srm ARCHITECTS INC.

Sustainability Statement

Project: **Aventus Developments Student Residence**
716 Gordon St.
Guelph, ON

Date: February 13, 2023

Height Details: 11-Storey Max (36.18m)

Density Details: 532 Dwelling Units

Prepared By: SRM Architects Inc.

The City of Guelph's Community Energy Initiative (CEI) lays out a strategy for the reduction of emissions generated by construction. With the goal to reduce corporate greenhouse gas emissions to Net Zero by year 2050. The Community Energy Plan (CEP) focuses on five goals: Investment with a sustainable energy future; reliable, competitive energy, water, transport services available; reducing greenhouse gas emissions; reducing energy & water consumption; and publicly funded investments supporting these four goals.

Sustainable strategies to be incorporated or being considered for incorporation into the design, which are aligned with the CEI and CEP are summarized below:

Transportation	**Transit Access:** The site is located along Gordon Street, which serves as a key transit corridor through the City. The site is 200m from four bus stops and served by at least 10 bus routes. It is also directly adjacent to a painted bicycle lane network. This makes it a prime location for the development of 1149 bedrooms targeted towards Guelphs sizable student demographic, many of whom use public transit or cycle as their primary mode of transportation and would benefit from proximate transit access. **Motor Vehicle Parking:** Vehicle parking is proposed to be provided at a rate of 0.25 spaces per bedroom. This rate is based on values from focused studies of actual vehicle usage of students, our population segment, to ensure adequate amounts of parking are provided.

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	Bicycle Parking: The number of bicycle parking is provided in accordance with the draft comprehensive zoning by-law. The proposed design includes a total of 590 bicycle spaces. **EV Charging Stations:** All parking will be equipped with EV ready conduit enabling future installation of EV parking. Several surface visitor EV parking spots will be provided at time of construction. **Alternative Transportation:** Car-shares will be available as another alternative transportation option.
Waste Management	Waste to be tri-streamed. In addition to privately provided garbage pick-up, recycling and composting will be managed at the Refuse Rooms at Ground level and P1 level for each tower, alongside a compactor in the Garbage Room. Furthermore, building management can provide programs where students can *"Leave what you don't need, take what you can use",* battery recycling and electronic waste disposals which often have incentives in the community. As an already popular strategy across the GTHA and particularly in student residences. This is an effective way to keep useful things out of the landfill through cyclical reuse, and reduce overall waste created.
Water Resources & Use	Options for water collection strategies will be explored with our mechanical engineering team. For instance, stormwater can be collected for use irrigating outdoor landscaped areas. Landscaped areas will be planted with native species suited for the climate, which will help support the local ecology and an overall reduction in water consumption.

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Waste-water Management	Stormwater run-off will be reduced through slow-drain design and collection to mitigate the storm water load on municipal sewers. Increasing soft landscaping and permeable paving will help mitigate stormwater runoff on the site. Strategic locations where accent planting and permeable paving options can be supported and further mitigate building run-off will be investigated. The use of bioretention swales to treat parking lot stormwater run-off was considered, but deemed infeasible because of site grading constraints.
Built Infrastructure	**Affordable Housing:** Ability to house a growing population at affordable costs is a less discussed aspect of sustainability. Options for affordable housing were considered for this proposal, and we will continue to investigate options for viable publicly funded investment in affordable housing for students. Our client is researching current CMHC programs and Wellington County guidelines to determine whether subsidies and low-cost loans can help us achieve affordable housing solutions. Programs which provide incentives toward affordable housing will be further analyzed as the design progresses. However, the target demographic of students generally makes the development unsuitable to provide typical affordable housing units. Instead, the proposal will increase units of purpose-built student housing close to the university, and thus reduce market pressures to convert more traditional single-detached housing stock in the area for this purpose. Ultimately, this would increase availability and affordability of homes in surrounding neighborhoods for families. **Materials & Construction:** it is sustainably minded choosing quality design and longevity of finishes. The development is to be well-constructed, with durable, long-lasting materials selected with students in mind. This is economical in terms of environmental costs, as it reduces the frequency the development required

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	renovations and at which building components need to be replaced, thus reducing the embodied energy and carbon the building will accumulate over its life cycle.
Environmental Performance & Thermal Comfort: Strategies for Heating & Cooling	**Mechanical Systems**: We have used geothermal systems in the past for High Performance buildings. However, this system was deemed to be unsuitable for this development. Nonetheless, efficient heating & cooling systems are a priority for us. In conjunction with our mechanical engineering team, an Energy Recovery Ventilation (ERV) system will be provided that will be able to efficiently provide thermal comfort to residents, while minimizing the buildings overall energy consumption. Building management would be able to control public area loads by reducing make-up air during off-peak hours in amenity and corridor areas. While each unit will be thermally controlled by its user to adapt to their needs, an overall range may be set by facility management. **Natural/Passive Systems:** Operable windows will allow for natural ventilation of habitable spaces. This improves air quality within the building and reduces energy consumption when outdoor conditions are suitable. **Building Envelope:** A high performance building envelope will be designed for the development, with a insulative range of R10-20 for walls, and equal or higher values for roof assemblies. Performative options for fenestration with suitable reflective coatings are also a key consideration. **Building Form:** Design and orientation of the building form minimizes east and west exposure, while maximizing southern exposures. This configuration is optimal for passive control and utilization of solar-heat-gain to reduce the buildings heating loads in the winter, and cooling loads in the summer.

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Energy Resources: Wind, Solar & Other Sources	**Rooftop Solar:** Large areas of open rooftop space, present opportunities for solar energy systems to reduce or offset energy consumption. Although these systems are not included as part of the proposed design, these rooftop spaces future-proof the building by enabling options for on-site energy generation to be implemented. **Energy Offsetting:** Although investigated other forms of on-site energy generation – excluding solar – were deemed to be unsuitable. A possible alternative is to buy a percentage of the electricity utilized from renewable energy sources. Some energy providers have the option to reduce emissions footprint by allowing building owners, or facilities management, to mitigate energy usage through the purchase of available renewable energy to offset typical use. Bullfrog Power is a Canadian green energy retailer that offers renewable energy sources such as wind, and low-impact hydro. Requirements to make the development ready for this option can be explored if it is of interest.

Considering the goals and measurement guidelines delineated through the CEP and CEI, we believe the proposed development supports the goals of both and will have a positive sustainable impact benefiting occupants and the community. This includes convenient access to public transportation and cycling infrastructure, access to EV charging; reduced water consumption through rainwater collection for irrigation, reduction of energy usage through natural lighting strategies, natural ventilation, envelope performance; and building form; as well as an overall reduced greenhouse emissions footprint compared to typical buildings of this type and size. Furthermore, the proposed bicycle and vehicular parking will adequately serve the site and encourage active transportation. The project will also investigate opportunities to fulfill requirements for publicly funded investment in the creation of affordable housing strategies for students, should they prove to be viable.

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