

The Corporation of the City of Barrie
Development Planning
70 Collier Street
Barrie, ON L4M 4T5

Date: January 18, 2024

Memorandum Subject: Sustainable Design Intent for Proposed YMCA Facility at 535 Bayview Drive

To Whom It May Concern,

The purpose of this letter is to provide our preliminary thoughts on overall building performance as it pertains to sustainable and resilient design for the proposed YMCA facility at 535 Bayview Drive. The YMCA is committed to best practices in facility design, construction, and operations with an intent to minimize its footprint, reduce ongoing operational costs and maximize the utility of its facilities and programs within the local community. The Barrie YMCA project team is exploring LEED (Leadership in Energy and Environmental Design) Certification. The following is a summary of our early design decisions that form the basis of our sustainability strategy.

An analysis on the balance of high-performance building envelope vs. mechanical and electrical systems will be undertaken in the next stage of project development. This involves weighing cost and performance benefits of each approach in consultation with the overall design team. The path to achieving LEED certification will be a combination of these elements as we identify the systems best suited to the building type and project specific parameters. In the later stages of project development, we'll focus in on building details such as thermal bridging, air tightness, and mechanical and electrical equipment specifications. These important decisions will come into focus once an energy model is completed.

We provide our strategies below for the criteria identified in Section 3.2.3 of the Official Plan 2051.

i) *Optimization of passive and renewable energy design strategies*

The need to address cooling loads and occupant comfort is increasing due to the effects of climate change. Warmer average temperatures and extended periods of extreme heat requires buildings to respond to current and future climatic conditions. At this stage in the project, we've considered site and environmental factors, most importantly heat gain through solar radiation. The building use greatly benefits from natural light and glass curtain wall is used throughout. In studying our glazing ratio and overall building form it was critical to include a solar shade in the form of a perforated metal screen to allow the passage of natural light but greatly reduce heat gain through ultra violet radiation. Additionally, north facing roof lights provide natural light to darker areas of the building

without contributing to solar heat gain. These massing and material decisions will greatly reduce the building's cooling load and energy consumption.

ii) *Minimization of non-renewable energy consumption, as well as waste;*

To achieve LEED certification the project team will be looking at renewable energy source options for mechanical and electrical systems. These include geothermal energy in lieu of or to offset natural gas and photovoltaic panels to offset electric consumption. Each of these renewable energy sources could be part of our LEED design strategy. Construction and lifestyle costs as well as performance and suitability for this project will be studied in the next phases of design.

iii) *Use of environmentally- friendly products;*

The products we specify for this project are considered through a 'cradle-to-grave' approach. Considering the embodied carbon of materials as well as their durability, life cycle, and effect on indoor air quality. Where possible we strive to use natural materials, from floor and wall finishes to insulation materials. Limiting the use of concrete is also important to reducing the embodied carbon footprint of the building.

iv) *Protection and conservation of water*

The building will minimize its use of potable water through a grey water system for fixtures that can use non-potable water. On the site, permeable pavers and landscape areas will retain rain water and limit the amount of storm water being directed off-site.

v) *Enhancement of the natural environment*

The project site is currently a surface parking lot, and therefore all of the proposed natural landscape areas are a net increase to the city's urban tree cover and natural environment. All available landscape area within the limit of work has been carefully designed to maximize potential for planting and tree cover. The basis of the landscape design is native trees and planting that will naturally fit in to the local environment and nearby storm water pond. Walking trails, benches, and gathering areas encourage use and enjoyment of these naturalized areas.

vi) *Mitigation of climate change and major weather events, including through the use of design elements and durable materials.*

vii) *Adaptation to Barrie's seasonal changes*

As mentioned in paragraph i) the effects of climate change and the impact on our local environment is present and must be anticipated to increase in severity in the future. Extreme heat in summer months and severe weather that brings above normal levels of precipitation are elements the building and site will address. Strategies that have been described herein to manage these major weather events include shading to reduce cooling loads, renewable energy sources to fuel cooling equipment, and landscape surfaces that will absorb water during heavy rainfall.

viii) *Resource conservation through operational maintenance practices.*

LEED certification demands resource conservation across all building systems. The building envelope will achieve R-values above Ontario Building Code minimums to reduce the amount of warm or cool air being lost through building elements such as walls, roofs, and windows. Lighting systems will be equipped with occupancy sensors to minimize the electrical load and HVAC systems will be of high efficiency and utilize energy efficient components such as ERVs (Energy Recovery Ventilator). High attention through each stage of design will be given to building envelope for air tightness to ensure the building operates as efficiently as possible.

Kind Regards,

A handwritten signature in black ink, appearing to read 'Mark Buckley', with a stylized flourish extending to the right.

Mark Buckley, OAA
Martin Simmons Sweers Architects, Inc.