such as high-performance envelope assemblies, daylight harvesting, and solar photovoltaic integration.
- Assessing the potential for the building to meet certifications, in this case Passive House Plus or Premium performance levels, and modeling scenarios for net-zero or net-positive energy outcomes.
- Documenting findings and recommendations to guide future phases, including detailed design, costing, and capital planning.

2.2 Methodology, Limitations and Extent

In preparing this feasibility study, Giaimo led the development of a schematic design for the proposed Kawartha Lakes Cultural Centre and Archive, in collaboration with Loring Consulting Engineers and supported by funding from the Federation of Canadian Municipalities' Green Municipal Fund. This work builds upon the Phase 1 and 2A studies completed by Giaimo and Nordicity, which identified key functional, spatial, and cultural priorities through research, community consultation, and municipal engagement.

This Phase 2B study focused on the integration of net-zero design principles and technical feasibility testing. Methodologies included the preparation of architectural schematic design drawings, energy modeling and performance simulation, and evaluation of

envelope, mechanical, and electrical systems to meet or exceed NECB 2020 and Green Municipal Fund targets. Schematic design work was guided by previous programming recommendations and municipal planning priorities, and energy modeling was conducted in accordance with industry standards using eQUEST simulation software. Multiple envelope and system configurations were tested to explore strategies for reducing Energy Use Intensity (EUI) and Thermal Energy Demand Intensity (TEDI), and to evaluate the potential for Passive House Plus or Premium performance outcomes.
This report was prepared with reference to the following documents:

- Kawartha Lakes Cultural Centre Feasibility Study – Phase 1, Giaimo and Nordicity (2023)
- Kawartha Lakes Strategic Plan
- Parks, Recreation, and Culture Master Plan, City of Kawartha Lakes
- Green Municipal Fund: Sustainable Municipal Buildings – New Construction Energy Targets, FCM (2023)
- National Energy Code of Canada for Buildings (NECB) 2020
- ASHRAE 90.1-2022

The following limitations and exclusions apply to this report:

- Existing conditions assessments (e.g., geotechnical, civil, structural, or environmental) were not undertaken and should be completed in future phases;
- No community consultation was conducted during this subphase; the report relies on findings from the Phase 1 and Phase 2A engagement;
- Detailed costing (Classes A, B, C), scheduling, and confirmed capital funding strategies are not included in this phase, though the results may inform such work in future stages;
- While the Ontario Building Code was reviewed for general compliance, no detailed assessment was performed. This should be performed at the later design stages for the project as the design progresses;
- No zoning analysis, or heritage designation evaluation was performed as part of this scope;
- Hazardous materials review, indoor air quality testing, or environmental site assessments (e.g., for soil or groundwater contamination) are beyond the scope of this report.

The content in this report reflects the design team's understanding and professional opinion based on the information available at the time of writing. All descriptions, analyses, and recommendations are subject to refinement by the selected design team as the project progresses and additional information becomes available.

3 - The Kawartha Lakes Cultural Centre

The proposed Kawartha Lakes Culture Centre is envisioned as a community-oriented cultural facility that supports a wide range of artistic and creative activities. It is intended to serve as a shared space for artists, performers, artisans, and cultural workers to connect, create, and engage with the public. By providing flexible, purpose-built spaces, the Centre will support both professional and community-based cultural practices across disciplines.

The facility aims to strengthen the local cultural sector by offering space for education, production, presentation, and participation. It is designed to complement and build on existing cultural assets in the municipality while addressing the need for a centralized, accessible location for cultural activity.

The concept for the Culture Centre has evolved over many years through community input and discussion. It is intended to reflect the creative interests and cultural history of Kawartha Lakes and to offer inclusive programming that responds to local needs.

The following section outlines the proposed program spaces that will support these goals, including key functional areas and intended users.

3.1 Space Design and Programming

Per the recommendations of the Kawartha Lakes Cultural Centre Task Force, the proposed programming of the Kawartha Lakes Culture Centre is outlined in the table below (Figure 3.1), reflecting the size of the spaces within the building designed for this report, which reflect the upper end of the range proposed for the total programming area in the Phase 2A report. Within the table in Figure 3.1, the programs are further broken down according to the sub-programs as described in the Phase 1 report, and reflects a finer grain of detail for each of the spaces. This building programming mix has been used as the basis of design for this subsequent phase of development of the design. Information on each of the individual program areas has been further detailed on the subsequent pages in this Section.

In addition to the requirements outlined in the table, any property that would accomodate the centre would need to be able to offer at least 80-120 parking spots. In the case of the property selected for this study, the parking is accomodated in an above ground lot, in order to reduce embodied carbon. Where this is not possible, options should be explored for parking alternatives such as off-site parking before a below-grade garage is explored.

As much as possible, the centre should be built with flexibility and adaptability in mind. The facility should enable as many artists, professionals, and culture workers/organizations to use it as possible – and rooms should be built and operated in multipurpose ways.

Within this section, the program requirements developed in Phase 2A have been further refined to include specific architectural and mechanical needs, as outlined on the following pages. This refinement has been carried out in the context of net-zero best practices, with the aim of aligning all aspects of the design with the project's energy efficiency and sustainability goals. These pages provide a structured summary of each individual space's functional and technical requirements. Each sheet includes a brief narrative description, along with clearly defined fields outlining the room's operation, primary function, and primary users, as well as acceptable alternatives. These contextual details are followed by a table of design categories—such as architectural form, lighting, envelope, and ventilation—each paired with specific performance or configuration requirements. Taken together, these preliminary program sheets translate programmatic intent into measurable design criteria, ensuring that spatial planning, systems integration, and sustainability targets are coordinated and known.

Program Group	Area (Sq. Ft.)
Exhibition Spaces Reference: 3.1.1 3.1.2	**3,750**
Art Education Spaces Reference: 3.1.3	**2,720**
Artist Creation Studios Reference: 3.1.4	**1,500**
Multipurpose Blackbox Studio Reference: 3.1.5	**2,500**
Archive, Artifact and Archaeological Spaces Reference: 3.1.6 3.1.7	**31,115**
Tenant and Co-working Spaces Reference: 3.1.8	**1,300**
Building Services, Circulation and Miscellaneous areas Reference: 3.1.9 3.1.10 3.1.11 3.1.12	**18,1615**
Total Area	**61,500**

Fig. 3.1. Table showing the subdivided programs in the proposed Cultural Centre and Archive building.

3.1.1 Exhibition Spaces

Primary Function

Gallery Space

Primary Users

Artists, Curators, Galleries, Schools, Arts Organizations.

Alternative Functions

Event, Meeting or Education Space.

Alternative Users

Charities, Corporate/Events Companies.

1 or 2 exhibition spaces available for rent by artists to present/exhibit art, artefacts, and cultural materials – from paintings and pottery, through textiles, historical relics, and even media arts presentations. These spaces should be continually animated by the many vibrant non-profit organizations, local schools, charitable organizations, and heritage societies/ organizations that exist in the Kawartha Lakes and surrounding region so that becomes recognized as a stable and welcoming public gathering space. Space(s) should include proper ventilation and lighting to protect and preserve the works that will rotate through the space, as well as to enable a wider range of community usages and ceremonial events. Can be merged with public gathering/lobby spaces, where appropriate.

Design Category	Design Requirements
Architectural Form and/or Layout	• Flexible floor plate to allow for a variety of gallery exhibitions • Variety of types of spaces to allow for community programs outside of gallery programming
Natural Lighting	Controlled, preferably north facing light
Artificial Lighting	Flexible, track based ceiling mounted lighting systems
Heating and Cooling	High control of temperature and humidity for preservation of exhibited/ stored art
Ventilation	No specific requirements
Envelope	• High R-Value for retention of internal temperature • Less glazing for more efficient temperature and humidity control
Materiality	Minimal interior finishing to allow for a variety of exhibition types, and alternative functions
Audio and Visual	A/V capabilities for possible exhibitions/events and screenings, including sound system, projector screens
Structural	No specific requirements
Other	

3.1.2 Art Gallery

Primary Function

Gallery Space

Primary Users

Visual Artists, Visual and Community Arts Groups.

Alternative Functions

Shared Exhibition Space, Event, Meeting or Education Space.

Alternative Users

Artists, Curators, Galleries, Schools, Arts Organizations, Charities, Corporate/Events Companies.

Purpose-built visual arts gallery to be rented out to a long-term anchor tenant who can help to brand, market, and drive traffic into the Centre.

The project team should continue discussions with visual arts stakeholders who would be interested in renting gallery space long-term and exploring the opportunity to plan towards renting this space in the future Centre.

Design Category	Design Requirements
Architectural Form and/or Layout	• Flexible floor plate to allow for a variety of gallery exhibitions • Variety of types of spaces to allow for community programs outside of gallery programming.
Natural Lighting	Controlled, preferably north facing light
Artificial Lighting	Flexible, track based ceiling mounted lighting systems
Heating and Cooling	High control of temperature and humidity for preservation of exhibited/ stored art
Ventilation	No specific requirements
Envelope	• High R-Value for retention of internal temperature • Less glazing for more efficient temperature and humidity control
Materiality	Minimal interior finishing to allow for a variety of exhibition types, and alternative functions
Audio and Visual	A/V capabilities for possible exhibitions/events and screenings, including sound system, projector screens
Structural	No specific requirements
Other	

3.1.3 Arts Education Spaces

Primary Function

Arts Education Classes and Lectures

Primary Users

Local Arts Guilds, Arts Organizations, Artists, Artisans, Schools/Educators, Private Academies/ Training Centres, Musicians, Textile Artists

Alternative Functions

Artist/Artisan Studio Space, Corporate Meeting Space, Event Space

Alternative Users

Arts Groups, Charities, Schools, BIAs, Corporate/ Events Companies, City Staff/Representatives.

A mix of appropriately sized and configured spaces to facilitate arts education for hands on arts learning in the following visual arts and artisan areas :

- Wet Artistic Mediums – e.g., Painting and Ink.
- Dry Artistic Mediums – e.g., Drawing, Pastels, Writing, Poetry, Leather-Working.
- Woodshop
- Pottery
- Glass

The rooms should include sinks and storage facilities for the washing and preservation of arts materials. Education spaces can be placed on higher levels. A suggested use for these spaces could include the local arts guilds offering classes and programming to their members.

Design Category	Design Requirements
Architectural Form and/or Layout	Studio-style layouts, multiple spaces that provide separation between different types of work shops (wet artistic mediums, dry artistic mediums, woodshop, pottery, glass)
Natural Lighting	More natural lighting capabilities, south facing windows can allow for heating in colder months, and large operable windows can provide natural cooling in warmer months to studio spaces
Artificial Lighting	Industrial quality ceiling mounted lighting in studio spaces, can be carried through to educational meeting/ presentation rooms
Thermal Comfort	• Dedicated thermal zone for pottery, glass, and woodworking studios • Dry/wet medium studio spaces may be a combined zone
Ventilation	• Dedicated ventilation for kiln areas in pottery room, and separate kiln hood vents • Dedicated ventilation area for glass work studio space, and separate kiln hood vents • Dedicated ventilation area for woodworking studios, and separate, adaptable wood dust collection system

3.1.4 Artist Creation Studios

Primary Function

Multi-functional artist studio spaces.

Primary Users

Artists and Artisans, Writers, Performers

Alternative Functions

Multipurpose Rental Space

Alternative Users

Various Community and Business Groups.

Open studio spaces with various desks and sections that local artists can rent out to create in. Consider having two different buckets of spaces – quiet spaces for textile artists, weavers, poets, writers, literary artists; and louder studio spaces, not under noise restrictions, for musicians, comedians, dancers, etc. For visual artists, it's important that the space is inspiring and inviting. Consideration should be given to the decorations and design of the space. Where possible, include natural light, but offer darker rooms for artists that require darker and cooler atmospheres to create and properly store/preserve their craft.

Design Category	Design Requirements
Architectural Form and/or Layout	• Adaptable spaces, allowing for a variety of artists' mediums • Open plan with modular spatial division elements for visual arts • Separate studios for musicians • Separate studios for dance/performance
Natural Lighting	More natural lighting capabilities, south facing windows can allow for heating in colder months, and large operable windows can provide natural cooling in warmer months to studio spaces
Artificial Lighting	Industrial quality ceiling mounted lighting in studio spaces
Thermal Comfort	No specific requirements, align with best practises for studio spaces
Ventilation	• Separate ventilation/hoods for spray booths • Separate studio spaces from other programs
Envelope	• May have larger operable openings to allow for flexible inside/outside conditions, for loading large equipment and allowing work to take place outside during warmer months • High R-Value for walls and glazing, notably to separate conditions of studio spaces from remainder of building
Materiality	• Durable, and easy to clean construction and interior finishes such as ceramic tile, exposed structure, and wood surfaces in visual arts studios • Soundproof surfaces in music studios
Audio and Visual	Music studios and performance spaces to have necessary A/V capabilities
Structural	No specific requirements
Other	-

3.1.5 Multipurpose Blackbox Studio

Primary Function

Blackbox Space

Primary Users

Dance & Performing Arts Organizations, Groups, and Artists, Schools, Summer Camps.

Alternative Functions

Event Space

Alternative Users

Businesses, Charities, Foundations, Event Planners, Brides & Grooms

Flexible studio space that can be used for dance, performance, or music rehearsal or as black box space with the capacity to host 100-150 people audiences. In both phases stakeholders expressed a desire for additional rehearsal space to facilitate the production of larger scale performances, as well as allow multiple performance groups to create in the community at the same time. This multipurpose space can also host events if designed appropriately, and so it should be attached to the commercial kitchen.

Through consultation, interest was determined for 1-3 rooms of various sizes/ functions, including 1-2 spaces that can seat between 30-75 people for community meetings/ gatherings. This space should be designed to meet the community interest in meeting spaces that can host 100+ guests, and could be subdivided for smaller capacities.

Design Category	Design Requirements
Architectural Form and/or Layout	• Focus on adaptability of space to accommodate the variety of programs that can be held in a Blackbox studio, including rehearsals and meetings • Space becomes flexible with an open plan, and portable risers, seating and staging elements • Should be adjacent to commercial kitchen to allow for catered events to take place
Natural Lighting	• May be designed to be adaptable, such as a black out curtain system to block out natural light when theatre type programs are taking place • Natural lighting is not mandatory
Artificial Lighting	• Stage lighting • Flexible ceiling mounted track-based systems
Heating and Cooling	Separate zone to allow a variety of programming to take place, from smaller rehearsals to larger 100-150 person shows and events
Ventilation	Align with best practise Blackbox studio requirements
Envelope	High R-Value walls to retain internal conditions
Materiality	Minimal interior finishes
Audio and Visual	A/V capabilities to align with rehearsal space and meeting requirements
Structural	Wide span ceiling structure to allow for minimal vertical support elements
Other	

3.1.6 Archive, Artifact and Archaeological spaces

Primary Function

Municipal Archives Space & Storage for Paper and Artefacts.

Primary Users

City of Kawartha Lakes, Culture and Heritage Organizations, Museums.

Alternative Functions

None.

Alternative Users

None.

Space for the City of Kawartha Lakes' Municipal Archives which includes a mix of paper-based records and artefact collections. Artefact storage facilities as well as rental/ low-cost storage facilities for some of the heritage organizations/museums in the region whose collections are outgrowing their existing facilities. The space would be operated and managed by the City of Kawartha Lakes.

Design Category	Design Requirements
Architectural Form and/or Layout	• Rectilinear organization of storage materials would be best served by a square/rectangular floor plate with double/triple height ceilings for maximizing vertical storage space • Likely located towards the middle or facing towards the edge of the site that has no street frontage, as no natural lighting is required, and accessibility to most of the spaces is public, but by appointment • Located a minimum distance above and away from flood plains • Not located adjacent to areas susceptible to water infiltration • Fixed or moveable metal storage system
Natural Lighting	No natural light within archival storage rooms
Artificial Lighting	Lighting design that aligns with specific guidelines of archival documents and materials storage
Heating and Cooling	• High control of temperature and humidity for preservation of materials • Different HVAC zones may be required within the storage space based on types of archival material • Cold storage may be required • Redundant equipment, or ability to transfer loads from non-storage area should be considered in the event of any mechanical failures

Design Category	Design Requirements
Ventilation	• Dedicated ventilation system • Ventilation design that aligns with specific guidelines of archival documents and material storage (Eg. Limit, filter outside air exchange) • Different HVAC zones may be required within the storage space based on types of archival material • Storage room to maintain positive pressure
Envelope	• High R-Value for retention of internal temperature • Fire Resistance Rating for separation from remainder of building • Moisture tolerant envelope design allowing specific Relative Humidity requirements to exist • Limited openings, seal any required penetrations • No openings on roof area above storage room • Avoid mounting mechanical equipment directly above storage room
Materiality	Align with best practise material requirements for archival storage rooms
Audio and Visual	No specific requirements
Structural	Floor load limit design below storage area would need to be considered
Other	Dry-type fire suppression system

3.1.7 Research Room

Primary Function

Research Room

Primary Users

Researchers, Students, Schools, Family Historians, Members of the Public, Developers, Museums, Galleries

Alternative Functions

None.

Alternative Users

None.

A space for researchers and community members to access municipal archival materials. The room should include chairs, tables, and materials for researchers to sit, take notes, ask questions, and explore different municipal records and artefacts safely. The design of the space should be cognizant of light and temperature to preserve these materials/ artefacts but should also be sufficiently functional and comfortable to allow community members to appropriately observe them.

Design Category	Design Requirements
Architectural Form and/or Layout	• Located adjacent to Archives Storage • Contains large tables, seating, computer desks
Natural Lighting	No natural light within most areas of research room
Artificial Lighting	Lighting design that aligns with specific guidelines of archival documents and materials storage
Heating and Cooling	High control of temperature and humidity for preservation of materials
Ventilation	Ventilation design that aligns with specific guidelines of archival documents and material storage
Envelope	High R-Value for retention of internal temperature
Materiality	May need to align with some material restrictions for archival storage rooms
Audio and Visual	Capability for installation of archive specific equipment, for example, slide projectors, scanners,
Structural	No specific requirements
Other	

3.1.8 Tenant Offices and Co-Working

Primary Function

Tenanted Office Space

Primary Users

Cultural Business Operators, Organizations, Collectives, and arts-adjacent practitioners

Alternative Functions

Artist Studio Space, Corporate Meeting Space, Event Space

Alternative Users

Textile Artists, Arts Groups, Charities, Schools, BIAs, Corporate/Events Companies, City Staff/ Representatives.

Additional office space for a mix of long- and short-term tenant use. Local arts organizations, cultural businesses, and arts-adjacent practitioners can consider renting office space through lease agreements. A broader range of potential users can book some of these spaces hourly for meetings.

Design Category	Design Requirements
Architectural Form and/or Layout	• Computer/Laptop desks, chairs, and meeting room spaces • Hot desks, communal lounges and kitchenettes to accommodate flexibility in users • Can be integrated with offices used for the cultural centre's administrative staff
Natural Lighting	More natural light creates a welcoming environment for projected users
Artificial Lighting	• Align with best practise coworking space requirements • Linear ceiling mounted lights for work areas, ceiling mounted pendants for lounge areas
Thermal Comfort	Align with best practise coworking space requirements
Ventilation	Align with best practise coworking space requirements
Envelope	High R-Value walls and glazing to retain internal conditions
Materiality	More glazing may be incorporated to create a welcoming co-working space
Audio and Visual	A/V capabilities for meeting rooms
Structural	No specific requirements
Other	

Design Category	Design Requirements
Envelope	• May have larger operable openings to allow for flexible inside/outside conditions, for loading large equipment and allowing work to take place outside during warmer months • High R-Value for walls and glazing, notably to separate conditions of studio spaces from remainder of building • Fire-resistance rating and separation from adjacencies for program with heat or dust related components (ie wood dust or kilns)
Materiality	Durable, and easy to clean heat resistant construction and interior finishes such as ceramic tile, exposed structure, and wood surfaces
Audio and Visual	A/V capabilities for one or two meeting room type spaces
Structural	Heavy wood working equipment, pottery kilns, and glass kilns may require additional structural reinforcement
Other	-

3.1.9 Retail SPace

Primary Function

Retail Space

Primary Users

Visual Artists, Visual and Community Arts Groups, Cultural Businesses, Artisans.

Alternative Functions

None.

Alternative Users

None.

A retail space would be added on the main floor either attached or adjacent to the Art Gallery. The space could be used as a gift shop or other storefront, or this space can be rented by other cultural businesses, artists, artisans, or arts groups for similar uses.

Design Category	Design Requirements
Architectural Form and/or Layout	Flexible street fronting spaces to allow for a variety of retail programming
Natural Lighting	No specific requirements
Artificial Lighting	Flexible, track based ceiling mounted lighting systems
Heating and Cooling	No specific requirements
Ventilation	No specific requirements
Envelope	• High R-Value for retention of internal temperature • More, focussed glazing at street frontages
Materiality	Exterior/interior connections may have more glazed surfaces for visibility of retail programming
Audio and Visual	No specific requirements
Structural	No specific requirements
Other	

3.1.10 Administration and Operations Offices

Primary Function
Facility Administration and Operations

Primary Users
Facility Operators, Site Cleaning/Maintenance

Alternative Functions
None.

Alternative Users
None.

A few rooms to be used by facility staff and operators, including custodians, site managers, etc. Office and Admin spaces can be located in secondary areas, away from public access.

Design Category	Design Requirements
Architectural Form and/or Layout	• Computer/Laptop desks, chairs, and meeting room spaces for office use • Can be easily inserted into existing buildings where available • Can be integrated with co-working spaces
Natural Lighting	No specific requirements, but ideally well lit for an inviting work space
Artificial Lighting	• No specific requirements, align with office programming • Linear ceiling mounted lights for work areas, ceiling mounted pendants for lounge areas
Thermal Comfort	Align with best practise office programming
Ventilation	Align with best practise office programming
Envelope	• High R-Value to retain internal conditions • Align with best practise office programming
Materiality	No specific requirements
Audio and Visual	A/V capabilities for meeting rooms
Structural	No specific requirements
Other	-

3.1.11 Commercial Kitchen

Primary Function

Kitchen Facilities/Food Storage for Education, Events, and Programming

Primary Users

Chefs, Caterers, Professional Culinary Educators, Kids Programming Leaders (for food storage)

Alternative Functions

None.

Alternative Users

None.

Culinary Arts is an area of strategic focus in Kawartha Lakes, according to the 2018 Food Strategy. Much enthusiasm exists in the community around the possibilities afforded by a commercial kitchen in the Culture Centre, feedback collected during this phase suggests that Kawartha Lakes culinary sector may not be developed enough yet to program a commercial kitchen on a full-time basis. Depending on the nature of the rental agreement made for the Café/Restaurant, its kitchen can potentially be used for events.

Still, culinary arts remain a strategic focus of the City of Kawartha Lakes, with the municipality having completed a Food Tourism strategy in 2018. A commercial kitchen can also be instrumental in enabling the facility to host larger events, galas, and gatherings of 100+ people. One survey respondent offered to initiate programming in a community kitchen, if included.

Design Category	Design Requirements
Architectural Form and/or Layout	Align with requirements of commercial kitchen appliance and circulation needs
Natural Lighting	Although not necessary, natural light can contribute to the quality and experience of the space and reduce loads of artificial lighting
Artificial Lighting	Industrial quality ceiling mounted linear lights
Thermal Comfort	Separate zone as kitchen program can produce a lot of heat
Ventilation	• Dedicated exhaust systems for all commercial cooking equipment • Separate ventilation system from remainder of programs
Envelope	High R-Value to retain internal conditions
Materiality	Easy to clean, durable surfaces such as tile, stainless steel
Audio and Visual	No specific requirements
Structural	Heavy appliances may require load considerations
Other	On site aerobic food waste digester, such as ORCA

3.1.12 Service Spaces, Circulation

Service spaces such as loading docks, janitor rooms, mechanical and electrical rooms, garbage rooms, and security areas—as well as vertical and horizontal circulation spaces—are not individually controlled environments and are not subject to especially strict requirements for thermal comfort or finishes. Instead, they will be designed following industry best practices to ensure functionality, durability, and efficiency. Considerations such as appropriate lighting, durable and low-maintenance materials, sensible layout, and integration within the building envelope will guide their design, supporting overall building performance and user safety without the need for specialized environmental controls.

4 - Site Selection

Site Selection Criteria for the Kawartha Lake's new cultural facility has been developed based on Core and Desired requirements, as described within this section. Core Site Selection Criteria was determined by the consultants through research and review of the existing context, the City of Kawartha Lakes previous plans and reporting, and the requirements of the building developed within this report. Desired Selection Criteria build on select design guidelines from the Phase 1 Report, and were developed and then refined based on the outcome of a Kawartha Lakes Culture Centre Feasibility Task Force workshop held by Giaimo on March 27, 2024. The criteria, and further detail and rationale are included below.

4.1 Core and Desired Site Selection Criteria

The Core Site Selection Criteria takes Phase 1 findings into account and seeks to further define the qualities of a suitable site based on facility requirements, municipal infrastructure and growth plan, and existing cultural facilities, festivals, and events. The Core criteria is divided into three broad categories:

- Determination of Sizing and Spatial Requirements
- Determination of Location Suitability
- Determination of Proximity to Partnerships

These criteria are intended to narrow the geographic scope of the site selection, based on both reporting already completed by the city, and research completed by the consultant team. These criteria are further detailed in Appendix J.

The first criteria determined the site sizing, based on the spatial requirements developed through the study in Sections 3 of this report, benchmarking a minimum site area of 39,600 square feet, to be accommodated based on specific site requirements.

The programming outlined in Appendix J of the Phase 2A report highlights the necessity of ground floor placement for accessibility and

Ground Floor Related Programming	**Square Footage**
Archive/ Storage and Preservation	20,000
Shared Exhibition Space	3,000
Art Gallery	1,500
Blackbox Theatre & Rehearsal	3,500
Education Spaces	2,500
Commercial Kitchen	1,100
Retail Space	1,000
Artist Studios (5-6)	1000
Services and Circulation Note: 40% of 15,000 sf building gross up, intended to include lobby, loading, garbage and other miscellaneous service programs.	6,000
Ground Floor Total	**39,600**
Parking (approximate, as per ZBL)	80 spaces - 18,000

Fig. 4.1. Table of Ground Floor Related Programming, which are programs which would ideally be related on the ground level either to enhance the public realm around the building, or for technical reasons. Note: not all building program is represented within this table. For full building program, refer to Figure 3.1.

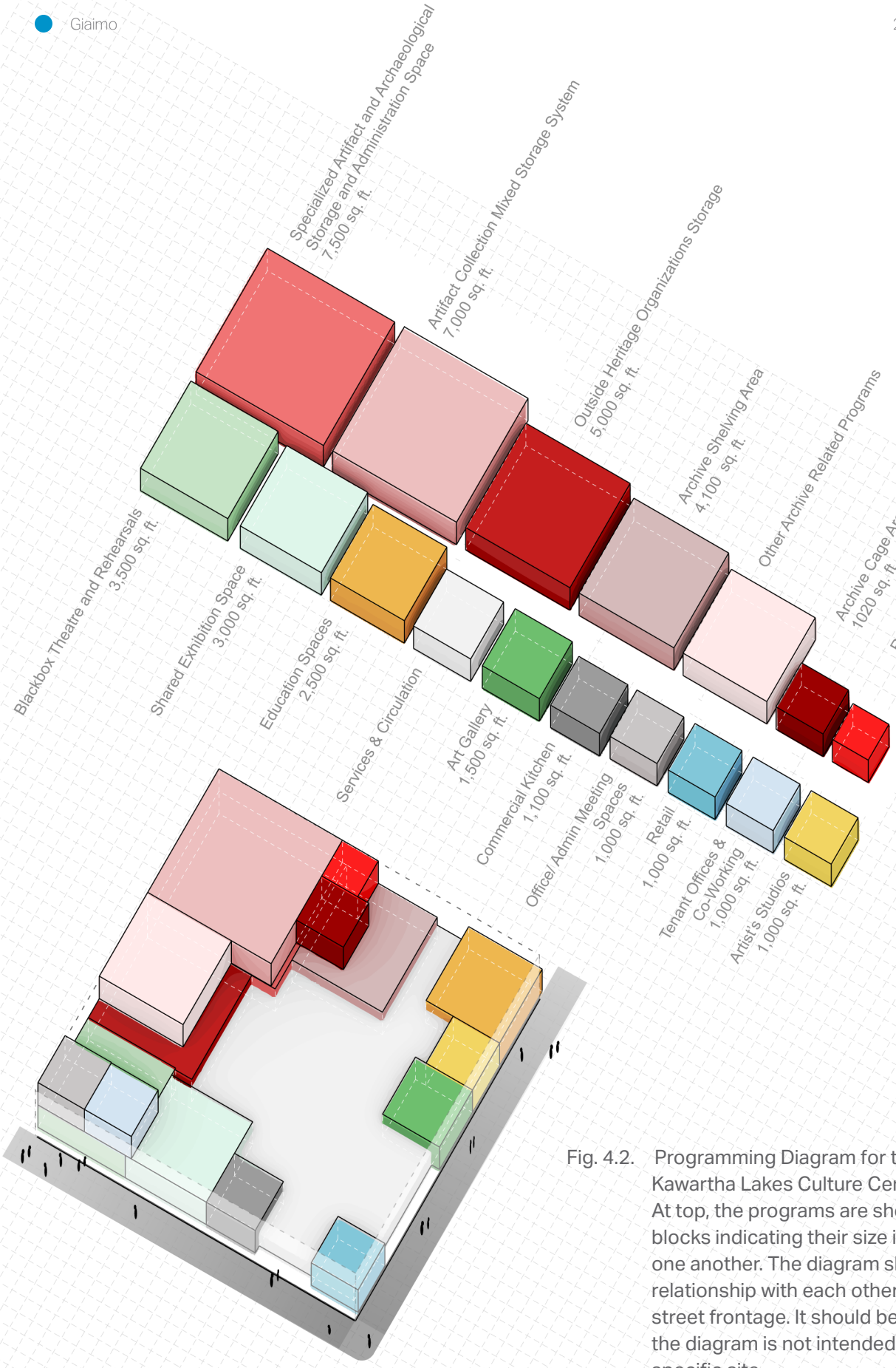


Fig. 4.2. Programming Diagram for the City of Kawartha Lakes Culture Centre
At top, the programs are shown as blocks indicating their size in relation to one another. The diagram shows their relationship with each other, as well as a street frontage. It should be noted that the diagram is not intended to reflect a specific site.

street activation. Essential services, including the lobby, loading area, and garbage room, are located on this level, along with archive and storage facilities. Artist studios are designed to serve as storefronts, promoting pedestrian engagement, while education spaces ensure easy access. This arrangement is supported by a precedent study of similar Canadian facilities in Appendix L, which validates the effectiveness of such layouts.

The ground floor's design focuses on creating a vibrant atmosphere, with retail and exhibition visibility aimed at attracting foot traffic and enhancing commercial success. Flexible designs promote indoor-outdoor interactions for events. Additionally, the center will appeal to tourists, with an inviting layout that encourages exploration of exhibitions and programming. An open retail area will draw visitors in, sparking interest in workshops and future activities. Figure 5.1 illustrates the proposed program relationships and their connection to the street.

5 - Selected Sites

5.1 Sites

Three sites were assessed based on their alignment with the core and desired site selection criteria, and can be classified into three broad 'site types': urban site with adaptive reuse potential, urban site without adaptive reuse potential, and greenfield or brownfield site. Selected sites should align with the core sizing and spatial requirements, location suitability and proximity to partnership requirements. It should be noted that each site type has advantages and disadvantages, and are not presented as ranked, but rather as the three strongest options to suit the vision of the facility as has been developed through this report, prior reporting, and the understanding of the community's vision for the facility. It is the intention of this report that the information provided can be applied generally to additional sites within the long list, specifically related to the cost of construction, interaction with existing buildings on site, and site sizing.

The first site type is an urban site that includes adaptive reuse opportunity. The form would be influenced by site constraints, including the shape of the site, and existing buildings on and adjacent to the site. The unexpected relatively higher cost of a more urban site would likely necessitate the construction of below grade parking, or require the use of existing parking resources in the vicinity.

The second site type is an urban site with limited or no adaptive reuse potential, also subject to site constraints that will influence layout potential, in this case, primarily the shape of the site and the relatively higher cost of urban land again necessitating a below-grade or off-site parking solution. The historic context does provide opportunities to integrate the building.

The third type is a suburban/brownfield site with limited or no adaptive reuse potential. The site allows for ideal orientation well suited to project type and interior program, as expected relatively lower land cost and land availability allows for less restricted site area. Similar to the other sites, there is a possibility to include below-grade structured parking, though this comes at significant cost, and is likely not necessary if a large site is located. However, due to its relatively remote location, the site does not contribute to the revitalization of the downtown core.

All three site types will result in the regeneration of a vacant site having the potential to adaptively reuse an existing building on site, and provide opportunity to become an important community landmark.

The specifics of these sites have been redacted from the public report to preserve the City of Kawartha Lakes' ability to negotiate with owners.

6 - Net-Zero Option Studies

Based on the site selection summarized in Section 5, and within the Phase 2A report, three site types and example sites were evaluated against first principles of sustainable design, with the aim of the development of the Cultural Centre as a Net-Zero Facility that conforms with the requirements of the Green Municipal Fund (GMF).

The studies assessed the built-up area needed for each site, reflecting the total area of 61,000 square feet as defined in Figure 3.1, while considering spatial efficiency and functional organization. To achieve the targets of a net-zero facility, each site was re-evaluated through the lens of sustainability, passive design strategies, and a net-zero energy target, ensuring that long-term energy performance is embedded into the initial planning phase. A tiered approach was used to begin preliminary assessments of what a net-zero building could look like on each of the sites. The importance of net-zero design at the basic building stage cannot be understated. Figure 6.1 shows that up to 60% of energy consumption can be reduced at the beginning stages of a project.

The following massing stage considerations were taken into account:

Building Orientation & Solar Access: The building's primary facades are oriented to optimize passive solar heating in the winter and minimize overheating in the summer. Alongside massing orientation, this will be achieved through controlled glazing ratios, shading elements, and material selection.

Building Form: The massing strategy prioritizes a compact form to minimize heat loss and reduce heating and cooling loads.

The options do not include energy modelling, but are based on best-practices. A theoretical example site representing a greenfield or brownfield site was selected for further exploration to allow for the testing of a broad range of sustainable strategies. This example site is modelled and further detailed in subsequent sections of this report.

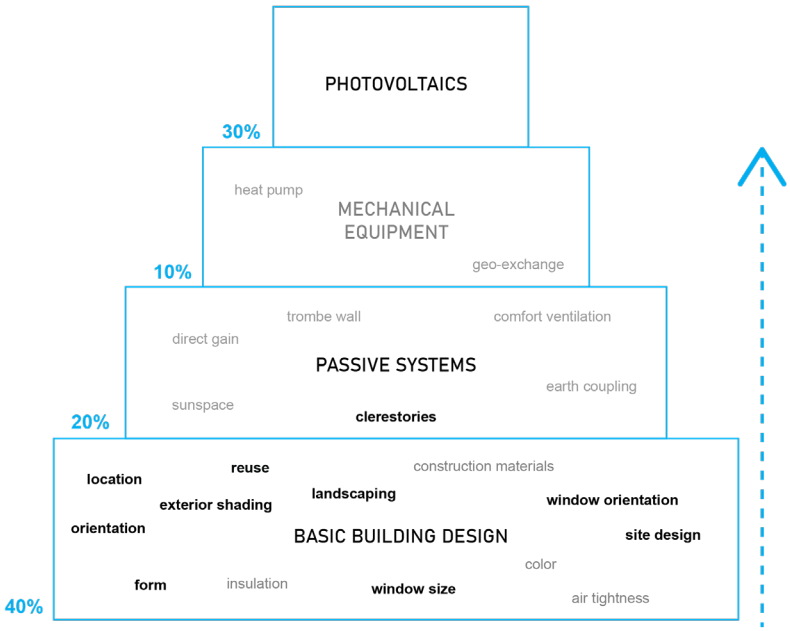


Fig. 6.1. Tiered Approach. Adapted from Heating, Cooling, Lighting (Lechner 2021)

7 - Design of the Cultural Centre and Archive

7.1 Schematic Design Approach

This section advances the design of a Net-Zero building scheme, on the theoretical example site. This section explores the schematic design and energy modelling of the proposed cultural centre.

7.1.1 Net-Zero and Sustainability Focus

One of the initial steps of the design process was the application of net-zero and low carbon massing principles. These included optimizing the building location, orientation and form to reduce energy demand while maximizing solar access and natural ventilation.

Using the tiered approach previously described in Section 6, the sub sections that follow develop the schematic design of the proposed facility, whilst continuing to employ sustainability strategies of a more refined scale. The design integrates sustainability strategies drawn from multiple high-performance building standards, including Passive House principles, LEED certification criteria, and guidelines from other organizations. These strategies inform decisions related to building form, envelope optimization, daylighting and glazing configurations, mechanical equipment and renewable energy. The consideration of embodied carbon was also critical in determining a sustainable strategy for this site. Furthermore, this example site contemplates the reuse of an existing building, which can help to reduce upfront carbon generated by the extraction, processing and transport of new materials to site.

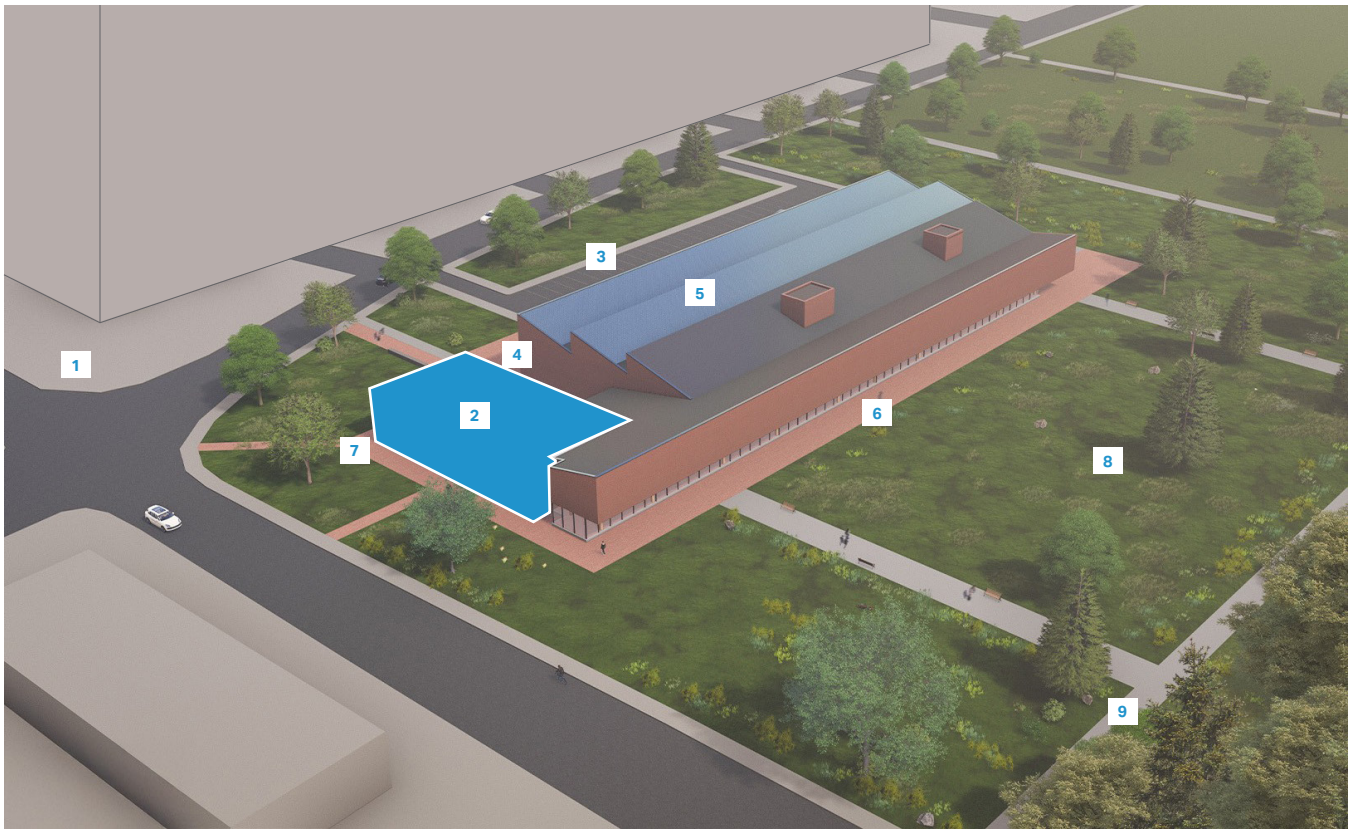
In addition to the basic design principles, through a combination of efficient mechanical systems, high-performance envelope assemblies, and renewable energy strategies, the project is positioned to meet and exceed energy performance targets set by the NECB 2020 and the Green Municipal Fund (GMF). The use of a Variable Refrigerant Flow (VRF) system with heat recovery significantly reduces operational energy demand, while a rooftop-mounted solar photovoltaic array is estimated to generate up to 343,160 kWh/year—exceeding the building's total energy consumption and achieving net-positive performance in Passive House Premium scenarios. Together, these measures result in a projected 48.4% reduction in Energy Use Intensity (EUI) and a maximum potential reduction of 77.0% in Thermal Energy Demand Intensity (TEDI) compared to the NECB baseline. These outcomes position the project as a model for sustainable civic infrastructure.

The following sections list and describe strategies that were implemented in order to develop the proposed facility to this stage, with the goal of meeting the operational targets described in 8.2.1., as well as minimizing upfront carbon emissions.

7.1.2 Site Design

A key consideration for the site design has been the siting of the building, which is anchored by a contemplated existing two-storey brick building at the corner of the site. The new construction portion of the building, together with the existing building forms a largely rectangular footprint with the long dimension oriented to the East and West, which optimizes for solar collection and reduces self shading, and allows for the optimization of the Photovoltaic array.

Vehicular access to the site is provided off the East-West Street. The proposed parking lot provides 80 spaces, which is in line with current zoning by-laws. The parking is tucked behind a green space to provide a visual barrier, as well as provide shading on to the paved surfaces. The paved surfaces will have a high



City of Kawartha Lakes Cultural Centre and Archive

1. Approximate location of transit stop
2. Reused Building
3. At-grade parking
4. Main building entrance
5. Rooftop photovoltaic arrays
6. Outdoor public gathering space related to interior gallery space
7. Pedestrian pathways
8. Remediated landscape
9. Drought tolerant, native landscape

Fig. 7.1. Axonometric view of the site and proposed Cultural Centre and Archive building with annotations.

albedo, to reduce the urban heat island effect, while still allowing for the use of plows to clear snow in the winter. While the monolithic surface of the parking area will not have extensive porosity, landscape buffers on all sides will aid in absorbing the surface run-off. The parking is ideally provided at grade, as the site is large, and below grade parking is carbon intensive as it requires additional concrete structure not otherwise needed. Further, the introduction of parking below a building with a sensitive program such as an archive would require upgrades to fire separation assemblies, or the introduction of more complex assemblies to prevent the spread of fire, as well as the transfer of structural loads to a transfer slab, to allow for the required parking layout below, which would greatly increase the upfront carbon intensity of the building. Pedestrian access is primarily off the Ease-West Street, and the proposed landscape design connects the parking area to the studio spaces in the existing building, as well as the southern exterior corridor which opens to an expanse of usable green space. Limiting vehicular access to the north of the site will ensure greater comfort and safety of pedestrian activity and public programming around the rest of the building.

Throughout the site, exterior lighting will be designed with a strong emphasis on minimizing light pollution and supporting dark sky principles. All luminaires will be fully shielded and downward-facing, ensuring that light is

directed only where needed, specifically along circulation paths, entrances, and areas requiring illumination for safety and accessibility.

The lighting strategy will reduce unnecessary up light, glare, and light trespass. This approach helps to preserve nighttime sky visibility, protect wildlife habitat, and maintain a comfortable, non-intrusive nighttime environment for adjacent properties and natural areas. Through the design phase, lighting levels will be carefully calibrated to meet applicable safety and code requirements without over-illumination. Where appropriate, energy-efficient fixtures will be paired with motion sensors or time-based dimming controls to further reduce energy use and limit impact during periods of low activity.

As mentioned, to explore a wider array of sustainable strategies and allow for broad applicability, the example site is contemplated to be contaminated. The potential site selection of such a site would require further research into the nature of the contamination and possible solutions to remediations. Depending on the type of contamination – which is theoretically caused by petroleum hydrocarbons from a former industrial use – one possible approach is phytoremediation, which would use planting on the site to accumulate and or break down contaminants and could be a more cost-effective approach when compared with other remediation techniques, which would involve digging up soil and removing from site, or other invasive methods. This would require further study with an environmental consultant, and landscape architect to determine the feasibility of this approach. The immediate site for the archive and cultural centre would require remediation in the nearer term to allow for use.

Following site remediation—or as part of an integrated remediation approach, the landscape is envisioned as a vibrant extension of the Cultural Hub. It will be planted with a diverse palette of native species, carefully selected for

Sustainability Strategies for Site Design

- Brownfield remediation
- Regenerative landscaping
  - Water collection
  - Permeable materials
  - Reduce irrigation demands
  - Water-efficient landscaping
- Existing building reuse
- Heat island reduction with high albedo surfaces
- On site Renewable energy
  - Solar PV Panels
- Light pollution reduction
- Location in proximity to transit routes
- At-grade automobile parking
- Bicycle storage and parking
- Building setbacks to accommodate landscape for water infiltration
- Pedestrian oriented landscaping, lighting and signage
- Light pollution reduction

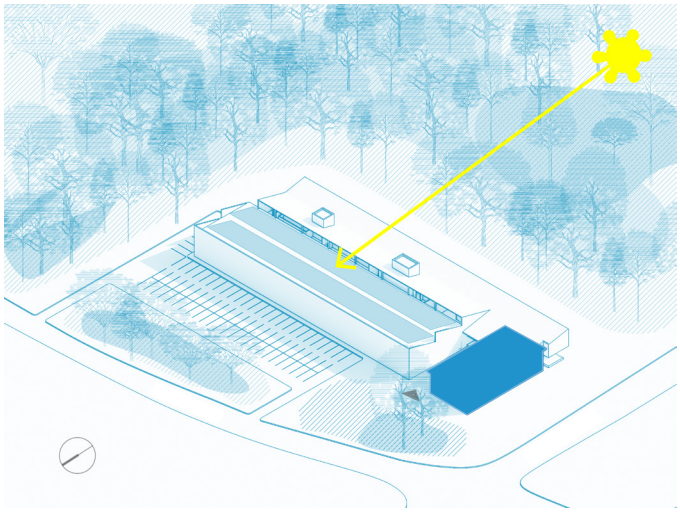


Fig. 7.2. Site plan diagram showing building massing and solar orientation

their adaptability to local climate conditions and ecological compatibility. This naturalized planting strategy not only restores habitat and supports biodiversity, but also significantly reduces irrigation demand by reducing or eliminating the need for intensive water inputs associated with non-native or ornamental species. The reduction or elimination of water requirements for landscaping will require verification in the design phase with a landscape architect.

The result will be a lush, resilient landscape that reinforces sustainability goals while offering year-round visual and experiential richness. A network of accessible paths and flexible outdoor gathering areas will extend cultural programming beyond the building footprint, encouraging creativity, reflection, and informal use throughout the site. This approach transforms the grounds into a dynamic, ecologically grounded cultural landscape that supports both environmental stewardship and community engagement.

7.1.3 Architectural Design

The massing described in Section 7.3 of this report was further developed to based on programmatic requirements. The proposed facility anchors itself to the existing 2 storey brick building through an activated, public, south facing circulation spine which links all of the programs together, and functions as the main public space within the building and is accessed through a welcoming courtyard between the existing building and the new building. Off the main spine are programs related to the exhibition or practice of arts and culture, notably the art gallery, shared exhibition space, and black box theatre programs, all of which invite activity into this public space.

The building as proposed for the purposes of this study has a total area of 61,500 square feet, exceeding the baseline by 2,800 square feet.



Fig. 7.3. Exterior view showing the entrance courtyard between the existing building and new building.



Fig. 7.4. Interior view of proposed building, showing the public connector space, with the exterior solar control overhang.

The architectural language of the new structure, notably in the sawtooth roofline, refers back to the example site's contemplated industrial past, both drawing from the flexibility of these historic structures, as well as serving as a reminder of Lindsay and the site's history as a centre of industry. The existing brick building has been repurposed to house programs related to the undertaking or creation of creative arts, along with education and instruction spaces. Serving as a buffer between the sensitive programs of the archival storage are programs including the black box theatre, community kitchen, and exhibition spaces, among other service-related spaces. The exhibition spaces are contained to allow for a greater degree of light control, while the main spine can house larger scale artifacts which are not light sensitive.

The building is strategically oriented along an east–west axis, optimizing solar exposure and allowing the majority of glazed openings to be located on the north and south façades. Along the south-facing elevation, a second-floor overhang forms a continuous spine corridor that serves both functional and environmental purposes. This deep overhang is calibrated to permit low-angle winter sunlight to enter the building—providing passive solar heating—while effectively blocking high-angle summer sun, thereby reducing unwanted heat gain.

Solar access is carefully managed to allow daylight to penetrate deep into the ground floor and adjacent program areas, where appropriate, avoiding spaces with light-sensitive uses. The south-facing corridor opens to sweeping views of the restored landscape, creating a strong visual and spatial connection to the outdoors and fostering an interior–exterior dialogue during the warmer months.

Complementing this, a north-facing clerestory introduces soft, diffused daylight into the interior, enhancing ambient illumination while minimizing glare and direct solar gain. Together, these passive strategies support occupant comfort, energy efficiency, and a dynamic relationship between architecture and site.

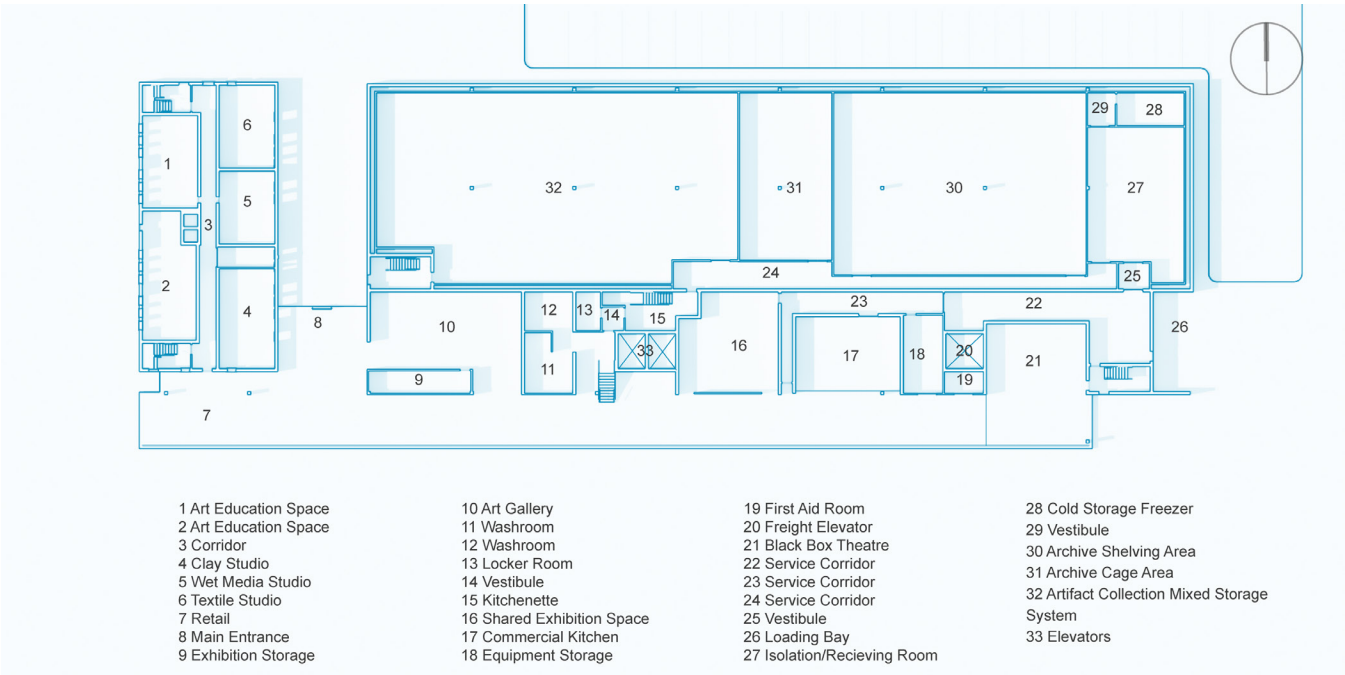


Fig. 7.5. Ground Floor plan of the proposed Cultural Centre and Archive building

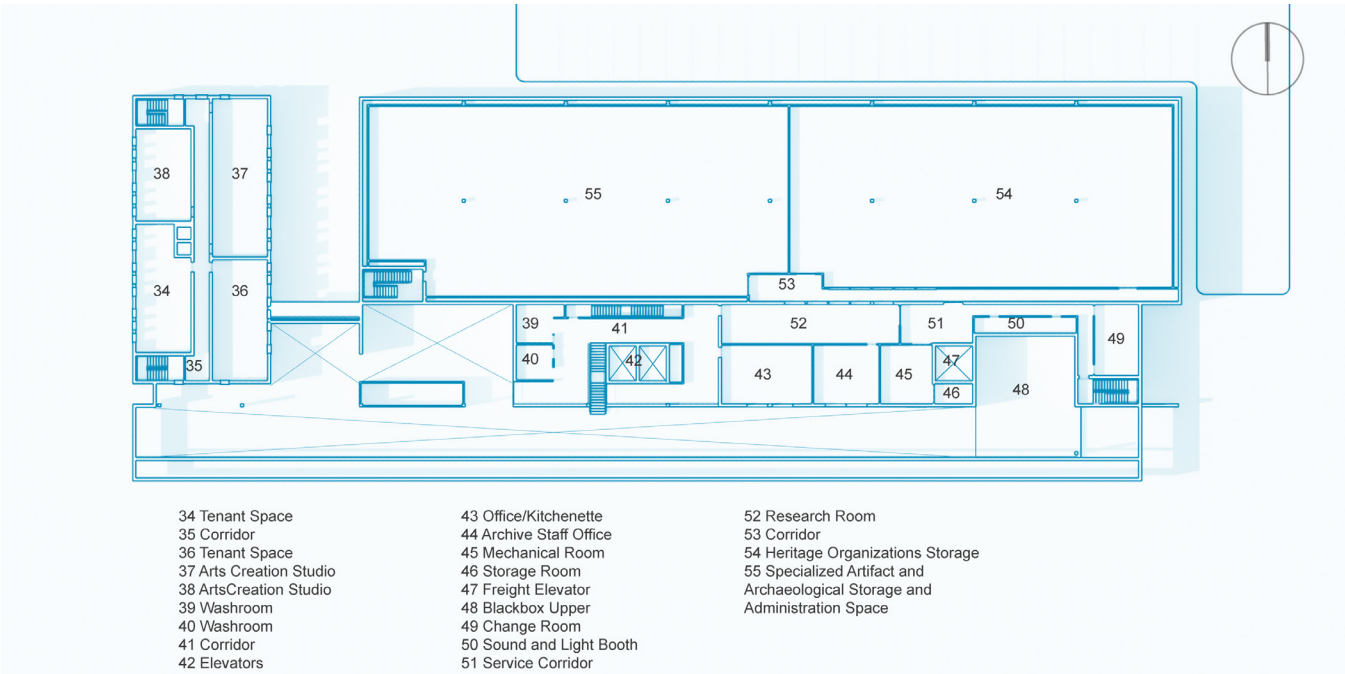


Fig. 7.6. Second Floor plan of the proposed Cultural Centre and Archive building

The art gallery is situated adjacent to the main entrance, inviting visitors further into the space. The public corridor provides spill over areas for the shared exhibition space, art gallery, and black box theatre. The black box theatre is at the terminus of the spine and is a double height space allowing for greater flexibility.

The Archive, which forms approximately half of the total program by floor area, is encapsulated on the northern portion of the new portion of the building, with the active spaces to the south acting as a buffer, while a double wall construction surrounds the east, north and west sides. All archive related programs are grouped together to allow for more efficient heating and cooling, as they require a high level of environmental control. The saw tooth roofline of the proposed building continues above the archives in the form of a formal parapet, angled to allow for the optimization of the proposed solar PV arrays. The slopes of the saw tooth roof have been designed with a 20° tilt, and are optimized for photovoltaic performance, accommodating a system capable of generating more electricity annually than the building consumes.

Archive, Artifact and Archaeological Spaces

The proposed breakdown of the archival programs is described in the table in Figure 7.8. The archive programs are connected through a shared corridor accessible through the loading bay to the east of the building, which in turn leads to a freight elevator to transport larger objects to the upper floor. This back of house area also permits access internally for staff through a kitchenette and locker room amenity space. A private, internal stair, that receives north facing lighting from the sawtooth roof above connects the ground and second floors for archive staff, allowing secure access through out the facilities. A double wall assembly provides both security and thermal efficiency for the archive programs.

Program Name	Area
Archive Shelving Area	4,695 sf
Archive Cage Area	1,585 sf
Outside Heritage Organizations Storage	7,100 sf
Artifact Collection Mixed Storage System	6,675 sf
Specialized Artifact and Archaeological Storage and Administration Space	7,900 sf

Fig. 7.7. Archive, artifact and archaeological program breakdown

Construction Materials and Assemblies

The structure is proposed to be constructed of mass timber post and beam construction, allowing for wide spans notably for the archive storage areas and exhibition type spaces. In comparison to more traditionally used systems at this scale such as steel and concrete, mass timber provides a renewable, thermally efficient, and lower embodied carbon alternative.

Proposed exterior cladding systems will target low embodied carbon, thermal efficiency, and local sourcing. Options include metal cladding, brick veneer, wood panelling, and terracotta panelling. For the purposes of this excercise, the conceptual wall assembly has been developed as a brick wall assembly with interior wind-bearing steel stud infill walls, and continuous insulation. This relates to the historic brick construction of the buildings on the site, as well as providing a material that is easily repairable, rather than part of a system that will require replacement on a larger scale when smaller components deteriorate, which can be seen as a long-term resiliency measure.

The propsed design considers multiple options for envelope assemblies for the purposes of energy modelling, including the opaque walls as well as the high-performance glazing systems. The parameters for the proposed assemblies can be seen in the table in Figure 7.11 for comparison. The building is primarily opaque, with select glazed openings

used to frame views and admit light into public use spaces. For example, the connective corridor along the south side of the building employs a glazed wall overlooking and connecting to the landscape to the south. The glazing is shaded by overhangs above, limiting solar gain in the warmer months, and allowing it in the colder months. Figure 7.9 demonstrates a conceptual wall section through this area, and demonstrates the differences in material thicknesses that will be required to meet the targets described in Figure 7.11. Elsewhere, such as in the archive, an opaque double-wall assembly is employed to limit environmental fluctuations within the strictly controlled archive spaces.

The opaque wall and roof assemblies similarly considered several options to achieve the requirements of the Green Municipal Fund, as well as to allow for the potential to target Passive House certification. The U-values of the wall assemblies range between 0.266 W/m^{2}K at the baseline, to 0.193 W/m^{2}K in the Proposed Upgraded model, which achieves Passive House targets. The roof values remain the same between the Proposed and Proposed Upgraded models, at 0.141 W/m^{2}K.

For fenestration, the U-values have the largest variance. The energy model considers the use of double low-e insulated glazing units with thermal breaks and argon fill (U = 0.25, SHGC = 0.37, VLT = 0.59), which would provide excellent thermal resistance while allowing generous daylight penetration and would achieve the GMF targets. Optional triple-glazed units were modeled (U = 0.14), to potentially meet the Passive House standard, however these upgrades yield relatively marginal incremental improvements to the building's energy performance.

The façade design is integral to the building's daylighting strategy, incorporating carefully placed fenestration that maximizes natural light while minimizing glare and heat gain. Glazing is optimized to support daylight

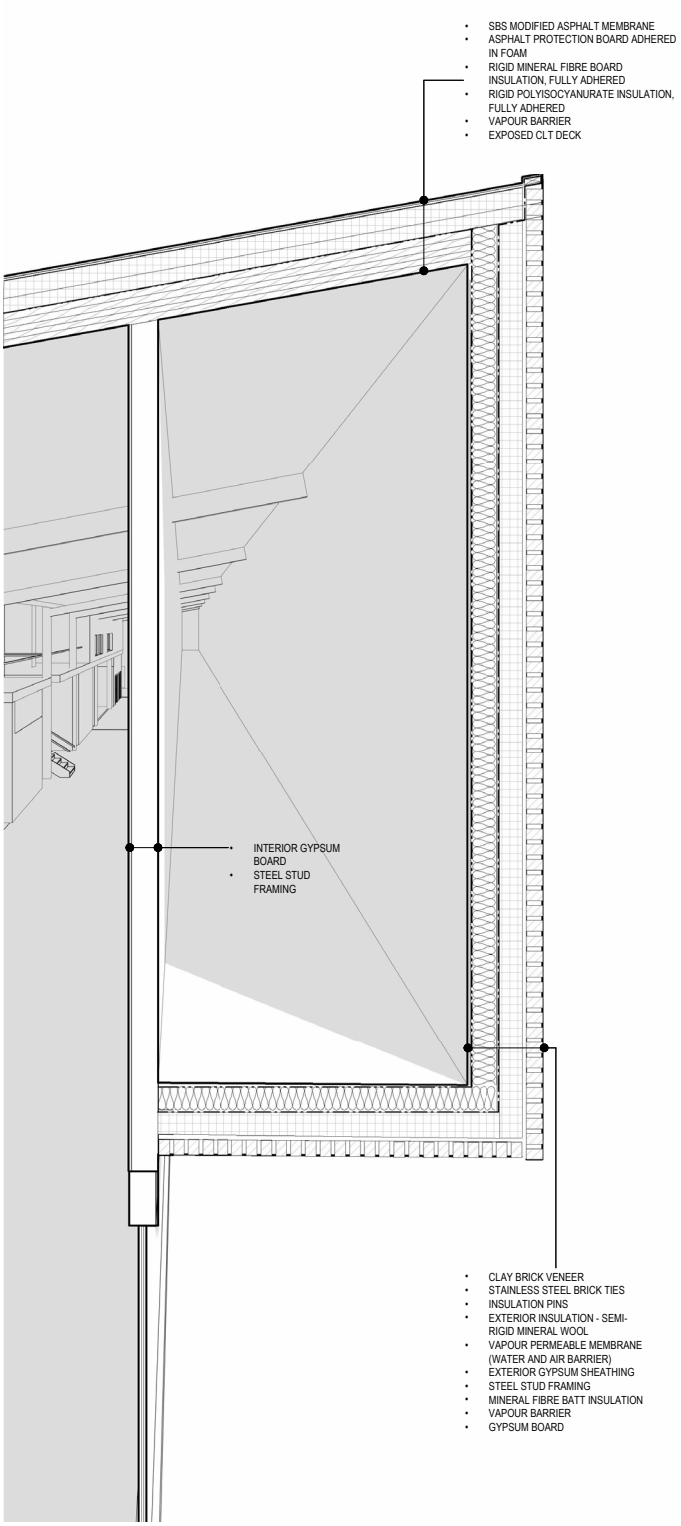


Fig. 7.8. Conceptual wall section diagram demonstrtating the different wall components.



Fig. 7.9. Exterior view of the connecting spine, overlooking the exterior public space and the larger remediated landscaped site.

Sustainability Strategies for Architectural Design

- Reuse and upgrade thermal efficiency of existing structures to reduce upfront carbon emissions
- Use sustainable materials to reduce upfront carbon emissions
- Orient building to allow for concentration of openings on north and south faces
- Optimize roof area for solar collection
- Place archive programs within the building's most thermally stable zones, to optimize energy efficiency
- Consider other spatial adjacencies that minimize energy-intensive environmental control strategies
- Utilize high performance glazing with optimized window-to-wall ratios to enhance daylight penetration and minimize unwanted solar gain
- Employ, or allow for shading devices and dynamic controls to further enhance occupant comfort
- Exceed minimum code requirements for wall assembly efficiency
- Reduce reliance on adhesive and chemical adhesion, to allow for future disassembly and component reuse.



Component	Baseline		Proposed		Proposed Upgraded	
	Description	U-Factor (W/m2K)	Description	U-Factor (W/m2K)	Description	U-Factor (W/m2K)
Roof	Insulation entirely above deck	0.153	Insulation entirely above deck	0.141	Insulation entirely above deck	0.141
Above Grade Exterior Wall	Steel-framed/Mass	0.266	Steel-framed/Mass	0.266	Steel-framed/Mass	0.193
Fenestration	Vertical Fenestration SHGC - 0.39 VLT - 40%	1.9	Vertical Fenestration SHGC - 0.37 VLT - 59%	1.4	Triple Low-E window SHGC - 0.46 VLT - 66%	0.79

Note: Values have been converted. For original imperial values, refer to Appendix.

Fig. 7.10. Comparison of building components and modelling scenarios

harvesting, allowing interior spaces to benefit from ample diffuse daylight and enabling the use of daylight-responsive lighting controls that automatically adjust artificial lighting based on available natural light.

This integration of high-performance glazing with responsive lighting systems significantly reduces lighting power density and contributes to overall energy savings. The envelope design combined with a spatial configuration that promotes cross-lighting minimizes the need for deep artificial lighting zones.

The tables in Figures 7.12 through 7.15 present the RSI and U-values for the key envelope assemblies used in the energy modelling process, as well as the associated upfront embodied carbon for each assembly scenario. Table 7.12 focuses on roof assemblies, illustrating the progression in rigid mineral fibre board insulation thickness—from 76.2 mm (3 inches) in the Baseline scenario to 101.6 mm (4 inches) in both the Proposed and Proposed Upgraded options. This increase in insulation thickness contributes to a significant improvement in thermal performance, as captured in the energy simulation results.

Table 7.13 compares the wall assemblies, highlighting a more substantial change: the use of 102 mm (4 inches) of semi-rigid mineral fibre continuous exterior insulation in the Baseline and Proposed options is increased to 178 mm (7 inches) in the Proposed Upgraded scenario.

CLT Roof Assembly Effective R-Value Calculations

Component	Baseline		Proposed and Upgraded	
	Thickness (mm)	RSI Effective (m^2K/W)	Thickness (mm)	RSI Effective (m^2K/W)
Interior air film	-	0.11	-	0.11
Mass Timber Roof Panel	191	1.47	191	1.47
Self-adhered sheet-applied air barrier	0.8	-	0.8	-
Rigid polyisocyanurate insulation, fully adhered	76.2	3.18	76.2	3.18
Rigid mineral fibre board insulation, fully adhered	**76.2**	**2.25**	**101.6**	**3**
Asphalt protection board, fully adhered	4.8	0.14	4.8	0.14
SBS modified asphalt membrane (base ply)	2.2	-	2.2	-
SBS modified asphalt membrane (cap sheet)	4	-	4	-
Exterior air film	-	0.03	-	0.03
TOTALS	355	7.18 RSI 0.140 U-Factor	381	7.93 RSI 0.126 U-Factor

Note: Effective U-Value data was referenced from similar Roof Assembly 03 within Appendix A of *New Design Resources for Embodied Carbon Targets: 2024 Comparitive Study by RDH Building Science + TMU*

Fig. 7.11. Effective Roof U-Value Comparison

This change results in a 30% improvement in the thermal performance (U-value) of the wall assembly, contributing meaningfully to the overall reduction in heating and cooling loads.

Importantly, Figures 7.14 and 7.15 reflect the embodied carbon implications of these insulation upgrades. While the increase in insulation thickness enhances thermal efficiency and reduces operational energy use, it also introduces additional upfront carbon emissions due to the production of mineral wool—a material known to have a relatively high embodied carbon footprint compared to other insulation types. These trade-offs between improved operational performance and increased material emissions are further explored in the Cost Review section (Section 8), where both energy and carbon payback considerations are discussed in relation to lifecycle benefits.

Wall Assembly Effective R-Value Calculations

Component	Baseline and Proposed		Proposed Upgraded	
	Thickness (mm)	RSI Effective (m^2K/W)	Thickness (mm)	RSI Effective (m^2K/W)
Interior air film	-	0.12	-	0.12
Interior gypsum board	12.7	0.05	12.7	0.05
Vapour barrier	-	-	-	-
Steel stud-frame w/ Batt insulation	152	1.3	152	1.3
Exterior Sheathing	12.7	0.1	12.7	0.1
Self-adhered sheet applied air and water barrier (vapour-permeable)	1	-	1	-
Semi-rigid mineral fibre exterior insulation with intermittent proprietary fibreglass clips	**102**	**2.272**	**178**	**3.976**
Air cavity	25	-	25	-
Anchored masonry veneer	90	-	90	-
Exterior air film	-	0.03	-	0.03
TOTALS	395.4	3.872 RSI 0.260 U-Factor	471.4	5.576 RSI 0.180 U-Factor

Note: Effective U-Value data was referenced from similar Wall Assembly 02 within Appendix A of *New Design Resources for Embodied Carbon Targets: 2024 Comparitive Study by RDH Building Science + TMU*

Fig. 7.12. Effective Wall U-Value Comparison

CLT Roof Assembly Embodied Carbon Emissions per 9 sqm of Assembly Area						
Component	**Baseline**			**Proposed and Upgraded**		
	Thickness (mm)	**Material Volume (m3)**	**Carbon Emissions (A1-A3) (kgCO2e)**	**Thickness (mm)**	**Material Volume (m3)**	**Carbon Emissions (A1-A3) (kgCO2e)**
Mass Timber Roof Panel	191	1.719	170	191	1.719	170
Self-adhered sheet-applied air barrier	0.8	-	61	0.8	-	61
Rigid polyisocyanurate insulation, fully adhered	76.2	0.6858	58	76.2	0.6858	58
Rigid mineral fibre board insulation, fully adhered	**76.2**	**0.6858**	**120**	**101.6**	**0.9144**	**160**
Asphalt protection board, fully adhered	4.8	-	36	4.8	-	36
SBS modified asphalt membrane (base ply and cap sheet)	2.2	-	68	2.2	-	68
TOTALS			513			553

Note: Embodied Carbon Emissions data was referenced from similar Roof Assembly 03 within Appendix A of *New Design Resources for Embodied Carbon Targets: 2024 Comparitive Study by RDH Building Science + TMU*

Fig. 7.13. Embodied Carbon Emissions Comparison

Wall Assembly Carbon Emissions per 9 sqm of Assembly Area						
Component	**Baseline and Proposed**			**Proposed Upgraded**		
	Thickness (mm)	**Material Volume (m3)**	**Carbon Emissions (A1-A3) (kgCO2e)**	**Thickness (mm)**	**Material Volume (m3)**	**Carbon Emissions (A1-A3) (kgCO2e)**
Interior paint	-	0.0014	0.6	-	0.0014	0.6
Interior gypsum board	12.7	0.114	26.04	12.7	0.114	26.04
Vapour barrier	0.8	0.0072	17.93	0.8	0.0072	17.93
Steel stud framing	152.4	-	31.15	152.4	-	31.15
Batt insulation	152.4	1.029	158.39	152.4	1.029	158.39
Exterior Sheathing	12.7	0.1143	42.26	12.7	0.1143	42.26
Self-adhered sheet applied air and water barrier (vapour-permeable)	1	0.009	11.16	1	0.009	11.16
Semi-rigid mineral fibre exterior insulation	**102**	**0.918**	**161.456**	**178**	**1.602**	**282.548**
Insulation pins	-	0.000302	3.73	-	0.000302	3.73
Cladding anchorage	-	0.001	17.92	-	0.001	17.92
Masonry veneer	90	0.81	407.4	90	0.81	407.4
TOTALS			878			999

Note: Embodied Carbon Emissions data was referenced from similar Wall Assembly 02 within Appendix A of *New Design Resources for Embodied Carbon Targets: 2024 Comparitive Study by RDH Building Science + TMU*

Fig. 7.14. Embodied Carbon Emissions Comparison

7.1.4 Structural Design

The structural design of the building reflects a low-carbon approach, prioritizing simplicity, material efficiency and adaptability. The building form, through the architectural design, is deliberately simple, with a rectilinear geometry and rational spatial organization that supports an efficient structural layout. Regular bay spacing and a clear structural grid reduce the need for complex framing or custom structural elements – minimizing material usage and waste.

Corollary to this, concrete use is also intentionally limited. Concrete is a carbon intensive material, and should is reserved for essential elements in contact with the ground, including the foundation and slabs, The depth of the foundation is limited in order to limit disturbance to potential site contamination, as well as reduce the volume of concrete used, the above grade structure is composed of engineered timber. As wood has a lower embodied carbon profile, it helps to meet the objectives of a lower upfront carbon building, when compared with using either concrete or steel alternatives.

Another key consideration is to design for disassembly. This principle allows for the potential reuse of building components at the end of the buildings life, ideally hundreds of years from now. Mechanical connections such as bolted joints are prioritized over chemically bonded or welded connections, which are not as readily reversible. This allows the components of the building to be deconstructed, processed and reused, should a suitable use for them be found, which ultimately reduces the waste of otherwise useful materials.

7.1.5 Mechanical Design

The mechanical systems are centered on a Variable Refrigerant Flow (VRF) system with heat recovery capabilities, selected for its efficiency and flexibility in managing varied space usage and occupancy patterns. This system enables simultaneous heating and cooling as required across zones, optimizing energy use and occupant comfort.

Fresh air is delivered through a Dedicated Outdoor Air System (DOAS), which operates independently from the conditioning systems. This decoupled approach allows for greater control over ventilation rates, aligning them closely with occupancy through demand-controlled ventilation strategies. In high occupancy or variable-use spaces such as classrooms and studios, this system helps maintain indoor air quality without unnecessary energy expenditure. The integration of natural ventilation strategies, facilitated by operable windows and thoughtfully designed openings – specifically the clerestory which can allow rising hot air to escape – can further reduce mechanical cooling demand and support passive thermal regulation.

Special consideration is given to spaces with stringent environmental requirements, such as archive and collections storage areas. These zones are designed for continuous 24/7 operation, with humidification systems maintaining stable relative humidity between 40% and 60% to protect sensitive materials. The mechanical systems are calibrated to ensure consistent environmental conditions in these areas, while still contributing to overall energy efficiency goals.

In terms of water efficiency, the proposed

design should target a minimum reduction of 20% in water usage, when compared with a facility of comparable use and size. This has been accounted for in the development of the operating models in the Cost Review in Section 8.

7.1.6 Electrical Design

The electrical design is informed by both energy efficient lighting products – a given in the present environment of LED lighting – coupled with intelligent controls. Lighting throughout the building is designed using space-by-space methodologies in compliance with ASHRAE 90.1-2022, achieving a reduced overall lighting power density. Daylight-responsive dimming systems are installed in perimeter spaces, with the ability to dim down to 10%, supplementing the mandatory automatic lighting controls.

Rooftop solar photovoltaic arrays form a central part of the electrical strategy. In the model which delineates a Passive House Premium target, they are projected to generate up to 343,160 kWh annually—more than enough to meet the building's operational electrical

Sustainability Strategies for Structural Design

- Simplify building form
- Reduce use of concrete
- Design for disassembly through use of mechanical connections

Sustainability Strategies for Mechanical Design

- Natural ventilation
- Air-source heat pump systems

Sustainability Strategies for Electrical Design

- Photovoltaic panels
- Automatic lighting controls
- Daylight responsive dimming

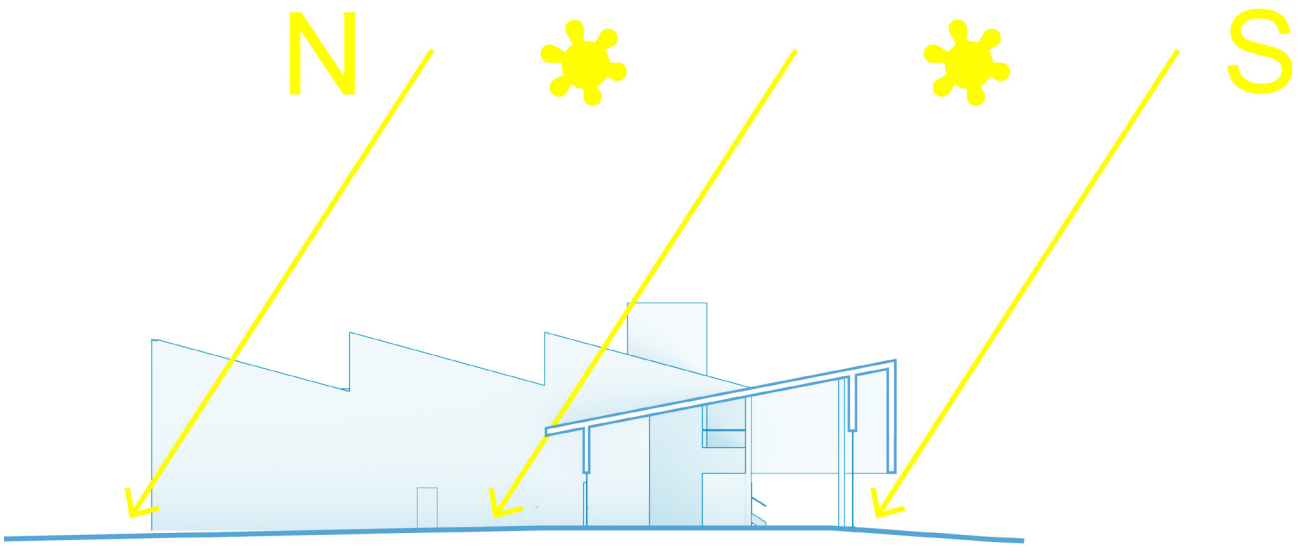


Fig. 7.15. Diagram showing optimization of roof angles for solar collection, and solar shading strategy.

needs. Demand-controlled ventilation in high occupancy spaces further reduces electrical loads associated with air handling systems. Domestic hot water is provided via heat pump water heaters with a Coefficient of Performance (COP) of 4.0, which eliminates the need to rely on less-efficient electric resistance heating.

7.1.7 Special Considerations

Several design strategies have been incorporated to meet the specific operational and programmatic needs of the Kawartha Lakes Cultural Centre, with a particular emphasis on environmental stability and energy performance. One of the most critical areas is the archive and collections storage, which requires continuous HVAC operation to ensure strict environmental control. These spaces are sensitive to fluctuations in temperature and humidity, which can damage or accelerate the deterioration of archival materials. To address this, the HVAC systems in these areas are designed to maintain a stable relative humidity between 40% and 60% and to operate 24/7, independent of the occupancy-driven controls used elsewhere in the building.

The mechanical design also takes into account the importance of airtightness as a fundamental component of the building's performance. The entire facility has been modeled with a tight air leakage rate of less than 0.3 air changes per hour (ACH), applied consistently across both baseline and proposed energy models. This assumption reflects the integration of a high-performance building envelope, which plays a significant role in reducing the demand on mechanical systems. By minimizing uncontrolled air infiltration and exfiltration, the envelope reduces the frequency and magnitude of heating and cooling loads.

This design strategy is especially significant given that space heating and cooling collectively account for approximately 29% of the building's total electricity consumption. Enhancing airtightness not only improves occupant comfort and system efficiency but also supports long-term durability by preventing moisture ingress and thermal bridging. The mechanical systems are therefore not only designed to deliver high operational performance but are also integrated into a holistic envelope-first approach, where reduced loads translate directly into smaller, more efficient mechanical equipment and lower operating costs over the life of the building.

Certification Systems

The building has been designed to consider potential pursuit of the Passive House Certification system. This system has five overarching criteria which must be met, including Space Heating Demand, Space Cooling Demand, Primary Energy Demand, Airtightness, and Thermal Comfort, which have associated metrics. As seen in the energy modelling section of the report, these metrics can all be achieved in either of the two developed models. There are additional tiers of Passive House - Plus and Premium, which could also be targeted. Plus requires the generation of energy on site, and would balance the energy requirements of the building. Passive Hosue Premium goes a step further and targets the generation of more energy than the building requires for operation, creating a surplus of renewable energy.

8 - Energy Modelling

A comprehensive whole-building energy model was developed by Loring Consulting Engineers using eQuest 3.65/7175 (DOE2.3), calibrated to match the schematic design package dated April 17, 2025. Simulations were performed to demonstrate compliance with NECB 2020 Chapter 8 Performance Path, and to assess eligibility for the Federation of Canadian Municipalities' Green Municipal Fund (GMF). Multiple design typologies were evaluated against NECB performance benchmarks. A baseline system complied with System 3 : Single-zone packaged rooftop unit with baseboard heating, constant volume fan control, air cooled DX cooling, electric resistance furnace for the rooftop and electric resistance for baseboards. A proposed system across the multiple Proposed upgrade options incorporated advanced Variable Refrigerant Flow systems with heat recovery and dedicated outdoor air systems. The analysis includes multiple energy conservation measures and parametric runs to test the effectiveness of upgrades such as triple glazing and enhanced ventilation control, and the possibility of compliance with Passive House targets.

8.1 Operational Targets

The operation targets for the Green Municipal Fund is based on two key metrics, used to measure the energy use of buildings – Thermal Energy Demand Intensity (TEDI) and Energy Use Intensity (EUI).

Energy Use Intensity (EUI) is a metric that represents the total amount of energy consumed by a building in a year, relative to its floor area. It is expressed in kilowatt-hours per square metre per year (kWh/m²/yr) and includes all forms of energy used within the building—such as for heating, cooling, ventilation, lighting, hot water, and plug loads.

EUI is a comprehensive indicator of a building's overall energy performance, and is influenced by:

- The efficiency of mechanical and electrical systems
- Operational schedules and occupant behaviour
- Envelope performance (insulation, glazing, airtightness)
- Lighting and equipment efficiency

Lower EUI values indicate better energy efficiency. As a metric, it allows comparisons across building types and helps track improvements from design upgrades or operational changes.

Thermal Energy Demand Intensity (TEDI) is a measure of the annual amount of heating energy required to maintain comfortable indoor temperatures in a building. It is expressed in kilowatt-hours per square metre per year (kWh/m²/yr) and specifically isolates the thermal performance of the building, and reflects the energy needed for space heating and cooling, accounting for heat losses and gains through the building envelope, ventilation, and infiltration.

This metric is influenced by factors such as:

- Envelope insulation and airtightness
- Window performance (U-values and solar heat gain)
- Passive solar gains
- Internal heat gains (from occupants and equipment)
- Ventilation losses

TEDI is often used to assess how well a building retains heat, independent of its mechanical system efficiency. Lower TEDI values indicate a well-insulated and airtight building that requires less energy to stay warm.

In order to comply with the requirements of the GMF study, the building has been

evaluated under two typologies, based on the buildings location in Climate Zone 5:

- **Typology One:**
  - Target EUI: ≤ 100 kWh/m²/year
  - Target TEDI: ≤ 32 kWh/m²/year
- **Typology Two:**
  - EUI: At least 25% below the NECB 2020 baseline
  - TEDI: Equal to or better than the NECB 2020 baseline

39% of the proposed Cultural Centre programming can be classified under Typology One, while the remainder would be classified under Typology Two. The above Typology based reductions are based on the calculated baselines, included in the table in Figure 8.1 below.

8.1.1 Design Assumptions

The following inputs are referenced from the Energy Model Report in the Appendices of this report, common to all developed energy models, unless noted otherwise:

- **Climate Data:** CTMY weather file for Toronto
- **Baseline Envelope:**
  - Roof: U = 0.153 W/m²K
  - Walls: U = 0.266 W/m²K
  - Windows: U = 1.9 W/m²K SHGC = 0.39, VLT = 0.40
  - Note: Above values have been converted. For original imperial values, refer to Energy Modelling Appendix.
- **Internal Loads:**
  - Based on space use with occupancy, lighting, and plug loads. Refer to Table 9 in Energy Modelling Appendix for more detail on specific space assumptions
  - Lighting Power Densities and usage schedules from ASHRAE 90.1-2022
  - Daylight-responsive dimming for perimeter zones
- **HVAC:**
  - Archive zone with 24/7 conditioning and RH control
- **Infiltration:**
  - Modeled between 0.3–0.01 ACH, consistent across both baseline and proposed models

The model is based on the drawings and model described in Section 7.1

Energy Simulation	Total Energy Consumption (kWh)	Energy Use Intensity (kWh/m²/year)	Thermal Energy Demand Intensity (kWh/m²/year)
Baseline Simulation	561,421	98.2	64.9

Fig. 8.1. Baseline model parameters, as basis of reduction to meet Net-Zero goals

8.2 Results

Broadly speaking, the parametric runs of the energy model can be classified into three main categories: Baseline, Proposed and Proposed Upgraded. A summary table of the envelope, and mechanical variables for each category is included in this report. For the envelope summary, refer to Figure 7.11.

Mechanical Component	Baseline	Proposed	Proposed - Upgraded
Mechanical – Cooling	• Single zone packaged rooftop unit • Air cooled direct expansion cooling	Variable refrigerant flow (VRF) system	Variable refrigerant flow (VRF) system
Mechanical - Heating	• Electric furnace resistance for rooftop unit • Baseboard heating		
Mechanical - Ventilation	Constant volume fan control	Dedicated outdoor air system (DOAS)	Dedicated outdoor air system (DOAS)

Fig. 8.2. Mechanical components used for modelling of each option

Based on the variables within Figure 7.11 and Figure 8.2, the results of the three major categories of Baseline, Proposed and Proposed Upgraded are included in the table in Figure 8.3 below.

Metric	Baseline	Proposed	Savings over Baseline	Proposed Upgraded	Savings over Baseline
Energy Use Intensity (EUI)	98.2 kWh/m²/yr	56.9 kWh/m²/yr	42.0%	50.7 kWh/m²/yr	48.4%
Thermal Energy Demand (TEDI)	64.9 kWh/m²/yr	22.0 kWh/m²/yr	66.1%	14.9 kWh/m²/yr	77.0%
Total Energy Consumption	561,421 kWh	343,917 kWh	38.7%	289,793 kWh	48.4%
Compliance	**NECB 2020 & GMF**	**Achieved**	**–**	**Exceeded**	**–**

Fig. 8.3. Energy modelling results for each option

Notably, the Proposed and Proposed Upgraded scenarios both exceed the Green Municipal Fund Targets. To meet the targets, the building would have required savings of 25% under Typology Two, as the Typology One baseline already exceeds the target Energy Use Intensity of 100 kWh/m2/yr for the entire building. This would have resulted in a Energy Use Intensity of 73.65 kWh/ m2/yr, which has been exceeded by an additional 17% and 23.4%, respectively for the two scenarios. The Thermal Demand Intensity of the building is required to be 32 kWh/ m2/yr for Typology One, and equal to or better than the NECB 2020 Baseline for Typology Two. The Baseline building has a Thermal Demand Intensity of 64.9 kWh/ m2/yr – more than double the requirement to achieve the Green Municipal Fund Target for Typology One. Even in the blended building, which contains 39% Typology One programs, the Thermal Energy Demand Intensity is lowered by 66%, and 77% in the Proposed and Proposed Upgraded scenarios, respectively.

When combined with the solar PV array (343,160 kWh/year), the project achieves net-zero or net-positive performance, qualifying for Passive House Plus or Premium energy standards depending on the configuration.

8.3 Cost Review

The Capital Cost review table outlines the comparative energy performance and financial implications of several design options evaluated against a NECB 2020-compliant baseline scenario, and presents for each scenario the Incremental Capital cost over the project baseline scenario, as well as a simple Return on Investment (ROI), which is the anticipated annual energy cost savings divided by the incremental capital cost of the respective option.

The baseline case represents OBC compliant, conventional construction without energy efficiency upgrades and therefore incurs the highest total energy consumption (561,421 kWh/year) and annual electricity costs ($79,484.88).

The Proposed design option introduces targeted upgrades including a more efficient variable refrigerant flow (VRF) mechanical system, increased roof insulation, and improved window performance. These enhancements collectively result in a 38.7% reduction in total energy use, with a corresponding drop in electricity costs to $48,838.56 per year. The incremental capital cost for this design is $387,637, resulting in a simple return on investment (ROI) of 12.6 years. As described in the Energy Modelling Report, this approach represents a significant improvement in building performance with minimal additional upfront investment.

Building upon this, the Proposed Upgraded option includes additional envelope improvements, notably increased wall insulation. These refinements further reduce the building's energy use to 289,793 kWh/year—a 48.4% reduction from baseline—and cut electricity costs to $41,211.72 annually. Although the capital cost rises slightly to $441,504 above baseline, the ROI improves to 11.5 years, indicating an even more favourable balance between upfront investment and long-term

Option Description	Percent Energy Consumption Reduction over NECB 2020	Annual Electricity Consumption (kWh)	Energy Use Intensity (kWh/m²/year)	Annual Electricity Costs($)	Total Project Capital Cost	Incremental Capital Cost over Baseline	Annual Energy Cost Savings over Baseline	Simple ROI (years)
Baseline	0.00%	561,421	98.2	$79,484.88	$36,505,500.00			
Proposed	38.70%	343,917	59.6	$48,838.56	$36,893,137.43	$387,637.43	$30,646.32	12.6
Proposed Upgraded	48.40%	289,793	50.7	$41,211.72	$36,947,004.74	$441,504.74	$38,273.16	11.5
Proposed Upgraded - Triple Glazing	49.10%	285,454	49.5	$40,599.00	$37,125,865.24	$620,365.24	$38,885.88	16.0
Proposed with PV array	100.00%	26,388	4.6	$4,096.00	$37,518,137.43	$1,012,637.43	$75,388.88	13.4
Proposed Upgraded with PV array	100.00%	-24,247	0.0	-$3,035.00	$37,572,004.74	$1,066,504.74	$82,519.88	12.9

Fig. 8.4. Operating Model for Baseline Option

operational savings.

A further parametric study was conducted using this upgraded scenario as a base and substituting in triple-glazed low-e windows. While this substitution improves performance marginally—reaching a 49.1% total energy savings and reducing energy use intensity to 49.5 kWh/m²/year—the additional cost of the high-performance glazing increases the incremental capital cost to $620,365. As a result, the ROI stretches to nearly 16 years. Although this measure supports Passive House certification by meeting required U-values and thermal comfort thresholds, it is not recommended for this project at this time due to the limited return relative to the investment.

Two additional options were explored using Passive House principles to evaluate the impact of adding a photovoltaic (PV) array to both the Proposed and Proposed Upgraded design scenarios. While formal Passive House certification (Plus or Premium) can not be pursued without the use of the Triple Glazed windows described in this section, the modelling targets the corresponding energy use intensity (EUI) thresholds of 45 and 30 kWh/m²/year respectively. The inclusion of PV alters the energy profile of the building significantly. In the Proposed Upgraded with PV configuration, the project becomes net-positive in energy, exporting an estimated 24,247 kWh per year to the grid, and generating an estimated negative annual electricity costs (–$3,035). This option requires the highest capital outlay—estimated at $1,066,504 above the baseline—but achieves the greatest operational savings, amounting to $82,519.88 annually, with a competitive ROI

of 12.9 years. This scenario demonstrates the long-term value and sustainability potential of coupling high-performance envelope design with on-site renewable energy generation, even in the absence of a formal certification target.

Impact on the Operating Model

The tables in Figures 8.5 and 8.6 represent the operating model for the Baseline option and Proposed Upgraded option, respectively. These tables are based on the Operating Model presented in Table 6 within the Phase 2A report, which reflects the anticipated income and expenses over the first five years of operation, without consideration for the expenses for the Archives, which represent an ongoing expense that the city already incurs. The model from Table 6 has been updated to reflect the better understanding of the Cultural Centre and Archive, based on the findings of the Energy Modelling report and design scheme development. With a better understanding of the actual utilities, including electricity usage and water demands, the assumptions within the Utilities row have been replaced. The costs used for both Electrical, and Water and Sewerage is based on local rates. Electrical rates were based on the Ontario Electrical Board rates for Hydro One Networks Inc - Former Peterborough Distribution Inc. Service Area. Water and Sewerage rates were based on the City of Kawartha Lakes posted consumption rates of $3.14 and $1.76 per cubic meter, for water and sewer, respectively. The water usage for the building is based on benchmarks of similar building types, and estimates approximately 2,552 cubic metres per annum.

When compared with the Table from the Phase 2A report, the utility costs are significantly higher. The previous report estimated utilities in the range of $43,000, whereas with the application of the aforementioned rates to the usage estimated in the Baseline energy model results in utility costs totaling $91,989.68 – with $79,484.88 attributed to electricity, and $12,504.80 for water and sewer. This is seen in the Table in Figure 8.5, which represents an update to the operating model of the baseline option. Ultimately, the first year of operation starts in a larger deficit of $50,940.68, and has a smaller but still positive operating income at year five of $20,253.32.

Figure 8.6 represents the operating model for the Proposed Upgraded option, which had the best ROI as identified in the Table in Figure 8.4. In this scenario, a 20% reduction in water usage has been used, as well as the 48.4% reduction in electrical demand as derived within the energy model. The total

Facility maintenance has also been slightly reduced, as there are fewer heating and cooling components, with the VRF system providing both heating and cooling through fewer individual elements. This cumulatively results in a scenario which is more familiar to the Operating model presented in Table 6 of the Phase 2A report, with a smaller deficit of $4,648.73 in the first year, and a larger net income of $66,545.27 in year five.

It is also worthwhile to note that the modelled PV systems can further benefit the building. With all other factors remaining the same, and the Proposed Upgraded option equipped with a PV system, the building produces more electricity than required and generates income. In this scenario, the centre would produce a net income of $39,597.96 in the first year, anticipated to rise to $110,791.96 by year five. This is described in the Table in Figure 8.7.

Carbon Accounting

Based on the upfront carbon intensity described in Section 7 of the report, the Proposed and Proposed Upgraded Options have been evaluated at a high level for their ability to provide a return on investment from an upfront carbon perspective.

Total Revenue	$483,905.00	$503,549.00	$524,130.00	$545,694.00	$568,288.00
			Expenses		
Building Administrative staff	$100,000.00	$102,000.00	$104,040.00	$106,121.00	$108,243.00
Facility Site Staff	$60,000.00	$61,200.00	$62,424.00	$63,672.00	$64,946.00
Custodial services	$95,000.00	$95,000.00	$95,000.00	$95,000.00	$95,000.00
Office operations, marketing	$25,000.00	$25,000.00	$25,000.00	$25,000.00	$25,000.00
Fundraising expenses	$7,500.00	$7,500.00	$7,500.00	$7,500.00	$7,500.00
Facility maintenance	$110,356.00	$110,356.00	$110,356.00	$110,356.00	$110,356.00
Utilities	$91,989.68	$91,989.68	$91,989.68	$91,989.68	$91,989.68
Insurance	$45,000.00	$45,000.00	$45,000.00	$45,000.00	$45,000.00
Total Expenses	**$534,845.68**	**$538,045.68**	**$541,309.68**	**$544,638.68**	**$548,034.68**
Net Income	**-$50,940.68**	**-$34,496.68**	**-$17,179.68**	**$1,055.32**	**$20,253.32**

Fig. 8.5. Operating Model for Baseline Option

Total Revenue	$483,905.00	$503,549.00	$524,130.00	$545,694.00	$568,288.00
			Expenses		
Building Administrative staff	$100,000.00	$102,000.00	$104,040.00	$106,121.00	$108,243.00
Facility Site Staff	$60,000.00	$61,200.00	$62,424.00	$63,672.00	$64,946.00
Custodial services	$95,000.00	$95,000.00	$95,000.00	$95,000.00	$95,000.00
Office operations, marketing	$25,000.00	$25,000.00	$25,000.00	$25,000.00	$25,000.00
Fundraising expenses	$7,500.00	$7,500.00	$7,500.00	$7,500.00	$7,500.00
Facility maintenance	$104,838.20	$104,838.20	$104,838.20	$104,838.20	$104,838.20
Utilities	$51,215.53	$51,215.53	$51,215.53	$51,215.53	$51,215.53
Insurance	$45,000.00	$45,000.00	$45,000.00	$45,000.00	$45,000.00
Total Expenses	**$488,553.73**	**$491,753.73**	**$495,017.73**	**$498,346.73**	**$501,742.73**
Net Income	**-$4,648.73**	**$11,795.27**	**$29,112.27**	**$47,347.27**	**$66,545.27**

Fig. 8.6. Operating Model for Proposed Upgraded Option

Total Revenue	$483,905.00	$503,549.00	$524,130.00	$545,694.00	$568,288.00
			Expenses		
Building Administrative staff	$100,000.00	$102,000.00	$104,040.00	$106,121.00	$108,243.00
Facility Site Staff	$60,000.00	$61,200.00	$62,424.00	$63,672.00	$64,946.00
Custodial services	$95,000.00	$95,000.00	$95,000.00	$95,000.00	$95,000.00
Office operations, marketing	$25,000.00	$25,000.00	$25,000.00	$25,000.00	$25,000.00
Fundraising expenses	$7,500.00	$7,500.00	$7,500.00	$7,500.00	$7,500.00
Facility Maintenance	$104,838.20	$104,838.20	$104,838.20	$104,838.20	$104,838.20
Utilities	$6,968.84	$6,968.84	$6,968.84	$6,968.84	$6,968.84
Insurance	$45,000.00	$45,000.00	$45,000.00	$45,000.00	$45,000.00
Total Expenses	**$444,307.04**	**$447,507.04**	**$450,771.04**	**$454,100.04**	**$457,496.04**
Net Income	**$39,597.96**	**$56,041.96**	**$73,358.96**	**$91,593.96**	**$110,791.96**

Fig. 8.7. Operating Model for Proposed Upgraded Option, with Photovoltaic array.

These calculations are based on the incremental reductions in electricity usage, and historical average emissions factors - in this case using a figure from 2023 of 67 gCO_2e/kWh, which represents the equivalent amount of carbon generated per Kilowatt Hour of electricity in Ontario.

The Proposed option results in an incremental increase of 27,533 $kgCO_2$ equivalent, through the increase in insulating material for the roof assembly. The resulting decrease in electrical consumption is 217,504 kWh when compared with the Baseline option. The avoided emissions in this reduction of electrical demand are 14,572 $kgCO_2e$ per year- which results in a payback period of 1.88 years.

The Proposed Upgraded option results in an increase of 61,905 $kgCO_2e$ when compared with the Baseline option. This is the result of the increased insulation in the roof and walls. The resulting decrease in electrical consumption is 275,967 kWh, and avoided emissions of 18,489 $kgCO_2e$ per year - which results in an upfront carbon payback period of 3.34 years.

Both of these are positive results, as they are well within the expected lifespan of the building.

9 - Lessons Learned

The development of the Kawartha Lakes Culture Centre through its early planning and feasibility phases has provided valuable insights into the opportunities and challenges of delivering a complex, multi-use cultural facility in a regional context. This section reflects on key takeaways from the project to date—spanning site analysis, consultant coordination, stakeholder engagement, sustainability planning, and heritage considerations. These lessons serve to inform the next phases of this project, and can help guide guide future civic and cultural infrastructure initiatives within the City of Kawartha Lakes and similar communities.

Optimizing Tradeoffs in Building Form

When analyzing the carbon impact of a building, it's important to consider how various design factors interact. Key considerations include:

1. **Size of Foundation:** Does the building need to sprawl? A building with a large footprint (i.e. spread out horizontally) requires a longer foundation perimeter, which typically means using more concrete—a material with high upfront embodied carbon.

   Design recommendation: Use a more compact building form where possible to reduce the total length of the foundation and thereby minimize embodied carbon from concrete use.

2. **Envelope Area:** For a given usable floor area, a single-storey building tends to have a larger exterior surface area (envelope) compared to a multi-storey structure. The envelope includes materials that manage thermal and moisture control—often involving complex, carbon-intensive components.

   Design recommendation: Minimize the envelope-to-volume ratio to reduce the amount of high-performance envelope materials required. This can lead to lower upfront carbon emissions. This analysis is performed at a high level in Section 7 of this report.

3. **Internal Structural and Programmatic Requirements:** While a cubed or compact massing may reduce both envelope area and foundation length (thus lowering embodied carbon), it might also introduce structural or functional challenges:
   - If upper floors need to support heavy loads, the structural system may become more complex and carbon-intensive.
   - Programmatic needs (like open spaces, special equipment, or specific adjacencies) might be compromised by overly compact forms.

   Design recommendation: Optimize both structural efficiency and functional usability. Sometimes it's better to accept slightly higher carbon intensity in order to support long-term utility, adaptability, and building longevity.

Reducing upfront carbon requires a careful balance between compactness (to reduce material use) and functional/structural suitability (to ensure the building works well and remains useful over time). Analyzing the interaction of these factors—foundation size, envelope area, and internal structure—can guide more sustainable and pragmatic design decisions.

Optimizing Tradeoffs in Structural Systems

When evaluating structural systems for a building, it's important to weigh the benefits and limitations of different materials, especially in terms of upfront embodied carbon. Key considerations include:

1. **Steel Structures:** Steel offers high strength-to-weight ratios, design flexibility, and speed of construction. While the upfront embodied carbon is higher than concrete on a per kilogram basis, less is used relative to a concrete structure, often meaning that a steel structure has a lower carbon footprint. It is often preferred for long spans, and sites with tight construction timelines.

   Design recommendation: Use steel strategically in locations where its structural advantages (e.g., long spans or rapid assembly) provide functional or economic value that justifies the carbon cost. Consider sourcing recycled steel where possible to reduce embodied carbon. If wood is not possible for use, steel is likely the next best structural system from an embodied carbon perspective.
2. **Concrete Structures:** Concrete provides durability, mass, and fire resistance, and it is often used for foundations, cores, and podium structures. However, the production of cement (a key component of concrete) is a major contributor to global CO_2 emissions, making concrete one of the highest-carbon structural materials.

   Design recommendation: Minimize the use of concrete where possible, particularly in above-grade structural systems. Where concrete is necessary, prioritize lower-carbon mixes (e.g., with supplementary cementitious materials) and efficient structural layouts that reduce volume.
3. **Wood Structures:** Wood is a renewable material with significantly lower embodied carbon than steel or concrete—particularly when responsibly sourced. Engineered wood products such as cross-laminated timber (CLT) allow for low-rise, mid-rise and even high-rise construction while sequestering carbon during the life of the building.

   Design recommendation: Where code, cost, and performance allow, use mass timber or hybrid wood systems to reduce upfront embodied carbon. Ensure that wood is FSC-certified or from other verified sustainable sources to maintain the integrity of carbon benefits.

Each structural material comes with distinct tradeoffs in terms of carbon intensity, structural performance, and design adaptability. By analyzing how steel, concrete, and wood align with the building's form, function, and sustainability goals, it is possible to make informed decisions that lower the building's carbon footprint while supporting long-term performance.

Optimizing Tradeoffs in CLadding Materials

Cladding Materials: Exterior Insulation and Finish Systems (EIFS) typically have lower upfront embodied carbon (A1–A3) than traditional brick veneer due to lighter materials and less energy-intensive production. However, studies show that over a building's full life cycle, EIFS can result in higher emissions during use and end-of-life stages (B1–C4). This is primarily because EIFS systems often require more frequent maintenance, repairs, or replacement, and generate more waste at end-of-life. In contrast, steel and brick have higher initial emissions but greater durability and minimal maintenance requirements, leading to lower cumulative emissions in the long term despite their carbon-intensive production.

Design recommendations: To reduce whole-life carbon impacts, the design should balance material selection based on performance across life cycle stages. Combining materials strategically and conducting whole-building life cycle assessments can help optimize both operational and embodied carbon performance.

Upgraded Glazing Units: It may seem that to achieve a high-level of building performance, using the highest performance systems is a foregone conclusion, but this can increase costs, without corresponding benefit. Whilst some high-performance systems have a reasonable Return of Investment timeline, in this case upgrading the glazing to Triple Glazing throughout the building may result in a much longer ROI, and only improve the performance marginally.

Design recommendations: Upgraded systems should be incorporated in the design on a case-by-case basis, balancing up-front costs and short-medium term return.

Optimizing Mechanical and Electrical Systems

Upfront Cost and Energy Use Pay-Off: Higher upfront costs for highly efficient mechanical systems can sometimes be justified by long-term savings and benefits. Although the initial investment may be greater, these systems reduce energy consumption significantly, lowering utility bills and operating expenses over their lifespan. They also tend to have better reliability, require less maintenance, and contribute to improved occupant comfort and environmental sustainability. Additionally, incentives and rebates can help offset initial costs. When evaluated over time, the combination of energy savings, reduced maintenance, and positive environmental impact often results in a favorable return on investment, making the higher upfront cost worthwhile.

Design Recommendation: Employing solar PV arrays with an upgraded assembly generates a negative annual electricity cost. While this option has the highest upfront cost, the Return of Investment is lowered, demonstrating the long-term value of renewable energy and high-performance design.

10 - Next Steps

With the feasibility stage complete, the project is now positioned to transition into more detailed planning and design. The following five steps outline a clear path forward to advance the Kawartha Lakes Cultural Centre and Archive from concept to construction readiness. These actions build upon the foundational work completed to date, ensuring the project remains strategically aligned with community needs, municipal priorities, and best practices in sustainable, culturally responsive civic development. This roadmap provides a structured approach to securing the site, assembling the right team, engaging stakeholders, and initiating the design and approvals process.



1. Confirm Project Commitment and Governance

Secure formal approval from municipal leadership, confirming scope, strategic goals, available funding, and thus the preliminary project budget. Establish a clear project governance structure, appointing a project lead and advisory or steering committee to guide next phases.

During this phase, an understanding should be gained for the goals of the project, such as the pursuit of Sustainable Design standards, and whether the project budget will allow for it.

Further project funding should be assessed, such as the Capital Stream of the Green Municipal Fund, as a follow up to this feasibility Study.

2. Secure and Assess the Site

Confirm site ownership or initiate acquisition. Complete the necessary due diligence process during the site acquisition stage, including review or undertaking of environmental assessments, geotechnical investigations, and other relevant studies as may be required. Determine the site constraints and opportunities, and assess the potential impacts on the project budget.

With the funding established in Step 1, a site meeting the requirements should be purchased prior to moving to the next steps.

3. Assemble the Design and Consultant Team

Following the site acquisition, procure a multidisciplinary team, with a focus on design excellence. The team should include:

- Architect (Prime Consultant)
- Landscape Architect
- Civil, Structural, Mechanical, Electrical Engineers
- Heritage Consultant
- Archive Consultant
- Environmental Consultant
- Cost Consultant

If high-performance or net-zero targets are pursued, include specialists in:

- Façade Engineer
- Energy Modeller
- Life Cycle Assessment (LCA) Specialist
- Commissioning Agent
- Building Envelope Consultant



4. Refine Project Scope and Engage Stakeholders

With the project team engaged, the design process should continue with the engagement of the community and project stakeholders to validate the early design options.

These findings should be translated into the design as it progresses through to Construction Documents. At this stage, the Project Steering committee should also be engaged to undertake fundraising for the project.

5. Prepare for Design and Approvals

Initiate schematic design and parallel planning approvals such as zoning review, Site Plan Approval, and heritage permitting, as required. Begin predesign studies and modeling work (e.g., daylighting, energy performance) to support an integrated and sustainable design process.

Early parts of this phase should incorporate ongoing community and stakeholder feedback, ensuring the design continues to reflect community needs.

Parallel to design development, a procurement strategy should be established for construction delivery, including prequalification of contractors to enable a competitive and transparent bidding process once design is complete.

10.1 Outcomes Measuring and Monitoring

To ensure the long-term success of the Kawartha Lakes Culture Centre, a structured outcomes measurement and monitoring framework should be established early in the project, following through to monitoring of the completed building once construction has been completed. This framework will define clear performance indicators aligned with the project's cultural, environmental, operational, and community goals. Key metrics may include:

- Cultural Impact: Participation rates, community programming diversity, partnerships with local artists and cultural organizations.
- Sustainability Performance: Post-occupancy Energy Use Intensity (EUI), Thermal Energy Demand Intensity (TEDI), and renewable energy generation compared to design targets, which are essential to validate design decisions, and to build understanding and capacity for sustainable buildings in the community.
- Operational Effectiveness: Facility usage rates, accessibility compliance, and feedback from staff and user groups.
- Community Engagement: Ongoing public involvement, visitor satisfaction, and equity of access.

Regular data collection, post-occupancy evaluations, and public reporting will support transparency and allow the City to assess the building's impact over time. This will also help inform continuous improvement, future investment decisions, and broader cultural infrastructure planning.

11 - Conclusion

This feasibility study confirms that the proposed Kawartha Lakes Cultural Centre and Archive is both viable and aligned with municipal goals and sustainability standards. Developed under the Green Municipal Fund (GMF) framework, the study assessed site options, program needs, schematic design, and capital implications. The varying sites provide potential for adaptive reuse of an existing building and supports sustainable development goals.

The schematic design integrates new construction with the reuse of a two-storey brick structure, reducing embodied carbon while preserving a building of local significance. The layout separates archival and public spaces, prioritizing durability, passive design, and operational efficiency.

Energy performance modeling was conducted using eQUEST (DOE2.3), in accordance with NECB 2020 Chapter 8 (Performance Path) and the Green Municipal Fund (GMF) requirements for new municipal buildings. Three scenarios were developed to evaluate the design's progression: a NECB 2020-compliant baseline model; a proposed design featuring a Variable Refrigerant Flow (VRF) system with Dedicated Outdoor Air System (DOAS), double-glazed low-e windows (U-0.25), and improved envelope assemblies; and a proposed upgraded model that incorporated additional insulation, enhanced wall assemblies (reducing U-values from 0.266 to 0.193 W/m²K), tighter air infiltration (0.3 ACH), and demand-controlled ventilation.

The baseline model resulted in an Energy Use Intensity (EUI) of 98.2 kWh/m²/year and a Thermal Energy Demand Intensity (TEDI) of 64.9 kWh/m²/year. The proposed design reduced the EUI to 56.9 kWh/m²/year and TEDI to 22.0 kWh/m²/year, while the upgraded design achieved further reductions to 50.7 kWh/m²/year and 14.9 kWh/m²/year, representing a 48.4% and 77.0% improvement over baseline respectively. These reductions exceed the GMF's minimum thresholds and align with high-performance building targets.

A rooftop photovoltaic (PV) system sized for 1,858 m² of panel area was modeled to generate approximately 343,160 kWh annually. In the upgraded scenario, this system would not only offset the building's projected annual consumption (289,793 kWh) but would generate surplus energy, enabling net-positive performance. These findings confirm that the proposed facility can meet or exceed net-zero energy targets through a realistic combination of energy-efficient systems, passive design strategies, and renewable energy integration.

A preliminary cost review indicates that the energy upgrades are financially viable, with the upgraded design producing a return on investment within approximately 11.5 years based on projected energy savings. While upfront costs are higher than the baseline scenario, the reduction in long-term operating costs and alignment with external funding criteria may justify this investment, particularly for a facility with significant public utility and long service life.

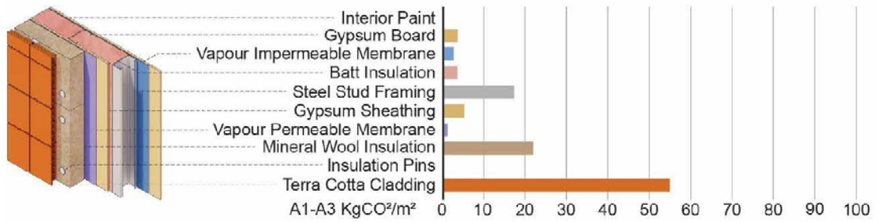
APPENDICES

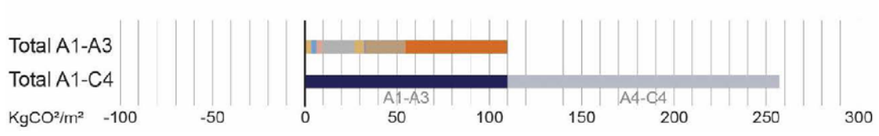
A - NEW DESIGN RESOURCES FOR EMBODIED CARBON TARGETS

APPENDIX A **WALL ASSEMBLY 02**

W02: Results Summary

Metrics	Results
Description	**Split Insulated Steel Frame with Lightweight Cladding**
Effective R-value	RSI-4.4 m^2K/W | R-25.2 $ft^2{\cdot}°F{\cdot}h/BTU$
Embodied Carbon per m^2 of Enclosure (A1-A3)	110.3 $kgCO_2/m^2$
Biogenic Carbon per m^2 of Enclosure	-0.4 $kgCO_2/m^2$





W02: Assembly Effective R-value Calculation

Description	t_{SI}	t_{IP}	k	C (USI)	$RSI_{effective}$	$R_{effective}$	$R_{nominal}$
Units	mm	in	W/mK	W/m^2K	m^2K/W	$ft^2{\cdot}°F{\cdot}h/BTU$	$ft^2{\cdot}°F{\cdot}h/BTU$
Interior air film					0.12	0.68	
Interior gypsum board	12.7	0.50	-	-	0.05	0.30	
Vapour barrier	-	-	-	-	-	-	
Steel stud-framed wall with batt insulation	152	6.00	-	-	1.30	7.38	
Exterior sheathing	12.7	0.50	0.13	10.1	0.10	0.56	
Self-adhered sheet-applied air barrier and WRB membrane (vapour permeable)	1.00	0.04	-	-	-	-	
Semi-rigid mineral fiber exterior insulation with intermittent proprietary fibreglass clips	127	5.00	-	-	2.84	16.1	21.5
Air cavity	25.0	0.98	-	-	-	-	
Terracotta panel cladding	40.0	1.57	-	-	-	-	
Exterior air film	-	-	-	-	0.03	0.17	
TOTALS	**371**	**14.6**			**4.40**	**25.2**	**21.5**

W02: Embodied Carbon Emissions (A1 to A3 Life Stages) for 9m² Assembly Area

Category	Material	Description (from EPD)	Thickness	Material Volume	Carbon Emissions (A1-A3)	% of total
Units			mm	m^3	kgCO2e	%
Finish	Interior Paint	Eggshell acrylic paint, 1294.29 kg/m3		0.0014	0.6	0.06%
Finish	Gypsum Board	Gypsum plaster board, regular, generic, 6.5-25 mm, 10.725 kg/m2 (for 12.5 mm), 858 kg/m3	12.7 (0.5")	0.114	26.04	2.62%
Vapour control	Vapour Impermeable Membrane	Vapor barrier	0.8 (0.032")	0.0072	17.93	1.81%
Interior insulation	Batt Insulation	Mineral fiber batt insulation, 6.89in	152.4 (6")	1.029	31.15	3.14%
Structure	Steel Stud Framing	Steel stud framing for drywall/gypsum plasterboard per sq. meter of wall area (incl. air gaps per m3), C-profile: 152.4 mm x 76.2 mm, gauge 20 (40 cm) spacing	152.4 (6")	*	158.39	15.95%
Sheathing	Exterior Gypsum Sheathing	Glass-mat gypsum board, fire and moisture-resistant; 799 kg/m3	12.7 (0.5")	0.1143	42.26	4.26%
Exterior membrane	Vapour Permeable Membrane	Latex-based membrane, vapor permeable, fluid-applied, fire resistant, 40 mils (1.016 mm), 1.399 kg/L, Perm-A-Barrier® VPL	1 (0.04")	0.009	11.16	1.12%
Exterior insulation	Exterior Insulation Mineral Wool (Semi-rigid)	Heavy density mineral wool board, 1 m2K/W, 1.34 in (34 mm), 0.86 lb/ft2 (4.2 kg/m2), 7.71 lb/ft3 (123.52 kg/m3), Industry average US (NAIMA)	127 (5")	1.143	201.82	20.32%
Exterior insulation	Insulation Pins	5 insulation pins per panel - 169 pins in total Hot-dipped galvanised steel sheets; 80% recycled content - 0.28 kg/m2	-	0.000302	3.73	0.38%
Cladding	Terra Cotta Cladding	Ceramic floor and wall tiles, 7.9375 mm, avg. weight 17.57 kg/m2 (Fireclay Tile)	40 (1.6")	0.36	499.9	50.34%
				TOTAL	**993.0**	100.0%

**Software auto-calculates the impact based on the area provided.*

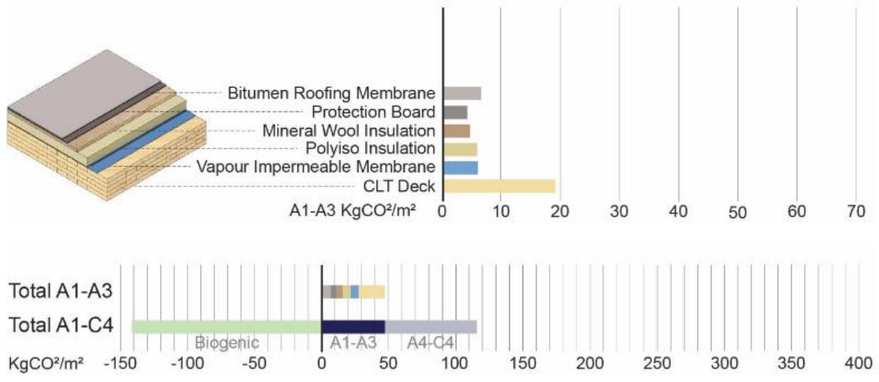
W02: Environmental Emissions (A1 to C4 Life Stages) for 9m² Assembly Area

Lifecycle Stage		**A1 to C4**	A1-A3	A4-A5	B1-B5	C1-C4	A1-A3 Contribution to total
Category	Units	**Total**	Construction Materials	Transport to Site & Construction	Material Replacement & Refurbishment	Deconstruction	%
Global Warming	kg CO2e	**2,407.78**	989.23	10.89	1332.6	75.06	41.08%
Acidification	kg SO	**5.30**	2.47	0.062	2.68	0.091	46.58%
Eutrophication	kg Ne	**0.81**	0.31	0.0087	0.4615	0.033	38.12%
Ozone Depletion	kg CFC11e	**0.000044**	0.0000098	0.0000029	0.000028	0.0000035	22.17%
Formation of Tropospheric Ozone	kg O3e	**172.06**	64.39	1.76	104	1.91	37.42%
Fossil Fuel Primary Energy	MJ	**11,129.73**	4,886.56	309.53	5654.8	278.84	43.91%
Biogenic Carbon Storage	kg CO2e	**-3.74**	3.74	0	0	0	-100.00%

APPENDIX A **ROOF ASSEMBLY 03**

R03: Results Summary

Metrics	Results
Description	**Conventional Modified Bitumen Roof with Hybrid Insulation on CLT Deck**
Effective R-value	RSI-4.4 m^2K/W | R-24.8 $ft^2{\cdot}°F{\cdot}h/BTU$
Embodied Carbon per m^2 of Enclosure (A1-A3)	48.1 $kgCO_2/m^2$
Biogenic Carbon per m^2 of Enclosure	1269.96 $kgCO_2/m^2$



R03: Assembly Effective R-value Calculation

Description	t_{SI}	t_{IP}	k	C (USI)	$RSI_{effective}$	$R_{effective}$	$R_{nominal}$
Units	mm	in	W/mK	W/m^2K	m^2K/W	$ft^2{\cdot}°F{\cdot}h/BTU$	$ft^2{\cdot}°F{\cdot}h/BTU$
Interior air film					0.11	0.61	
Mass timber roof panel	191.00	7.52	0.13	0.68	1.47	8.34	
Self-adhered sheet-applied air barrier and vapour-impermeable membrane	0.80	0.03	-	-	-	-	
Rigid polyisocyanurate insulation, fully adhered (polyurethane adhesive)	76.20	3.00	0.02	0.31	3.18	18.03	16.80
Rigid mineral fibre board insulation, fully adhered (polyurethane adhesive)	25.40	1.00	0.03	1.34	0.75	4.24	4.30
Asphalt protection board, fully adhered (polyurethane adhesive)	4.80	0.19	-	-	0.14	0.79	
SBS modified asphalt membrane (base ply)	2.20	0.09	-	-	-	-	29.98
SBS modified asphalt membrane (cap sheet)	4.00	0.16	-	-	-	-	
Exterior air film					0.03	0.17	
TOTALS	**304.40**	**12.00**			**5.70**	**32.20**	**21.10**

R03: Embodied Carbon Emissions (A1 to A3 Life Stages) for 9m² Assembly Area

Category	Material	Description (from EPD)	Thickness	Material Volume	Carbon Emissions (A1-A3)	% of total
Units			mm	m^3	kgCO2e	%
Structure	CLT Deck	CLT produced in British Columbia, 464.7 kg/m3 (Forestry Innovation Investment) (Generic)	191 (7.5")	1.719	170	39.6%
Exterior Membrane	Vapour impermeable membrane	SBS polymer-modified bitumen membrane roofing, self-adhered, 6.69 kg/m2 (Certain Teed, Henry, IKO, Malarkey Roofing Products, Siplast, Soprema)	-	*	61	14.0%
Exterior Insulation	75% Polyiso adhered in foam	Polyisocyanurate (PIR) roof insulation boards, glass fiber reinforced cellulosic faced (GRF), boards	76.2 (3")	0.6858	58	13.2%
Exterior Insulation	25% mineral wool adhered in foam	Heavy density mineral wool board, 1 m2K/W, 34 mm (1.34 in), 4.2 kg/m2 (0.86 lb/ft2), 123.52 kg/m3 (7.71 lb/ft3), Industry average US (NAIMA)	25.4 (1")	0.2286	40	9.2%
Insulation Protection	Protection Board adhered in foam	Roof cover board, fiberglass facing, 6.1 kg/m2, EVERBOARD™ - ¼ fiberglass faced (Continuous Materials, plant Philadelphia)	-	*	36	8%
Exterior Membrane	Base sheet - SBS torch applied Cap Sheet - SBS torch applied	Bitumen roofing membrane, torch-applied, 9.02 kg/m2 (Asphalt Roofing Manufacturers Association)	-	*	68	15.7%
				TOTAL	**433**	

**Software auto-calculates the impact based on the area provided.*

R03: Environmental Emissions (A1 to C4 Life Stages) for 9m² Assembly Area

Lifecycle Stage		**A1 to C4**	A1-A3	A4-A5	B1-B5	C1-C4	A1-A3 Contribution to total
Category	Units	**Total**	Construction Materials	Transport to Site & Construction	Material Replacement & Refurbishment	Deconstruction	%
Global Warming	kg CO2e	**1048.494**	436.93	18.4	417.35	175.814	41.67%
Acidification	kg SO	**3.66E-05**	1.33E-05	4.86E-06	1.10E-05	7.48E-06	36.30%
Eutrophication	kg Ne	**5.00659**	2.938	0.1043	1.45	0.51429	58.68%
Ozone Depletion	kg CFC11e	**1.020318**	0.46635	0.01428	0.237	0.302688	45.71%
Formation of Tropospheric Ozone	kg O3e	**80.104007**	53.05	2.978	18.74	5.336007	66.23%
Fossil Fuel Primary Energy	MJ	**13016.28**	5891.15	523.04	6556	46.09	45.26%
Biogenic Carbon Storage	kg CO2e	**1269.96**	1269.96				

B - PHASE 2A REPORT

Feasibility Study for a Culture Centre in Kawartha Lakes: Phase 2

Final Report – Part 1

September 13th, 2024.



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1. Introduction

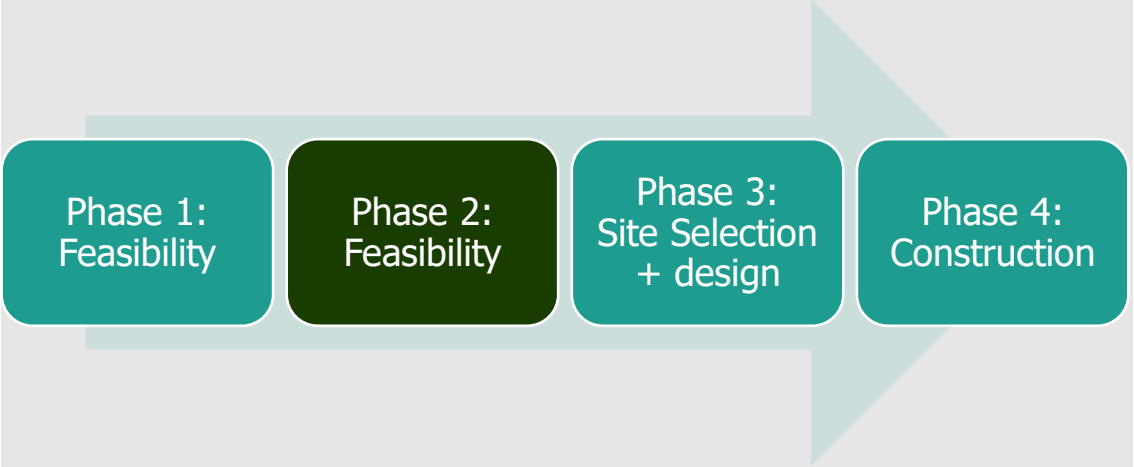
The City of Kawartha Lakes is one of the largest municipalities in Ontario and Canada by land size. With a rich history in lakes and natural heritage, farming, and industrial development, the area is home to many charming and historied cultural facilities, heritage organizations, artists, artisans, arts organizations, networks, and groups that preserve and animate the local arts and culture scene. Located just 90-minutes outside the Greater Toronto Area, the Kawarthas have been a popular tourist destination for nature lovers and cottagers alike starting in the mid-nineteenth century.

While many treasured culture and heritage facilities already exist across Kawartha Lakes, artists and residents feel the arts and culture sector lacks a homebase to come together to learn, explore, and create in. At the same time, the City of Kawartha Lakes is looking to transform and expand its cultural programming, and needs adequate spaces and infrastructure to do so. The idea of a culture centre has been mentioned in the community for over a decade as a solution to these needs.

1.1 Culture Centre Development Process

The City of Kawartha Lakes, the Kawartha Lakes Cultural Centre Feasibility Task Forces, Giaimo Architects, and Nordicity have been working collaboratively since late 2021 to assess the feasibility of developing a cultural centre, or various culture centres, in the municipality over two initial phases. These feasibility projects have involved conducting research to determine an appropriate development approach and strategic vision, spatial programming, operating and governance model, and location for a future facility. This report marks the halfway point through the City of Kawartha Lake's process towards creating a new culture centre, as displayed in Figure 1 below.

Figure 1: Culture Centre Development Process by Phase



For more detail on the complete Culture Centre planning process and research activities involved, see **Appendix A** in the appendices document.

Phase One analysis determined a single cultural and archival facility would be feasible and put forth two size/scope options for the facility. In September 2023, The City of Kawartha Lakes created a new Culture Centre Feasibility Task Force and re-engaged Nordicity and Giaimo Architects to undertake Phase Two which involved conducting additional research, analysis, and planning to define and validate the design and function of the forthcoming Culture Centre and plan for site election, acquisition and construction. This report presents a collaboratively developed Culture Centre concept that reflects the needs, ambitions, and interests of members of the Kawartha Lakes community.

2. Analyzing the Opportunity

Kawartha Lakes' culture sector needs access to transformative, affordable, and accessible professional facilities to support:

- Innovation
- Collaboration
- Artistic Creation
- Sector Growth & Development
- Audience Attraction

Preference has been expressed for something in a downtown core, something walkable. Most respondents to a Phase Two survey prefer a new Culture Centre to be walkable or within a 30-minute drive of where they live (Select survey responses are summarized in **Appendix B**).

2.1 Market Context

Kawartha Lakes consists of 16 former municipalities, collectively known as Victoria County. The County was amalgamated into a single-tier municipality in 2001, and much regionality still exists among the many unique townships and communities. The major population centres include Lindsay, Fenelon Falls, Bobcaygeon, and Omemee.

Local Culture Sector

Kawartha Lakes culture sector contributes more than $40 million to Ontario's GDP and provided 527 jobs in Kawartha Lakes in 2017. Heritage plays a large part in Kawartha Lakes culture scene, and 12 existing organizations and museums work to preserve and share community histories. The **existing arts and culture sector is small, vibrant, and somewhat siloed**. The amalgamation of several communities into a single municipality is relatively new. Indeed, its vast geographic spread and individual community histories play a factor in the arts and culture development in Kawartha Lakes. Artists and culture workers in the region work very hard, but on average get **paid significantly less** than culture workers in major cities, like the City of Toronto. Also, arts organizations and facilities in the region rely on a very large and longstanding **network of passionate volunteers.**

Many local arts organizations and groups are **collaborative** among themselves, running joint programming and supporting each other's marketing and events where possible. For example, the Kawartha Lakes Arts Council and Kawartha Art Gallery share staff and facility resources to make operations more sustainable and success.

One comment seems to capture the prevailing sentiment: *"When the arts and culture community gets together to achieve something, it's usually successful."*

Infrastructure Gaps

Several gaps exist that a new Culture Centre would address. While the arts sector is broadly collaborative, many of the local organizations and **artists lack permanently accessible facilities** to meet and socialize. Interviews pointed to this being the case particularly in Lindsay where there is a higher concentration of cultural organizations than in smaller communities. Many of the existing culture facilities in Kawartha Lakes need renovation/upgrades to be more accessible, on top of regular updates to maintain aging facility infrastructure. In addition, the rental rates for both City and privately owned spaces continue to increase.

Local arts service organizations, guilds, networks, associations, and other groups have observed a **growth of artists in the region**, including many new residents as well as existing artists in more rural

parts of the region who've been inspired to connect with other artists post-pandemic. It appears that the sector has grown coming out of the pandemic, with an influx of new and emerging artists and young families in search of affordable housing and more rural lifestyles. The region is **expected to continue that growth** into the foreseeable future. Local arts councils, networks, and groups fear that the municipality currently lacks infrastructure, resources, and spaces for this burgeoning arts community to get together – and that may cause these artists to move elsewhere. Local artists currently feel constrained by a lack of permanent/affordable space to gather, particularly for their innovation and artistic development. Specific space needs by sector stakeholder have been mapped out in **Appendix D**.

Community-Led Initiatives

The sector has begun seeking solutions to these infrastructure gaps. Three existing culture facilities and groups in the areas are planning to develop new or expanded facilities to offer arts, culture, and creative programming: other museums within the municipality are considering undergoing developments to become culture hubs and plans vary. As well, The Pinnguaq Association purchased 12 Peel Street in Lindsay last year, the former Public Works building. Pinnquap are in the process of turning this into their head office and creating a 4500 sq. ft. Makerspace "where adult and youth education focused on science, technology, engineering art and math (S.T.E.A.M) will take place…". It will also offer offices and hot desks, a streaming studio, and recording studio.

2.2 Municipal Context

Exploring the feasibility of a Cultural Centre or Centres aligns with the importance and value of arts, culture and heritage assets to Kawartha Lakes, as set forth through the goals and objectives of the City's core strategies, plans and policies i.e., the Cultural Master Plan, Public Art Policy, and Heritage Master Plan (See **Appendix E** for specific linkages). Currently, culture at the City of Kawartha Lakes is supported under various departments (See **Appendix F** for a full breakdown). The Economic Development Division has recently launched some direct programming to support arts and culture, including the: Public Art Program; Film Office; Heritage Conservation; Curatorial Services, and; the Arts and Heritage Trail among others. Staff also support members of the culture sector directly through emails, phone calls, and other formal/informal partnerships and collaborations. The City has various agreements in place with local arts organizations and facilities where it provides a facility, funding, or other resources in support of the organization/facility's public programming.

In view of the growing artist community in Kawartha Lakes and expected population growth over the next decade, the City is hoping to explore new approaches to culture programming in the future. A culture centre could be **a transformative infrastructure** if used as a vehicle through which to administer innovative new programming. It can support the development of the local community and the wider economy by providing a place for local artists, artisans, performers, creative and corporate businesses and culturally interested citizens to explore and engage with each other to create and enjoy art.

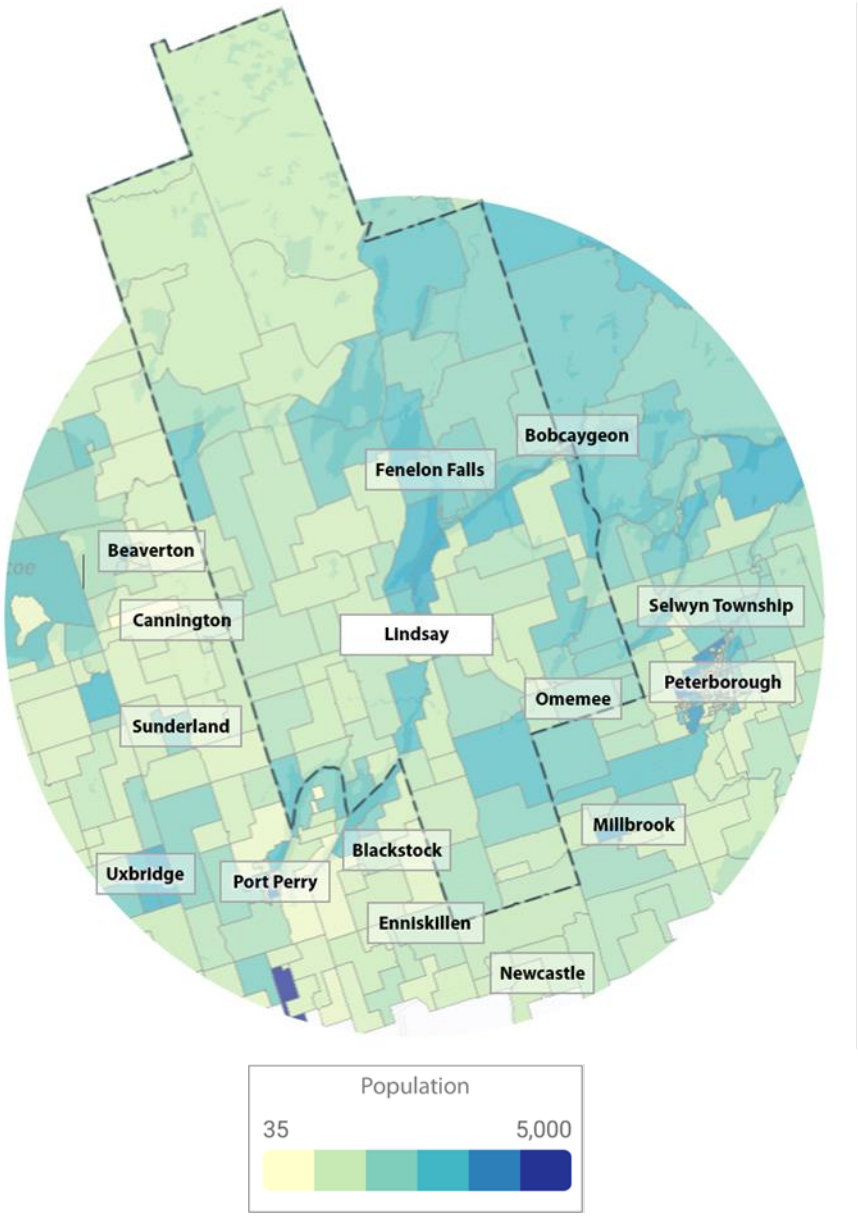
At the same time, the City's archival space – both paper and artefact-based – is inadequate to support the growth of its files and collections in the long-term. Municipal staff estimate that **components of the City of Kawartha Lakes' physical records and archives are growing at 20-30% annually** (despite increased investment in digitization), are not easily accessed by the public or academic researchers and are not held in adequate museum/custodial facilities.

2.3 Available Market

It is not uncommon for residents of the City of Kawartha Lakes, especially the southern and eastern towns and hamlets, to drive to Peterborough for certain purposes related to arts and culture. It would be reasonable to assume that residents from neighbouring communities like Peterborough might do the same in Kawartha Lakes if there are appropriate facilities available. Based on publicly available census data for these regions and extrapolating to account for the smaller regions without readily available distinct census data, Nordicity estimates that **the available market is approximately 250,000 permanent residents in total.**

The graphic below approximates the geographical boundaries and population density of the addressable market, with Lindsay located in the centre (note that city and town labels are not representative of any size of community). The City of Kawartha Lakes boundaries are shown with a dashed black line. Lighter shading indicates a region with lower population density, while darker shading indicates a region with higher population density (refer to the legend below the graphic).

Figure 2: Graphical Boundaries and Population Density of Addressable Market



The average individual income of the available market's permanent residents is approximately $46,000 and the average household income is approximately $79,000. The age bracket most represented in this market is senior citizens, with over one quarter of permanent residents (26%) aged 65 and above. The second-most represented age bracket in this market is children aged 14 and below (14%). More detailed demographic characteristics of the permanent residents in the available market are provided in **Appendix G.**

The **average individual and household income of the available market falls slightly under the provincial and national averages**, which emphasized the need to ensure a new Culture Centre is reasonably financially accessible to people in all income brackets.

In addition to permanent residents, **tourist visits** are also important to consider in discussions about the addressable market. A new Culture Centre is an attraction that a portion of tourists are likely to

see when visiting the area. The City of Kawartha Lakes welcomes approximately 1.6 million tourists per year, and the Ontario Arts Council's 2023 Arts and Culture Tourism Profile estimates that approximately 13% of the province's tourists participate in arts and/or culture activities while visiting their destination. This translates to approximately 208,000 City of Kawartha Lakes tourists who participate in arts and culture activities annually.

Table 1: Estimated Annual KL Tourists Participating in Arts & Culture Activities

Annual tourists to CKL	1,600,000
% of tourists participating in culture activities	13%
Estimated annual CKL tourist visits participating in culture activities	**208,000**

Given the diversity of cultural offerings in the City of Kawartha Lakes and their distribution across a large geography, it is not realistic to assume that all 208,000 will visit a new Culture Centre; rather, a small portion can be assumed to visit. The table below shows how many tourists may visit the Culture Centres in several scenarios ranging from 2% of culture-participating tourists up to 10% of culture-participating tourists; the results range from 4,160 people to 20,800 people.

Table 2: Tourist Visit Projections to KL Culture Centre

% of culture-participating tourists captured	2%	4%	6%	8%	10%
Annual # of tourists visiting Culture Centre	**4,160**	**8,320**	**12,480**	**16,640**	**20,800**

Attracting only 2% of culture-participating tourists would translate into more than 4,000 visitors to the Culture Centre, while attracting a more ambitious 10% would translate into nearly 21,000 visitors. This tourist market holds immense potential to not only drive visitor spending at the Culture Centre, but in the surrounding area as well – leading to important economic impacts for the region.

Additionally, the City of Kawartha Lakes receives 31,000 **seasonal residents** each year during cottage season . It can be reasonably assumed that a small portion of these seasonal residents will also participate in a new Culture Centre. If the same assumptions as described above are applied to this market segment, it is reasonable to assume that between 81 and 403 seasonal residents will visit annually.

Table 3: Seasonal Resident Visit Projections to KL Culture Centre

% of culture-participating seasonal residents captured	2%	4%	6%	8%	10%
Annual # of seasonal residents visiting Culture Centre	**81**	**161**	**242**	**322**	**403**

2.4 Economic Impacts

Arts and culture's true value is hard to measure, and its full impact is often overlooked. Though a new Culture Centre requires significant upfront capital investment as well as ongoing investment to ensure its effective operation, establishing such a Centre could have several economic impacts in the City of Kawartha Lakes. These include:

- The construction and ongoing operation of a culture centre would involve spending on **materials, labour, and services.** This spending would stimulate economic activity in the local construction industry and other related sectors, including architecture, engineering, and hospitality.

- The economic impacts of the culture centre would extend beyond the above-mentioned direct impacts. The increased economic activity generated by the centre would have **multiplier effects**, leading to additional spending and job creation in other sectors of the local economy.
- A culture centre can serve as a catalyst for the **growth of the cultural and creative industries in the region**. It would provide a platform for local artists, performers, and cultural organizations to create and showcase work, attracting talent and investment to the area.
- The presence of a culture centre could lead to increased **demand for real estate** in the surrounding area. **Local property values** may rise as the area becomes more desirable due to the cultural amenities offered by the centre. This could attract real estate developers and investors, leading to further economic development and infrastructure improvements.

Overall, the establishment of a new culture centre in the City of Kawartha Lakes could have significant positive economic impacts and contribute to overall prosperity and vitality in the city.

3. The Kawartha Lakes Culture Centre

A community-arts focused cultural centre is what a large, passionate community in the Kawartha Lakes major population centres are looking for - a place for emerging and established artists, performers, artisans, and culture professionals to connect, create, and share their work with arts-interested citizens, tourists, and hobbyists alike. This facility will act as a transformational infrastructure for the local culture sector with space for arts education, creation, innovation, and appreciation. It will enable cultural experiences in new ways through collaborative sector programming and activities.

A core goal for a centre that wears the "Kawartha Lakes" brand would be to act as a catalyst for community engagement that honours and builds on Kawartha Lakes' history in arts, culture and heritage. The Culture Centre concept has been developed by various community members over the last decade and should ultimately reflect the collective ideas, aspirations and evolution of Kawartha Lakes' cultural sector and residents.

3.1 Space Design & Programming

The proposed design of the Kawartha Lakes Culture Centre is outlined in the table below.[1]

Table 4: Proposed Facility Design and Space Sizing for the Kawartha Lakes Culture Centre

Programming	Sq. Ft.
Shared Exhibition Space (1-2, including lobby areas)	2300-3000
Art Gallery	1500
Retail	400-1000
Archive	15,000-20,000
Shared Storage & Specialized Artefact Administration Space	7500
Research Room	300-600
Arts Education Spaces (5)	2500

[1] Final programming selected by the Kawartha Lakes Culture Centre Task Force.

Programming	Sq. Ft.
Artist Creation Studios (5-6)	750-1000
Office Admin	800-1000
Multipurpose Blackbox Studio	3500
Commercial Kitchen	900-1100
Tenant Offices + Co-Working	1000
Services and Circulation	10,000-15,000
Total Range	**46,450-58,700**

Giaimo Architects estimate that a facility of this size and composition would cost

- $34,900,000 if a building is reused/renovated, with no below grade parking
- $39,600,000 for a new building, with no below grade parking
- $46,100,000 for a new building, with below grade parking.[2]

These costs exclude capital/land acquisition, furniture/equipment, and soft costs.

In addition, the property would need to be able to offer at least **80-120 parking spots**. As much as possible, the centre should be **built with flexibility and adaptability in mind**. The facility should enable as many artists, professionals, and culture workers/organizations to use it as possible – and rooms should be built and operated in multipurpose ways.

The size, scope, and ambition of the Kawartha Lakes Culture Centre should not outpace the capacity and development of the local culture sector. While much ambition exists in the community for a large transformational sector, a phased building approach allows for more organic growth. Start with the must haves and ensure the site for the facility will allow for future expansion, as community needs evolve. This transformational infrastructure should support the future generations of Kawartha Lakes, and the needs of those generations are yet to be uncovered. As such, the Centre should be built with the capacity to scale in mind. The function of each space is described in the subsections below.

3.1.1 Shared Exhibition Space

1 or 2 exhibition spaces available for rent by artists to present/exhibit art, artefacts, and cultural materials – from paintings and pottery, through textiles, historical relics, and even media arts presentations. These spaces should be continually animated by the many vibrant non-profit organizations, local schools, charitable organizations, and heritage societies/organizations that exist in the Kawartha Lakes and surrounding region so that becomes recognized as a stable and welcoming public gathering space. Space(s) should include proper ventilation and lighting to protect and preserve the works that will rotate through the space, as well as to enable a wider range of community usages and ceremonial events. Can be merged with public gathering/lobby spaces, where appropriate.

[2] Estimates informed by the Altus 2024 Canadian Cost Guide.

Operation: Short-Term Rental (Monthly, Weekly, Daily depending on the user)

Primary Function: Gallery Space
Primary Users: Artists, Curators, Galleries, Schools, Arts Organizations.

Alternative Functions: Event, Meeting or Education Space.
Alternative Users: Charities, Corporate/Events Companies.

3.1.2 Art Gallery

Purpose-built visual arts gallery to be rented out to a long-term anchor tenant who can help to brand, market, and drive traffic into the Centre. The Kawartha Art Gallery would be the ideal tenant for this facility. It can vacate its current space and move into the Culture Centre when built.

However, it is understood that the development of the facility is still 3-5 years away and so there is some risk that the current community needs may no longer exist by this time. The project team should continue discussions with the Kawartha Art Gallery and other visual arts stakeholders who would be interested in renting gallery space long-term and exploring the opportunity to plan towards renting this space in the future Centre.

Operation: Long-Term Lease (Multi-year)

Primary Function: Gallery Space
Primary Users: Kawartha Art Gallery, Visual Artists, Visual and Community Arts Groups.

Alternative Functions: Shared Exhibition Space, Event, Meeting or Education Space.
Alternative Users: Artists, Curators, Galleries, Schools, Arts Organizations, Charities, Corporate/Events Companies.

3.1.3 Retail Space

A retail space would be added on the main floor either attached or adjacent to the Art Gallery. The Kawartha Art Gallery could rent this space for use as a gift shop or other storefront, or this space can be rented by other cultural businesses, artists, artisans, or arts groups for similar uses.

Operation: Long-Term Lease (Multi-year)

Primary Function: Retail Space
Primary Users: Kawartha Art Gallery, Visual Artists, Visual and Community Arts Groups, Cultural Businesses, Artisans.

Alternative Functions: None.
Alternative Users: None.

3.1.4 Archive and Artefact Storage

Space for the City of Kawartha Lakes' Municipal Archives which includes a mix of paper-based records and artefact collections. Artefact storage facilities as well as rental/low-cost storage facilities for some

of the heritage organizations/museums in the region whose collections are outgrowing their existing facilities. The space would be operated and managed by the City of Kawartha Lakes.

Operation: Mixed (City Storage & Annual/Multi-Year Rental from Heritage Organizations for Storage).

Primary Function: Municipal Archives Space & Storage for Paper and Artefacts.
Primary Users: City of Kawartha Lakes, Culture and Heritage Organizations, Museums.

Alternative Functions: None.
Alternative Users: None.

3.1.5 Research Room

A space for researchers and community members to access municipal archival materials. The room should include chairs, tables, and materials for researchers to sit, take notes, ask questions, and explore different municipal records and artefacts safely. The design of the space should be cognizant of light and temperature to preserve these materials/artefacts but should also be sufficiently functional and comfortable to allow community members to appropriately observe them.

Operation: City Run – Public Access (Free Access – scheduled with City in advance)

Primary Function: Research Room
Primary Users: Researchers, Students, Schools, Family Historians, Members of the Public, Developers, Museums, Galleries

Alternative Functions: None.
Alternative Users: None.

3.1.6 Office Admin

A few rooms to be used by facility staff and operators, including custodians, site managers, etc. Office and Admin spaces can be located in secondary areas, away from public access.

Operation: Administrative

Primary Function: Facility Administration
Primary Users: Facility Operators, Site Cleaning/Maintenance

Alternative Functions: None.
Alternative Users: None.

3.1.7 Tenant Offices and Co-Working

Additional office space for a mix of long- and short-term tenant use. Consider including 1-3 rooms of various sizes/functions, including 1-2 spaces that can seat between 30-75 people for community meetings/gatherings. There is some community interest in meeting spaces that can host 100+ guests. The Kawartha Lakes Museum & Archive is considering adding meeting rooms to their facility expansion. In the design phase, exact space sizing should be scoped out based on gaps in available infrastructure.

Local arts organizations, cultural businesses, and arts-adjacent practitioners can consider renting office space through lease agreements. A broader range of potential users can book some of these spaces hourly for meetings.

Operation: Mixed (Long-Term Lease or Hourly Room Rental depending on the user)

Primary Function: Tenanted Office Space
Primary Users: Cultural Business Operators, Organizations, Collectives, and arts-adjacent practitioners

Alternative Functions: Artist Studio Space, Corporate Meeting Space, Event Space
Alternative Users: Textile Artists, Arts Groups, Charities, Schools, BIAs, Corporate/Events Companies, City Staff/Representatives.

3.1.8 Arts Education Space

A mix of appropriately sized and configured spaces to facilitate arts education for hands on arts learning in the following visual arts and artisan areas[3]:

- Wet Artistic Mediums – e.g., Painting and Ink.
- Dry Artistic Mediums – e.g., Drawing, Pastels, Writing, Poetry, Leather-Working.
- Woodshop
- Pottery
- Glass

The rooms should include sinks and storage facilities for the washing and preservation of arts materials. Education spaces can be placed on higher levels. The local arts guilds are expected to use these spaces to offer classes and programming to their members.

Operation: Short-Term Rental (Monthly, Weekly, Daily, Hourly depending on the user)

Primary Function: Arts Education Classes and Lectures
Primary Users: Local Arts Guilds, Arts Organizations, Artists, Artisans, Schools/Educators, Private Academies/Training Centres, Musicians.

Alternative Functions: Artist/Artisan Studio Space, Corporate Meeting Space, Event Space
Alternative Users: Textile Artists, Arts Groups, Charities, Schools, BIAs, Corporate/Events Companies, City Staff/Representatives.

3.1.9 Artist Creation Studios

Open studio spaces with various desks and sections that local artists can rent out to create in. Consider having two different buckets of spaces – quiet spaces for textile artists, weavers, poets, writers, literary artists; and louder studio spaces, not under noise restrictions, for musicians,

[3] Categories were determined by the Kawartha Lakes Culture Centre Task Force as part of July 23rd meeting.

comedians, dancers, etc. For visual artists, it's important that the space is inspiring and inviting. Consideration should be given to the decorations and design of the space. Where possible, include natural light, but offer darker rooms for artists that require darker and cooler atmospheres to create and properly store/preserve their craft.

Operation: Short-Term Rental (Monthly)

Primary Function: Multi-functional artist studio spaces.
Primary Users: Artists and Artisans, Writers, Performers

Alternative Functions: Multipurpose Rental Space
Alternative Users: Various Community and Business Groups.

3.1.10 Multipurpose Blackbox Studio

Flexible studio space that can be used for dance, performance, or music rehearsal or as black box theatre space with the capacity to host 100-150 people audiences. In both phases stakeholders expressed a desire for additional rehearsal space to facilitate the production of larger scale performances, as well as allow multiple performance groups to create in the community at the same time. This multipurpose space can also host events if designed appropriately, and so it should be attached to the commercial kitchen.

Operation: Short-Term Rental (Monthly, Weekly, Daily depending on the user)

Primary Function: Blackbox Theatre Space
Primary Users: Dance & Performing Arts Organizations, Groups, and Artists, Schools, Summer Camps.

Alternative Functions: Event Space
Alternative Users: Businesses, Charities, Foundations, Event Planners, Brides & Grooms

3.1.11 Commercial Kitchen

Culinary Arts is an area of strategic focus in Kawartha Lakes, according to the 2018 Food Strategy. Much enthusiasm exists in the community around the possibilities afforded by a commercial kitchen in the Culture Centre, feedback collected during this phase suggests that Kawartha Lakes culinary sector may not be developed enough yet to program a commercial kitchen on a full-time basis. Depending on the nature of the rental agreement made for the Café/Restaurant, its kitchen can potentially be used for events.

Still, culinary arts remain a strategic focus of the City of Kawartha Lakes, with the municipality having completed a Food Tourism strategy in 2018. A commercial kitchen can also be instrumental in enabling the facility to host larger events, galas, and gatherings of 100+ people. One survey respondent offered to initiate programming in a community kitchen, if included.

Operation: Short-Term Rental (Monthly, Weekly, Daily depending on the user)

Primary Function: Kitchen Facilities/Food Storage for Education, Events, and Programming
Primary Users: Chefs, Caterers, Professional Culinary Educators, Kids Programming Leaders (for food storage)

Alternative Functions: None.
Alternative Users: None.

3.2 Governance

A culture centre is successful when it's animated and well-used by its community. The Kawartha Lakes Culture Centre will be animated by the organizations and people who reside in Kawartha Lakes, and so there needs to be a governance structure that encourages broad community participation. That structure should encourage collaboration between the Culture Centre and the many different groups representing different arts interests and disciplines. Comparable cultural facilities regularly reference their communities as key stakeholders and contributors to their operational success.

Victoria County was amalgamated into the City of Kawartha Lakes 20+ years ago, and while much has changed in the municipality since then, the various formerly separate townships have retained much of their local identities as an outgrowth of their distinct history and heritage. As the facility is intended to serve the full Kawartha Lakes region, the operational model needs to reflect and support the various communities that make up the arts sector across the region.

With this context in mind, a **hybrid governance model** would seem to be in order, one that combines the operational strengths of the City of Kawartha Lakes and the wide and diverse cultural interests in the region. (See additional detail on the results of the Kawartha Lakes Culture Centre Feasibility Task Force's governance brainstorming session in **Appendix H**). A hybrid governance model involves a **partnership** between the municipality and an external community-led arts "**governance group**". ". The City of Kawartha Lakes' municipal archives would continue to be run and managed by City staff, and the external governance group would oversee the programming and use of the additional shared spaces within the facility in order to preserve its function as an arts and culture centre with enhanced community access. Within any overriding stipulations by the City, this group will set standards of facility access, user conduct, programming levels, and oversees the use of shared spaces in the facility.

The governance group would consist of the Centre's key anchor tenants, frequent renters, and a selection of arts and cultural leaders in the community. The City of Kawartha Lakes would collaborate with this external governance group to share space for programming, book rentals, and maintain the building. The forthcoming Greater Vernon Cultural Centre is an example of a future facility enacting a hybrid governance model.

3.3 Operating Model

The operating model for the Kawartha Lakes Culture Centre has been refined from Phase 1 to reflect the updated concept and design specifications described in Section 3.1 and 3.2 above.

The table below gives an overview of the financial and usage assumptions made to create the operating model. **Appendix I** provides detailed rationale and explanations behind these assumptions.

Table 5: Financial and Usage Assumptions

Line item	Year 1	Year 2	Year 3	Year 4	Year 5
Facility rentals - flex exhibition space					
Hourly rental price ($)	$90	$90	$90	$90	$90
Occupancy CAGR	5%	5%	5%	5%	5%
Occupancy rate	40%	42%	44%	46%	49%
Rental hours	1168	1226	1288	1352	1420
Annual Rental revenue ($)	$105,120	$110,376	$115,895	$121,690	$127,774
Facility rentals - rehearsal space					
Hourly rental price ($)	$53	$53	$53	$53	$53
Occupancy CAGR	5%	5%	5%	5%	5%
Occupancy rate	25%	26%	28%	29%	30%
Rental hours	730	767	805	845	887
Annual Rental revenue ($)	$38,325	$40,241	$42,253	$44,366	$46,584
Facility rentals – black box theatre					
Hourly rental price ($)	$70	$70	$70	$70	$70
Occupancy CAGR	5%	5%	5%	5%	5%
Occupancy rate	25%	26%	28%	29%	30%
Rental hours	730	767	805	845	887
Annual Rental revenue ($)	$51,100	$53,655	$56,338	$59,155	$62,112
Facility rentals - education spaces (5)					
Hourly rental price ($)	$30	$30	$30	$30	$30
Occupancy CAGR	5%	5%	5%	5%	5%
Occupancy rate	30%	32%	33%	35%	36%
Rental hours	4380	4599	4829	5070	5324
Annual Rental revenue ($)	$131,400	$137,970	$144,869	$152,112	$159,718
Artist studios (5)					
Monthly rental price ($)	$300	$309	$318	$328	$338
Inflation	3%	3%	3%	3%	3%
Occupancy rate	100.0%	100.0%	100.0%	100.0%	100.0%
Annual Rental revenue ($)	$18,000	$18,540	$19,096	$19,669	$20,259
Office anchor tenants					
Monthly rent for 300 sq ft ($)	$500	$515	$530	$546	$563
Inflation	3%	3%	3%	3%	3%
Number of tenants	3	3	3	4	4
Annual Rental revenue ($)	$12,000	$12,360	$12,731	$13,113	$13,506
Art Gallery					

Line item	Year 1	Year 2	Year 3	Year 4	Year 5
Monthly rent ($)	$2,505	$2,580	$2,658	$2,737	$2,819
Inflation	3%	3%	3%	3%	3%
Annual Rental revenue ($)	$30,060	$30,962	$31,891	$32,847	$33,833
Retail Space					
Monthly rent ($)	$1,250	$1,288	$1,326	$1,366	$1,407
Inflation	3%	3%	3%	3%	3%
Annual Rental revenue ($)	$15,000	$15,450	$15,914	$16,391	$16,883
Board room / Meeting Space					
Hourly rental price ($)	$37.50	$37.50	$37.50	$37.50	$37.50
Occupancy CAGR	5%	5%	5%	5%	5%
Occupancy rate	20.00%	21.00%	22.05%	23.15%	24.31%
Annual Rental revenue ($)	$21,900	$22,995	$24,145	$25,352	$26,620
Maintenance					
Maintenance rate (per sqft)	$1.88				
Fundraising and Sponsorship					
Fundraising expenses rate	25%	25%	25%	25%	25%
Sponsorships	$30,000	$30,000	$30,000	$30,000	$30,000
Donations/fundraising	$30,000	$30,000	$30,000	$30,000	$30,000
Heritage Organization Development Grant	$1,000	$1,000	$1,000	$1,000	$1,000
Archive expenses					
Annual cost (per sqft)	$2.12				
Archive size (sqft)	28,100				
Annual archive cost	$59,640				
Archive Storage					
Monthly storage rental rate	$100	$100	$100	$100	$100
Number of organizations renting space	3	3	3	3	3
Annual Archive storage revenue	$3,600	$3,600	$3,600	$3,600	$3,600

The following table represents the operating model and provides an overview of revenues (including potential revenues from other sources outside of the revenue-generating programming outlined above), and projected expenses associated with running the proposed Kawartha Lakes Culture Centre.

Table 6: Operating Model for the Kawartha Lakes Culture Centre

	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue - earned, Facility Rentals					
Rental revenue	$329,545	$345,842	$362,954	$380,922	$399,788
Revenue - earned, Tenant Rentals					
Rental revenue	$78,960	$81,767	$84,680	$87,703	$90,841
Revenue – earned, Artist Studios					
Revenue	$18,000	$18,540	$19,096	$19,669	$20,259
Revenue - other					
Sponsorships	$30,000	$30,000	$30,000	$30,000	$30,000
Donations/fundraising	$30,000	$30,000	$30,000	$30,000	$30,000
Heritage Organization Development Grant	$1,000	$1,000	$1,000	$1,000	$1,000
Total Revenue	**$580,505**	**$602,939**	**$626,394**	**$670,587**	**$696,820**
Expenses*					
Archive expenses	$59,640	$59,640	$59,640	$59,640	$59,640
Archive Staff	$306,350	$312,477	$318,727	$325,101	$331,603
Building Administrative staff	$100,000	$102,000	$104,040	$106,121	$108,243
Facility Site Staff	$60,000	$61,200	$62,424	$63,672	$64,946
Custodial services	$95,000	$95,000	$95,000	$95,000	$95,000
Office operations, marketing	$25,000	$25,000	$25,000	$25,000	$25,000
Fundraising expenses	$7,500	$7,500	$7,500	$7,500	$7,500
Facility maintenance	$110,356	$110,356	$110,356	$110,356	$110,356
Utilities	$43,000	$43,000	$43,000	$43,000	$43,000
Insurance	$45,000	$45,000	$45,000	$45,000	$45,000
Total Expenses	**$851,846**	**$861,173**	**$870,687**	**$880,391**	**$890,288**
Net Income	**-$364,341**	**-$354,024**	**-$342,956**	**- $331,096**	**- $318,400**

*all staff are employed by the City of Kawartha Lakes.

As is the industry standard, a Culture Centre in Lindsay will operate at a deficit (estimated to be approximately $364,000 at first) that slowly decreases with time. After a few years of operation, the Centre will have a greater understanding of its market demand and will ideally become more efficient, so there may be greater build-up over time. Importantly, the operating deficit of a Culture Centre that delivers a robust selection of revenue-generating programs and usable space is much lower than one that does not. In addition, a larger-scale Centre with more program offerings can bring in more donations and sponsorships. It should be noted that the model does not currently list any yearly operating grants from different levels of government, but precedent suggests that these

kinds of funds can be available at municipal or provincial levels. Next steps should involve establishing a funding arrangement with the City of Kawartha Lakes

A larger Centre with more programming requires a much higher capital investment up front and higher yearly operating costs. However, if it is successful in attracting community-based activities, it is more commercially viable than a smaller facility with less programming.

The key expenses associated with a Culture Centre of this size are staffing (including full-time, part-time, and other support staff), and facility maintenance and utilities. It should be noted that that some expenses will be part of the municipal operating budget (for example, staff are likely to be employed by the municipality) but have been included in the operating model to present costs associated with running a Culture Centre of this sort.

The key revenue source for this facility is space rental. It should also be noted that the above-defined annual operating deficit is only achievable with donations and sponsorships totaling approximately $60,000 per year.

4. Fundraising Considerations

The next steps proposed in this document aim to set the table for a successful capital fundraising campaign. There are 4 steps discussed in this document, namely:

- Determine a clear and compelling vision for the Culture Centre, including an artistic vision for the space and programming
- Assess the fundraising landscape specific to this project
- Build out the capital campaign
- Develop a clear narrative

These steps are proposed based on conventional fundraising principles and practices, tailored where appropriate to the Kawartha Lakes context.

4.1 Determine a clear and compelling vision for the Kawartha Lakes Culture Centre, including an artistic vision for the space and its programming.

These spaces, and the expected programming happening within them, should be of interest to many Kawartha Lakes residents, and provide the base information to base decisions for the capital campaign. From here, we can deduce the anticipated audience and visitor market, prospective donors/sponsors, and begin crafting the campaign narrative.

Consider how the Culture Centre fits into the existing cultural landscape. What tenants/resident companies/organizations will be using the space? How will the Culture Centre fundraise within the community without cannibalizing funds for existing arts organizations? A fund-raising campaign can be developed around the specific amenities that will be created by the cultural centre. However, there should be a shared value established among a broad range of potential donors who see an arts community centre as a major benefit to the community. Hence articulating a clear and compelling vision for the Culture Centre will inform the Case for Support in a fundraising campaign by creating alignment with donor motivations.

4.1.1 Draft Vision & Mission Statement

A draft vision and mission for the Kawartha Lakes Culture Centre, which can be built up with more specificity by answering the questions above, might be:

The Kawartha Lakes Culture Centre invites Kawartha Lakes' cultural and heritage organizations, residents, neighbours. and visitors to gather, share space, create, learn, and experience the arts and culture of Kawartha Lakes.

***Vision**: To support the appreciation of Arts and Culture in Kawartha Lakes.*

***Mission**: The Kawartha Lakes Cultural Centre is a transformational facility providing space for artistic creation, education, and appreciation at all levels. The Culture Centre will:*

- *House and showcase cultural assets;*
- *Provide professional space for artists at all levels to create and practice;*
- *Provide space for all community members to experience arts and culture events*

A community and City led group should be convened to finalize these statements, once there is commitment from Council to go ahead with the project.

4.2 Assess the fundraising landscape specific to this project

An estimate of fundraising targets would be based on several environmental factors, including comparative research to other jurisdictions and other charity targets in the same region. It would also encompass economic analysis of disposable income, definition of catchment area that will be considered as part of the market, analysis of trends in charitable donations, competing campaigns anticipated, strength of local leadership and volunteers, and other considerations.

The governance model will inform future operations planning and will impact financing and donor motivations for the capital campaign. The model must be sound and evoke trust from potential donors. In a City-run model, there may be a perception that tax dollars are already supporting the development which would limit taxpayer's interest in donations to the construction and ongoing operations. Sponsorship and foundational revenues are still viable options across models.

Philanthropy in Canada is going through a transformative time, with economic challenges, high interest rates and inflation changing the ability of many Canadians to give. It is important for KL to be realistic about the broad trends in philanthropy in Canada.

- People are giving less – Giving participation rates (i.e., the percent of Canadians who claim charitable gifts on their tax returns) have been steadily falling since 1990. In 2022, the overall household participation rate dropped 8%, with the steepest drops among households with the highest incomes[4]
- 24% of charities reported decreased donor levels in 2023 – this finding is also reflective on anecdotes from community consultations.[5]
- Arts and culture are a lower priority – On average, Canadians who report donating to arts and culture causes say they give approximately $11 out of $100 of their annual charitable giving

[4] The Giving Report 2023, Environics Analytics and CanadaHelps

[5] State of the Canadian Charitable Sector, Mid-Year Report 223, Charity Insights Canada Project

to arts and culture. In Ontario, the average donation going to arts and culture is closer to $8 out of $100 – the lowest provincial figure.[6]

The landscape for capital fundraising is likely to continue changing. Opportunities to explore new and innovative campaign approaches and positioning exist. Some key fundraising considerations for the Kawartha Lakes Culture Centre include:

- There is no one-size-fits-all framework for overall capital budget, funding sources, or campaign timelines. Be creative with your ideas!
- It can be effective to target single large private funding donations instead of widespread crowdfunding campaigns focusing on smaller donations from many residents.
- Creating a sense of belonging and a community identity is one of the most important roles of culture centres, according to Ontario-based donors. A business case/campaign narrative is a vital part of substantiating requests for support. The narrative tells a story, highlighting the challenges at hand and the proposed solutions. It presents a compelling vision of the end goal so donors can understand what they are helping build.
- Community projects can generate a lot of enthusiasm, and there can be a tendency to translate that energy into a higher estimate of funds than could feasibly be raised. Depending on the psychology of the campaign leadership, "stretch goals" can be useful as motivators. They are appropriate in certain campaign contexts.

Another important context perspective is the fundraising precedents in the surrounding area that are indicators of the potential for fundraising. These include:

- **Summit Wellness Centre** (in development – opening 2025) - $11 million dollar project ($7.5 million projected initially), $1 million community fundraising goal reached in 2022 – made up of over 1500 individual donors, includes a $200,000 donation from the Hann Family. A fundraising task force was pulled together. City of Kawartha Lakes. committed $1.5 million. Federal and provincial support is also being applied for.
- **FLATO Developments** has been an active cultural investor across Ontario, and especially in Kawartha Lakes recently. For a $1.375 million commitment over 15 years, FLATO developments purchased the naming rights to the Academy Theatre in 2021. The developer also donated $3 million to Ross Memorial Hospital. FLATO has been developing different housing units in the municipality and is investing back into the community in these ways.
- **Bruce County Museum & Archives** are planning for a 12,000 sq ft. expansion or new build archives facility development to accommodate their expanding operations. A 2017 feasibility study proposed a $3.5-$5 million capital campaign.

A sum of $10.5 million in capital allocated in the City of Kawartha Lakes Budget for the Culture Centre Network in 2027. $6 million is also available in asset management. While these funds have been allocated for these uses, there has been no formal commitment by the City to use these funds yet. Federal and Provincial grant funding programs should also be pursued and make up most of the capital, including:

- **Canada Cultural Spaces Fund**: The CCSF supports the improvement of physical conditions for arts, heritage culture and creative innovation. The CCSF supports renovation projects, the acquisition of specialized equipment, and planning, design and feasibility studies related to

[6] Arts Response Tracking Survey, November 2023, Nanos Research, the National Arts Centre, and Business/Arts

arts and heritage cultural spaces. Beginning in 2024-25, the Canada Cultural Spaces Fund (CCSF) will enter a period of experimentation with the implementation of the expanded feasibility studies component. The expansion will include funding a wider range of arts and heritage cultural spaces projects in the earlier stages of development.

- **Green Municipal Fund**: through its "capital project: construction of new sustainable municipal and community buildings stream", funding is available to commission and construct a new high-efficiency municipal or community building. The City of Kawartha Lakes is currently pursuing this potential funding option.

Consider private/foundational sources of funding as well. Social finance and other forgivable loan programs may also be a viable option for bridge financing. An assessment of this project's fundraising potential would be based on these factors and more. A fundraising goal should be established, with amounts allocated to different streams (e.g., donations, sponsorships, grant funding). Note that fundraising can take make years, and consideration about annual fundraising goals may also be appropriate.

4.3 Build out the capital campaign

Once the fundraising landscape specific to this project has been assessed, the next step is to set a target and budget for the financial campaign. Giaimo estimates that a development of this size can cost between $35-$49 million or more. Capital campaign costs will likely include consulting fees/staff, writer/designer, production and distribution of promotional materials, event costs, advertising expenses, donor recognition and volunteer appreciation costs, etc. Total capital campaign costs of 10–15% of the campaign goal can be expected.

1. Assess and determine fundraising target. Giaimo will be determining the rough construction cost for the facility. Once that's established, a final fundraising campaign target should be confirmed, based on an assessment of the local fundraising landscape. Other financing sources should also be sourced during this time to meet the construction and start-up costs (e.g., government grants, municipal subsidy, etc.).
2. Note that private donations and some other sources of capital can take years to realize, e.g. if a private donor disburses their donation over 3 years. In that case, some form of bridge financing will need to be explored to prevent the project from being delayed.
3. Create and follow a strategic fundraising campaign plan. A capital campaign is an opportunity to encourage community investment in several ways – including financially, intellectually, and emotionally. Although the details of the framework may change over time (including targets and priorities), it is imperative that the campaign be managed strategically, thoughtfully, and professionally from beginning to end. Planning a campaign that is closely associated with the art community should be a core feature of the fundraising strategy.

- Begin to identify key sponsorable properties and physical recognition opportunities (e.g., facility or individual room naming rights) as architectural plans are formed.
    - Begin to build out the Case for Support including a bold and compelling vision, financial information relevant to donor interests (including plans for operational sustainability), and a timeline for the campaign and project.
- Assess prospects and revise as necessary the fundraising goal and strategies - Consider the extent to which major donors will have a voice in the planning of the space, programming, and other aspects of building the Culture Centre. Consider the timing of different funding sources and the amounts that can be sought from each source.

- Begin to recruit members of a fundraising committee – specifically high-net-worth individuals who are well-connected in the community and passionate about the vision for the Culture Centre.

See **Appendix I** for tools and resources to support the development and execution of the strategic fundraising campaign plan.

Note that the financial targets may change during campaign planning. However, once the campaign has officially launched to the public, the total fundraising goal is generally considered final and fixed. A realizable number or at least a range that can portend a higher target is recommended.

4.4 Develop a campaign narrative

For any fundraising initiative to be successful, the Case for Support (a "business case") needs to be clear – it needs to hang together as an operating model, even if it cannot totally pay all the bills from its operating income alone. The vision and mission of the centre needs to appeal to the community and connect to them in some way. It will likely mean usage will be priced to what is affordable as opposed to what can be profitable. But the business case will still show the discipline of operating within a budget. A solid operating plan and governance model that is both responsible and attracts community arts activists will be important for attracting private and public funds.

The Case for Support outlines the rationale, objectives, and fundraising goals for a project or campaign. It provides the foundation for all campaign communications, ensures all team members are on the same page, and acts as a public-facing pitch for prospective donors. The document should be reasoned, optimistic, and persuasive. It should outline a bold, compelling vision with a clear call to action. It should be brief and readable. The Case for Support should be donor centered. The following table outlines the core components that should be included in a Case for Support.

Section	Purpose
Introduction	Aims to pique the interests of prospective donors; establishes context and highlights a personal connection; presents the challenge and proposes a bold solution; creates a sense of urgency and excitement
Vision for the Centre	Presents the Centre's features and amenities; outlines potential benefits for the community; paints a compelling picture for prospective donors of the final product they will help bring to life
Financials	Outlines fundraising goals, anticipated revenue streams, and projected construction costs (in the form of budget tables); provides an overview of anticipated annual operational costs and subsidies
Timeline	Presents process to date and outline future milestones including Council approvals, capital campaign, construction, and target opening date
Governance	Provides information about the organizing body behind the Centre; includes all key individuals and institutions directly involved in designing, fundraising for, and building the centre; provides insights into how the Centre will run

Section	Purpose
Call to Action	Outlines how donors can get involved in a clear, urgent, and emotional manner; presents opportunity to create a personalized donation and recognition plan

A sample case for support has been provided in **Appendix I**.

5. Site Selection

Site Selection Criteria for the Kawartha Lake's new cultural facility has been developed based on Core and Desired requirements, as described within this section. Core Site Selection Criteria was determined by the consultants through research and review of the existing context, the City of Kawartha Lakes previous plans and reporting, and the requirements of the building developed within this report. Desired Selection Criteria build on select design guidelines from the Phase 1 Report, and were developed and then refined based on the outcome of a Kawartha Lakes Culture Centre Feasibility Task Force workshop held by Giaimo on March 27, 2024. The criteria, and further detail and rationale are included below.

5.1 Core and Desired Site Selection Criteria

The Core Site Selection Criteria takes Phase 1 findings into account and seeks to further define the qualities of a suitable site based on facility requirements, municipal infrastructure and growth plan, and existing cultural facilities, festivals, and events. The Core criteria is divided into three broad categories:

- Determination of Sizing and Spatial Requirements
- Determination of Location Suitability
- Determination of Proximity to Partnerships

These criteria are intended to narrow the geographic scope of the site selection, based on both reporting already completed by the city, and research completed by the consultant team. These criteria are further detailed in Appendix K.

The first criteria determined the site sizing, based on the spatial requirements developed through the study in Sections 3 of this report, benchmarking a minimum site area of 39,600 square feet, to be accommodated based on specific site requirements.

Ground Floor Related Programming*	Square Footage
Archive/ Storage and Preservation	20,000
Shared Exhibition Space	3,000
Art Gallery	1,500
Blackbox Theatre & Rehearsal	3,500
Education Spaces	2,500
Commercial Kitchen	1,100
Retail Space	1,000
Artist Studios (5-6)	1000
Services and Circulation	6,000

Note: 40% of 15,000 sf building gross up, intended to include lobby, loading, garbage and other miscellaneous service programs.	
Interior Total	39,600
Parking (approximate, as per ZBL)	80 spaces - 18,000

*Not all facility program is represented within this chart – only program that is ideally located at grade.

The suitable geographic area was narrowed using the city's planning reports, and review of the urban cores of the three largest settlements in the city, along with Fleming College's Frost Campus. The benchmarked site area was found to be possible in the three settlements, but more easily attained, and more centrally located in Lindsay.

This was further reinforced in the review of proximate partnerships, which found the highest concentration of arts organizations based on the city's cultural resources map. In conclusion, the site was determined to be most ideally located in the urban settlement area of Lindsay, specifically in either the downtown core, or at the Fleming College Frost Campus. These sites are accessible, sufficiently sized, conform with the city's planned growth, and most importantly, are centrally located to best serve the creative community within the City of Kawartha Lakes.

While Core Site Selection Criteria forms the minimum requirement for a site to be considered, five secondary or 'desired' criteria were determined for the centre based on architectural best practices that would contribute to creating a landmark destination. These criteria are further detailed in Appendix K, and each site is evaluated against these criteria in Section 6.

Section 6 of this report, which includes the recommended sites, the site long list, and their evaluation against the criteria has been issued under separate cover to be provided to the city confidentially, in order to preserve the city's ability to negotiate with current site owners.