

File No. 036684

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Attention: Monika Serrer

Subject: 1488 Alberni – Response to Rezoning Policy for Sustainable Large Development

This letter is to provide a high level description to respond to City of Vancouver's Rezoning Policy for Sustainable Large Development regarding the Rainwater Management and Low Carbon Energy Supply.

RAINWATER MANAGEMENT STRATEGY

Objective

The City of Vancouver requires a Rainwater Management Plan that recognizes rainwater as a resource to enhance the community and environment. This will contribute to the Clean Water Greenest City target – to reduce per-capita residential water consumption by 20% by year 2020.

Intent

The intent is to reduce storm water discharge, reduce the generation of run off, treat surface runoff to reduce contaminants, and where possible, conserve portable water use.

Rainwater Management Concept

The project is designed to limit interference with natural hydrology by maximizing pervious cover, increasing on-site infiltration opportunities, limiting runoff generation, and reducing pollution.

The project is designed with various landscape areas on ground level, accessible roof garden on podium, and possible vegetation garden to increase pervious cover for the building.

In addition, a storm water detention system is designed to achieve equivalent runoff rate and volume between post-development and pre-development for the two-year 24-hour duration storm.

Based on the preliminary assessment, the storm detention system contains a tank sized between 80 cubic meters to 120 cubic meters depending on the final landscape design. The system contains a flow control orifice and regulates the storm water discharge rate to the city system.

Furthermore, a possible new park on Nicola Street contributes to the stormwater runoff rate reduction due to the new green space and soil filtration. The storm drain from the new park will tie into the building storm detention system.

The rain water management plan will also contain a stormwater treatment system. With the landscape filtration and storm treatment system, 90% of the average runoff volume will be treated, and the system is capable to remove 85% of the total suspended solids (TSS). Preliminary filtration includes a stormceptor incorporated in the detention system.

Rainwater Management Plan Components

The following elements will be included in the final rainwater management plan:

- Pre-development Site Plan
- Post-development Site Plan
- Hydrologic and Hydraulic Analysis
- Pre-manufactured Product
- Assurance Letter by Registered Professional

In addition, the final rainwater management plan will include:

- Strategy to retain existing healthy trees
- Strategy to use waterwise planting selections
- Adequate planting medium depth
- In-ground tree planting plan with sufficient medium area
- Rain garden to capture storm run-off
- Green roof planting

All above storm water management plan measure will meet the City of Vancouver Building By-law requirements.

LOW CARBON ENERGY SUPPLY

Objective

The City of Vancouver requires a low carbon energy supply strategy to contribute to the Greenest City target on Climate Leadership and target to reduce community-based greenhouse gas emissions by 33% from 2007 levels.

Intent

The intent is to establish a low carbon energy solution to the new development, which help to reduce greenhouse gas emission by using an energy source that has low carbon footprint. In addition, the new development will require a 45% lower energy consumption than ASHRAE 90.1 2010, and it will require 22% lower energy cost than the ASHRAE 90.1 2010 standard.

Low Carbon Energy Strategy

This project is currently intended to be connected to future district energy system (DES) when it is available. The energy source of the DES is supposed to meet the low carbon energy supply requirement set by City of Vancouver. The new development will contain a building mechanical system that is DES ready, and future connection can be easily established.

In addition, the project is currently being discussed as a potential passive house building, where the envelope has a high performance with increase insulation and thermally broken design. The building energy usage is expected to decrease with all the energy measures.

Mechanical System and Energy Measures

In order to be DES ready, the mechanical system selected will contain a hydronic system that utilize hot water as the heating source. The future DES room will contain heat exchangers, hydronic pumps, buffer tanks, expansion tanks, and hydronic piping to transfer heat from DES to the building mechanical system.

The potential mechanical systems include four-pipe fan coil system, hybrid heat pump system, water source VRF system, air source VRF with hot water coil, and hydronic baseboard heating system. All these potential mechanical system will be easily connected to DES in the future.

In addition, the project has a plan to implement earth tube or earth-air heat exchange system in order to pre-heat and pre-cool a part of ventilation air in the building. This will promote significant energy saving and lead to low-carbon target that is stated in City of Vancouver's Rezoning Policy. This will be achieved by creating narrow cavities in the interior of underground parkade wall which will used to draw outdoor air at end of the tunnel and extract at the other end. Mechanical ventilation system will consequently pick up the pre-heated and pre-cooled outdoor air to further distribute to the spaces in the building.

Preliminary energy modelling is performed to assist on building system design and envelope performance evaluation. High performance window glasses are being evaluated, and the thermally broken window frames are also essential to this project.

To reduce the energy consumption, the following energy measures are also considered:

- Optimized performance envelope system
- Reduced glazing percentage compared to typical Vancouver building
- Simultaneous heating and cooling heat recovery
- Individual air side heat recovery ventilator
- Building sewer heat recovery system
- Solar panel domestic hot water pre-heat system
- Underground parkade heat recovery system
- Low water consumption plumbing fixtures
- Enhanced building control system
- Energy monitor and metering system

Sustainability Approach

With the above mentioned energy measure implementation, it is expected to reduce the energy use intensity, greenhouse gas intensity, and thermal energy demand intensity, compared to other typical high rise buildings in Vancouver. Our intent to reduce these emission outcomes aligns with City of Vancouver's plan.

Other sustainability approaches include direct ventilation to residential suites, improved air tightness building envelope, energy use metering, improved indoor air quality, resilient water access, enhanced commissioning, and green storm water system. All above sustainability approach will meet the City of Vancouver Building By-law and rezoning requirements and help to achieve the energy saving targets.

Yours truly,

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