

ENERGY CONSERVATION BRIEF

87-95 SEAGRAM DR

MIXED USE 34 STOREY BUILDING

87-95 SEAGRAM DR, WATERLOO, ON

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EXECUTIVE SUMMARY

A thirty-four-storey residential apartment building is proposed at 87-95 Seagram Drive in Waterloo. The development includes two residential towers of 27 storeys above a 7-storey podium.

The building includes commercial spaces at the ground floor facing Seagram Drive, as well as an amenity floor at the eighth floor that includes both indoor and outdoor amenity spaces.

The development is geared for student accommodation and includes 522 units and 1074 bedrooms in a variety of unit sizes.

The development delivers on the urban intensification targets set by the Ontario Government, Region of Waterloo and City of Waterloo for neighbourhoods served by higher orders of transit: in this case Light Rail Transit (LRT). Located in a Station Area neighbourhood meters from an LRT station, the development supports reduction of the use of personal automobiles and the use of alternate modes of transportation, such as LRT, and active transportation – using bikes and walking.

The building is envisioned as highly energy efficient according to the aggressive energy efficiency targets set out by the Canada Mortgage and Housing Corporation (CMHC) under the LMI funding program guidelines. Overall, the design targets **25% improvement** over the already aggressive Ontario Building Code energy efficiency targets.

As part of the energy efficient and sustainable design, the building will be fully electric and will be equipped with an efficient central HVAC system with VRF circulation system using air pumps.

The building is envisioned as a modular total pre-cast concrete structure that is efficient to produce and construct. The building envelope will be energy efficient and designed to minimize heat loss.

In summary, the proposed building delivers sustainable design and sustainable living in many ways, including the following:

- . Residential intensification in an area well served by alternate modes of transportation
- . A highly efficient building envelope based on modular construction and tight, high-value insulation.
- . Architectural detailing that emphasizes continuity of building insulation and airtightness to reduce energy loss
- . Use of clean energy – electricity – to reduce carbon footprint
- . Highly efficient mechanical and electrical systems and equipment to reduce energy demand
- . Water use reduction through low flow water fixtures and low water appliances
- . High efficiency appliances
- . Transportation Demand Management measures including limited parking rates
- . Light colour roofing materials
- . Occupancy controlled LED lighting

INTRODUCTION

This report has been prepared by Masri O Architects in support of the application for Zoning By-law Application for the redevelopment of 87-95 Seagram Drive properties in Waterloo. Masri O Architects was engaged by the developer Modern Real Estate Development to lead a team of design professionals to facilitate the re-development of this property.

The purpose of this report is to communicate the design intent relative to energy conservation in reference to City of Waterloo's energy goals as identified by the City's commitment to achieve a reduction of greenhouse gas emissions by 50% by 2030 and 80% by 2050 relative to 2010 levels.

This report focuses on the design features related to sustainability, energy savings, as well as other significant aspects of the development vision, as summarised in the table below:

Goals of Undertaking Energy Study

Proposal/Development Details

Identification of opportunities to increase energy efficiency and reduce greenhouse gas emissions in new development at the conceptual design stage.

CMHC LMI program presents an opportunity for measurable building performance relative to energy well exceeding targets set by the building code.

Consideration of opportunities to site buildings and configure blocks to take advantage of existing or proposed energy infrastructure, energy capture, and/or solar orientation.

The site location in a Station Area with existing infrastructure and high order transportation offers a low-cost intensification and supports sustainable living.

Consideration of opportunities to optimize the installation of future building energy systems that will allow the development to cost-effectively achieve net-zero energy performance.

Building mechanical and electrical systems are highly efficient and clean energy based – solely electrical.

Consideration of opportunities to increase resiliency.

The building is designed with the changing climate in mind.

Consideration of embodied carbon and material selection.

Use of electricity as a clean energy source eliminates carbon emission from gas.

Exploration of potential operational cost savings and capital cost incentives.

Energy efficiency and operational cost savings are aligned – added insulation, highly efficient mechanical systems and low energy use electrical equipment and appliances result in lower operational costs.

The City will encourage energy conservation in the community by promoting a compact City form including... directing development to areas contiguous to the built up area of the City to optimize the use of existing infrastructure.

[Section 8.5 Waterloo Official Plan \(2024 Official Plan\)](#)

A. OVERVIEW OF PROPOSED DEVELOPMENT

The proposed development involves the consolidation of five low-rise dwelling lots: 87, 89, 91, 93 and 95 Seagram Drive in Waterloo (Site). The Site is located just north of the Uptown District of the City of Waterloo in an area designated *Mixed-Use High Density Residential* in the Official Plan.

The proposed re-development of this Site is a major intensification of severely under-utilised lots in a growing neighbourhood, well served by various amenities and public transportation. When completed, the proposed development will provide 522 units in a 34-storey mixed-use building that replaces ten dwelling units on five lots.

Currently, the Site includes ten units arranged as follows:

- . 87 Seagram Drive: a two-storey townhouse, with six units
- . 89 Seagram Drive: a single storey house
- . 91 Seagram Drive: a 1.5-storey house
- . 93 Seagram Drive: a 1.5-storey house
- . 95 Seagram Drive: a single storey house

The re-developed Site will be comprised of two 27 storey towers on top of a 7-storey commercial/residential podium for a total of 34 storeys. As mixed-use building, the development includes commercial spaces at the ground floor and two office floors 33-34 in one of the towers, as well as underground and structured parking.

With 522 units and 1074 bedrooms, the development constitutes a significant contribution to local housing stock, aligning with the Official Plan in the goal to densify the built-up areas within the City, especially areas within Protected Major Transit Station Areas (PMTSAs).

The foundation for this development is providing rental housing in close to Universities and Uptown Waterloo that is up-scale, yet reasonably affordable. It caters to students and young professionals seeking housing in a prime location: close to employment, shopping and amenities such as Waterloo Park as well as proximity to the Universities. In addition to the ideal location, the development is within a Protected Major Transit Station Area – only 300 metres from the Laurier-Waterloo Park ION station.

The development is designed to contribute positively to an urban style of living that relies on ease of access to various types of amenities within the building and the neighbourhood, access to transit and walkability. The development offers reduced parking rates: approximately 0.14 per unit for a total of 76 parking spaces (including resident, visitor and commercial parking). This supports the reduction of reliance on automobiles and encourages the use of alternative means of transportation.

The new development contributes towards a complete neighbourhood in the City of Waterloo by providing:

- . A sustainable building with impressive energy efficiency targets,
- . A range of apartment sizes to accommodate various stages of life and needs,
- . Commercial uses within the building that cater to the residents and the neighbourhood with a focus on health and well-being,
- . A rich range of on-site amenities that support socialization, study, health & well-being, nutrition and healthy living,

- An attractive building design that will contribute positively to the neighbourhood and enhance the street,
- An active building façade that enriches the public realm through attractive design, transparent facades, soft and hard landscaping and street furniture.
- Affordable housing as a percentage of the overall unit/bedroom density.

Through careful and considerate design, the building is envisioned to exceed the aggressive energy efficiency standards set by the Ontario Building Code **by 25%**. Simultaneously, the design will target minimizing adverse impacts on the environment by reducing carbon, conserving energy, recycling, and eliminating VOCs.

The re-development and densification of this property will allow for the construction of rental housing stock that is energy-efficient, modern, safe, and meets the evolving needs of city dwellers – providing a significant amount of housing in a key location adjacent to Universities, Waterloo Park, and LRT connecting people to the greater Region of Waterloo.

B. ENERGY AND EMISSIONS ANALYSIS

While investment in all types of new housing development is necessary to accommodate the growing population in the Region and to address the increasing housing shortage, infill developments represent an excellent opportunity to address the need for housing more sustainably. Infill developments such as the one proposed is inherently sustainable as it does not require additional infrastructure; it also curbs sprawl and reduces reliance on carbon emitting automobiles. As such, vertical development is the preferred approach for augmenting the existing housing stock and supporting a mix of dwelling types within future cities. Compact urban infill reduces urban sprawl and preserves natural habitat.

Compact urban oriented vertical buildings offer opportunities for efficient building design. The compact form of an apartment building with reduced surface or building envelope reduces the amount of building materials, and reduces energy use and loss, reducing resource consumption. Grouping apartment dwellings together allows the use of efficient centralized and shared HVAC building systems, further reducing energy efficiency.

The location of the Site is close to LRT and offers easy access to amenities and places of work and study. The lifestyle the proposed development supports is urban in nature, with easy access to amenities supported with alternate modes of transportation replacing individual automobiles. An urban life style is environmentally friendly as a result of reduced energy use and reduced carbon footprint. Centralized developments such as this one inherently reduce trip lengths making walking, biking and use of Carshare and Rideshare more affordable and realistic.

This building will provide a low parking rate, equivalent to approximately 0.12/unit plus 0.025/unit for visitors (of residents and commercial units).

The development is envisioned as a highly sustainable building targeting to **exceed OBC energy standards by 25%**. In addition to the provision of affordable units, the energy reduction target of 25% better than OBC forms the compliance basis for funding by Canada Mortgage and Housing Corporation (CMHC). This is in line with the provincial, regional and local objectives.

C. ENVELOPE ANALYSIS

By their nature, high density apartment buildings have compact forms, reducing the surface area of exterior walls and roofs, thereby reducing exposure to cold weather and heat loss, and consequently, reducing the energy required to maintain a comfortable interior temperature.

From a design standpoint, the proposed building will be a **high-performance building**. The building envelope will incorporate **high insulation values, mass walls, and airtight exterior walls and roofs**. The building envelope detailing will minimize heat transfer and loss which will maximize heat retention resulting in a reduction of operational energy consumption.

The OBC introduced stricter energy efficiency standards as of 2012. For example, increased insulation values for walls, roofs, windows and foundations increased the efficiency requirement for building equipment, enforced energy loss reductions through ERVs and required attention to construction detailing to prevent cold joints.

For this development, in addition to the high-performance building envelope composed of concrete pre-cast mass walls combined with high value insulation, high-efficiency mechanical systems have been considered. Low U-value windows (with low heat loss) will also be considered as an aspect to help achieve the aggressive energy reduction targets.

While energy conservation is imperative and is legislated by the new building codes, the Owner has committed to an energy efficient building design targeting **25% more energy efficient** than Ontario Building Code requirements.

Apart from providing energy conservation measures, the development has been designed for long-life, high durability and high quality, low-maintenance and long life-cycle materials as detailed in the following sections.

Building Energy Conservation Summary

- . The building's energy use is targeted to be **25% better** (less) than required by the Ontario Building Code.
- . Efficient building envelope with high insulation values, efficient windows and careful detailing.
- . High efficiency mechanical and electrical systems and equipment.
- . The compact building shape minimizes the building envelope and reduces heat loss/gain.
- . The compact unit sizes result in the reduction of resource use, including energy.
- . The use of electricity as the primary source of energy, which is a clean energy source in Ontario, thereby reducing carbon generation.

Some of the additional energy reducing considerations implemented that help achieve the targeted reduction in energy use include: the use of LED lighting, light colour roofing, shading, and high-efficiency appliances. The use of Energy Recovery Ventilators (ERVs), ventless condensing dryers and variable refrigerant flow (VRF) HVAC systems will further enhance energy saving measures for this building.

Water Conservation & Stormwater Management

The use of water-conserving fixtures in homes has become a common standard. These include low-flush and dual-flush toilets, low-flow shower heads and front-load high-efficiency washer/dryers. Furthermore, draught-resistant plants have been selected to minimize the need for watering: this serves both as a water conservation measure and a reduction in operational maintenance requirements.

The stormwater management strategy involves flow control drains on the roof, and an underground temporary stormwater gallery to ultimately be drained to the existing municipal storm service along Seagram Drive. The site contains some surface parking area, which will gather stormwater to be treated by the site oil and grit separator (OGS). A significant portion of the site is built due to the podium design, and its roof generates 'clean' stormwater.

Air Quality

There are a number of design features that directly and indirectly affect air quality positively.

- Low VOC interior finishes
- Operable windows in units controlled by residents
- Continuous fresh air supply through mechanical ventilation to all units and shared spaces within the building.
- The reliance on alternate modes of transportation. The building offers low rate of on-site vehicle parking to encourage the use of the nearby LRT. It provides high rate of bike parking per unit and it is located close to various amenities and universities making the development highly walkable.
 - Secured bike storage for 540 bikes at a rate of 1.03 per unit. This accounts for the required 313 spaces (0.6/unit) plus an additional 172 to be distributed as needed to residents. This also includes 20 Type B bike parking spaces located along the street frontage, intended for use by visitors.
 - The location of the development provides residents and visitors convenient access to rapid transit and active transportation modes to travel to/from the subject site.

Waste Reduction and Management

The design will target the efficient use of materials, and construction procedures will be geared towards reducing waste and recycling of packaging materials.

Durable and long life-cycle building materials will result in more efficient use of resources.

Garbage will be collected in a central facility and sorted for recycling through private service providers.

D. RENEWABLES AND EMBODIED CARBON

The reduction of embodied carbon will be primarily achieved through the use of electricity as the primary energy source for the building. Electricity in Ontario is considered to be a 'clean' energy source as it is not carbon emitting with the majority of electricity being produced through nuclear, hydro and wind sources.

The building is designed as a pre-cast concrete structure. While this type of structure offers great benefits in insulation as a mass wall and speed in construction, concrete has a high embodied carbon ratio.

The carbon emitted during the initial manufacturing of the building structure is partially offset by the long life of a concrete structure. The use of electricity will reduce carbon emissions for the life of the building.

In order to further reduce embodied carbon for the overall building, the design team will consider:

- Efficient and compact structural systems that are not oversized.
- Flexible and efficient spaces that allow changes in use over the long-term.
- Implement other strategies to reduce carbon through the selection of building finishes and management/reduction of construction material waste.

In conclusion, by relying on electricity as a clean energy source and utilizing long-life building materials, as well as adopting efficient, adaptable, and waste-conscious design practices, the development takes meaningful steps toward reducing its embodied carbon footprint. These measures not only support environmental sustainability but also contribute to a more resilient and resource-efficient building over its lifespan.

E. RESILIENCY

The City of Waterloo, in collaboration with the Region of Waterloo, is proactively enhancing its resilience to the physical, social, and economic effects of climate change. This initiative is guided by the **Community Climate Adaptation Plan**, which emphasizes four key focus areas: health and community, the built environment, natural resources, and energy and the economy.

Supporting this effort, the City's **Corporate Climate Change Adaptation Plan** identifies targeted actions to reduce vulnerabilities, strengthen resilience, and capitalize on opportunities presented by a changing climate. Together, these initiatives align with the **City's Green Building Policy (A-033)**, which requires all new construction and major retrofits to City-owned buildings to include strategies that lower greenhouse gas emissions and enhance overall building resilience.

A range of strategies can be integrated into building design to enhance resilience, including:

- Incorporating future climate data to inform building performance and design
- Reducing the **Thermal Energy Demand Intensity (TEDI)**
- Installing ceiling fans
- Shading elements such as canopies, trees and shrubs
- Reducing hardscape

By integrating thermal efficiency new developments can better withstand future climate impacts. Incorporating these types of measures today ensures long-term protection of both the building and its occupants.

The design for this building incorporates resilience by using the following strategies:

- High quality and durable building materials that last longer and perform efficiently
- Use of electricity-based systems that can be supported by alternative modes of energy production such as solar, as well as emergency generator systems
- Providing intensification in a central location and built-up area; making use of existing infrastructure as well as preserving green infrastructure

F. DISCUSSION AND RECOMMENDATIONS

Modern Real Estate Development vision for the re-development of 87-95 Seagram Drive Site is a high quality, sustainable, energy efficient and urban style apartment building that fits within its vibrant and urban context. The proposed development incorporates many good design and planning practices that support a sustainable way of life for residents in the surrounding neighbourhood and Waterloo as a whole. These goals include:

- **Reduction of Energy Use:** Targeting performance 25% better than the Ontario Building Code through high-performance building envelope and mechanical systems.
- **Reduction of Carbon Footprint:** Use of electricity as the primary and clean source of energy, and support of alternate modes of transportation, thereby reducing carbon emissions for the life of the building.
- **Use of Alternate Modes of Transportation:** The building's location near the LRT station will encourage transit use, walking, and cycling; reducing reliance on private vehicles and lowering residents' carbon footprint.
- **Support of Urban Life Style:** based on compact living with reliance on shared and nearby amenities.
- **Durable and Efficient Construction:** Using modular off-site construction methods for systems that include precast concrete, interior partition walls, millwork & cabinets, etc.
- **Sustainable Low-Impact Site Design:** Water conservation and stormwater management are addressed through low-flow fixtures, drought-tolerant landscaping, and on-site stormwater control systems.

The proposed development targets a balance within the intersecting circles of social, environmental and economic aspects of urban dwelling. The re-development and densification of the Site integrated within the urban fabric of the city allows for an adaptable re-development of an under-utilised site that will provide for a healthy inclusive community. By providing considerate design features, the community will be able to stay active and healthy, as well as be part of sustainable practices on a daily basis.

Walkable, visit-able, safe and community-oriented residences all promote a better and healthier life. Similarly, the development promotes community-oriented, active living through its amenity spaces and encouragement of active transportation.

As such, we see the proposed the Modern Real Estate Development redevelopment to be setting a very high standard as a responsibly envisioned community. The energy savings targets are aggressive and will result in a highly technical sustainable building suited for the evolving needs of urban cities of the future.