ENERGY CONSERVATION REPORT

PENADY (NORTH BARRIE) LIMITED

303 CUNDLES ROAD EAST BARRIE, ONTARIO

JUNE 2022

EXECUTIVE SUMMARY

Penady (North Barrie) Limited is proposing a 505-unit residential project, currently known municipally as 303 Cundles Road East. The development is situated on an irregular 4.78-acre (1.93ha) parcel, directly in between the existing The Junction Condos (295 & 299 Cundles Rd. E) and the North Barrie Crossing Shopping Centre commercial lands to the east.

The proposed development currently consists of three (3) residential towers, ranging in size from 8 to 12-storeys in height. Parking is proposed to be located within the site at grade with some surface parking, as well as below-grade parking levels.

The requirement for an Energy Conservation Report applies to new developments including industrial buildings over 5,000 m^2, commercial buildings over 2,500m^2, and residential buildings with over 50 units. It is expected that a formal Report can be submitted with the Site Plan Amendment application, once more specific design elements have been determined and implemented.

The energy conservation report is intended to act as a roadmap that helps achieve the City of Barrie's energy consumption and carbon reduction targets. The report also is intended to help designers and developers identify at the earliest opportunity, options to integrate local energy conservation measures that are efficient, low carbon, and resilient. The development team is committed to creating a development in line with OBC SB-10 performance requirements.

A formalized Energy Conservation Report will follow during the Site Plan Control stage of this application. Penady (North Barrie) Limited's Energy Conservation Report consultant will endeavour to predict the energy use, thermal demand, and expected carbon impact of the project through the buildings design and material considerations.

Table of Contents

INTRODUCTION

The proposed development consists of three residential towers, and a combined total 505-units. There will be some surface parking provided, but the bulk of the parking will be facilitated via an underground parking garage. Buildings B1 and B2 will share a parking garage structure, while Building B3 will have its own.

Currently, it is anticipated that the project will at a minimum meet OBC SB-10 requirements for energy conservation targets, but the future Report will be used to identify opportunities for measures that may be incorporated later on in the design process, as feasible. The current document will outline where some energy conservation measures can be implemented.

Figure 1. Proposed Project Rendering

PURPOSE

The City of Barrie has developed a number of sustainability policies in order to address climate change, with particular focus on local energy solutions that are efficient, low-carbon, and resilient. Barrie has also recently introduced the requirement for an Energy Conservation Report when an application proposes any of the following:

- Industrial development over 5,000 m2 (53,820 sq. ft.)
- A commercial building over 2,500 m2 (26,910 sq. ft.); or
- A residential development greater than 50 units in a single building.

The intent of this future report could possibly encourage projects to:

- Identify innovative solutions to reduce energy consumption
- Explore engaging private investment in energy sharing systems
- Identify and evaluate opportunities to achieve very low energy use and reduced energy demands
- Consider energy sharing for multi-building developments
- Consider increased resiliency such as strategic back-up power capacity

Policies regarding Energy Conversation in the City's current Official Plan are set out later on in the document as they relate to Energy Conservation, and implementation thereof at the Development.

It should be acknowledged that all of the strategies discussed are being identified during the conceptual stage of the project. Energy Conservation measures are ultimately developed and refined at the detailed phase of the design process. However, we intend to consider the energy conservation requirements set out in concert with OBC SB-10 performance requirements to inform design.

CURRENT OFFICIAL PLAN ENERGY CONSERVATION POLICIES

With environmental issues top of mind, energy conservation has become an increasingly important topic within a world with limited resources. Section 3.7 of the City of Barrie's current Official Plan sets out goals around Energy Conservation and Renewable Energy Systems. This includes Goals and General Policies towards Energy Conservation, as more specifically set out below.

GOALS (SECTION 3.7.1)

Section 3.7.1 sets out the following Goals for Energy Conservation & Renewable Energy Systems) as follows:

a) ***To ensure land use and development patterns support energy efficiency and improved air quality. (Mod D (rr)(i))***

b) ***To encourage conservation efforts that support energy conservation and the reduction of emissions from vehicles as well as municipal, residential, commercial and industrial sources. (Mod D (rr)(ii))***

c) ***To promote the use of alternative energy systems where appropriate and in accordance with the goals and policies of this Plan and in accordance with Federal and Provincial requirements. (Mod D (rr)(iii))***
d) ***To facilitate development of renewable energy systems and to support the establishment of a green economy in accordance with the Green Energy and Green Economy Act (2009). (Mod D (rr)(iv))***

Penady (North Barrie) Limited will consider to implement the use of environmentally-friendly products for the exterior, interior and finishes. The development will also meet OBC requirements pertaining to energy efficiency. Through consultation with our project architect, we have proposed building design elements that are constructed out of durable materials, which will be constructed and operate in an efficient manner (from a heating and cooling perspective), which will ultimately help to contribute to conservation efforts that support energy conservation via residential sources.

GENERAL POLICIES (SECTION 3.7.2.1)

Similarly, the City's framework for policies pertaining to Energy Conservation (as per Section 3.7.2.1 of the current Official Plan) states the following should be achieved, where reasonable:

a) ***A compact urban form, which supports active transportation, transit use, and trip reduction as a means of reducing energy consumption and improving air quality will be promoted;***

b) ***Energy conservation shall be encouraged through community and site planning design and the use of energy-efficient materials and landscaping;***

c) ***In the review of development applications, consideration shall be given to energy conservation measures such as the solar orientation of streets and buildings, increased densities, and the use of landscaping and building materials; and***

d) ***The retention of forests and tree planting will be encouraged to enhance and improve the "urban forest" and tree cover as a means of improving air quality and reducing energy use through shading, sheltering, and screening.***

With energy costs on the rise, the project team will endeavour to use and implement high efficiency systems (including, but not limited to, HVAC systems, lighting, plumbing, Energy Star© appliances, etc.,) as a means to cut down on overall energy consumption. The project also intends to implement rough-ins for the future installation of plug-ins for electric vehicles, which have zero emissions.

The development will also implement drought resistant, water efficient landscaping, including the use of native trees and/or plants on site, as a means of improving air quality.

DESIGN OPPORTUNITIES

PASSIVE DESIGN MEASURES

At this point in design, the building materials and materiality of the building envelope is still under consideration. It is too early in design for the envelope interface details to be developed. However, the project team will carefully consider these details as design progresses. Building design considerations could include the following:

- Thermal Bridging Opportunities (which give a better representation of the thermal comfort within a space).
  - As an example, with a poor performing building envelope, the first couple feet of a space adjacent to the exterior wall can be unusable due to thermal comfort issues. By improving the performance of the wall, it can increase occupant comfort significantly and can allow for mechanical equipment to be downsized. It also could mean that interior spaces can better be able to maintain their temperature set-points, HVAC system cycling and run times can be reduced, leading to increased HVAC system longevity.

- The glazing for the project
  - The project team will endeavour to encourage a product with a low solar heat gain coefficient. This will provide daylight while reducing cooling loads in the summer and reducing over-heating in the shoulder seasons.

As building design proceeds and eventually enters the Ontario Building Code review stage, the design team will consider a number of passive design measures, which per the OBC minimum design suggestions could include (but are not limited to):

- High performance opaque building envelope, with continuous insultation within the assembly
- Low window to wall ratio (e.g., 40% vision)
- Thermal bridge performance at envelope interfaces

ACTIVE DESIGN MEASURES

At the current design stage, mechanical systems have been considered only at a conceptual level (to demonstrate the mixed and layouts of the proposed units within each building). However, it is intended (based on typical design for similar buildings in Ontario) that each building will include a dedicated mechanical heating and cooling system, with individual HVAC units provided for each suite. A centralized HVAC system will be provided in the hallways and common areas. The suites and common areas will include LED lighting, Energy Star© appliances, and high efficiency plumbing, all of which will help to reduce electrical and water consumption.

CONCLUSIONS

Through attention to detail in the building envelope design and construction for each building, including mechanical system selection, it is anticipated that minimum Ontario Building Code performance targets could be achieved.

As the design for this project continues through the planning and approvals process, the design team will engage with the energy consultant to explore the feasibility of higher levels of energy and carbon performance, as well as implement advanced design strategies (where feasible) to create a truly sustainable development.