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**To:** Planning Committee **Date:** December 2, 2009  
**From:** Joe Erceg **File:**  
General Manager, Planning and Development  
**Re:** **Bylaw 8561 to amend the Official Community Plan 7100 Schedule 1, Aircraft Noise Sensitive Development Policy and Map and Schedule 2.11A (West Cambie Area Plan)**

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**Staff Recommendation**

1. That Bylaw No. 8561 proposing an amendment to:
  - a) the Official Community Plan (Bylaw 7100) Schedule 1, Section 5.4 Noise Management:
    - by removing the single-hatched areas of the OCP Aircraft Noise Sensitive Development map;
    - by adding 80/100 Lancaster Crescent to the ANSD map as Area 2;
    - by clarifying the air cooling system standards and techniques, in Note 4 of the OCP Aircraft Noise Sensitive Development Table;
  - b) the Official Community Plan (Bylaw 7100) Schedule 2.11A (West Cambie Area Plan), Section 8.1.6 to clarify the air cooling system standards and techniques for new construction in the Alexandra area of West Cambie,  
be introduced and given first reading.
  
2. That Bylaw No. 8561, in accordance with the City Policy on Consultation during an OCP Amendment, be referred to the Vancouver International Airport Authority (VIAA) for comment before January 13, 2010.

Joe Erceg  
General Manager, Planning and Development

JE:dj  
Att. 1

FOR ORIGINATING DEPARTMENT USE ONLY					
<b>ROUTED TO:</b>	<b>CONCURRENCE</b>		<b>CONCURRENCE OF GENERAL MANAGER</b>		
Building Approvals	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>		<i>[Signature]</i>		
Development Applications	Y <input checked="" type="checkbox"/> N <input type="checkbox"/>				
<b>REVIEWED BY TAG</b>	YES <input checked="" type="checkbox"/> <i>[Signature]</i>	NO <input type="checkbox"/>	<b>REVIEWED BY CAO</b>	YES <input checked="" type="checkbox"/>	NO <input type="checkbox"/>

## Staff Report

### Origin

This report addresses four administrative issues to the OCP.

1. When City Council added the Aircraft Noise Sensitive Development (ANSD) policy and map in 2004, it was done with the knowledge that ANSD uses in some parts of the City Centre (shown as single-hatched lines) would only be considered after the City Centre Area Plan (CCAP) was updated. As the CCAP was adopted on September 14, 2009 and the use of these areas has been clarified, single-hatched lines need to be removed.
2. At the time of writing this report, a rezoning application at 80/100 Lancaster Crescent in the Burkeville area received first reading to rezone from a duplex to single detached (RZ 08-406864). While the whole Burkeville area is identified as Area 2 under the ANSD map, this property was erroneously excluded. This report and Bylaw proposes to add this property (**Attachment 1**) to the ANSD map as Area 2.
3. To better clarify the air cooling standard and techniques in the ANSD policy.
4. To mitigate the amount of aircraft noise infiltrating buildings in noise sensitive uses, the OCP ANSD policy requires an air cooling systems report during the permit process to ensure that comfort levels to building occupants are achieved during the summer months when doors and/or windows are closed. Currently, cooling requirements listed in of the OCP and the West Cambie Area Plan is worded differently and this Bylaw will make them consistent and ensure flexibility.

### Related Policies & Studies

#### Official Community Plan – Bylaw 7100 Schedule 1

The ANSD Section 5.4 text establishes an air cooling standard and techniques.

The ANSD map in Section 5.4:

- identifies a hatched area that restricts new ANSD rezonings until the City Centre Area Plan is updated,
- currently does not show the property located at 80/100 Lancaster Crescent within the ANSD area.

#### West Cambie Area Plan – Bylaw 7100 Schedule 2.11A

Currently, the Architectural Elements of the Alexandra Area require applicants to incorporate air conditioning in the construction of new buildings. Schedule 1 of the OCP provides more detail and flexibility for air cooling systems, which was the original intent of the ANSD policy.

**Analysis**

Aircraft Noise Sensitive Development Map

When the ANSD policy was adopted, it was known at the time that a City Centre Area Plan (CCAP) would be updated. Due to the uncertainty of uses in some areas within the boundary of the CCAP at the time, the ANSD map shows these areas in a single-hatched line to indicate that no new ANSD rezonings will take place until the area plan is reviewed. Now that the CCAP has been adopted, these single-hatched areas are no longer needed.

80/100 Lancaster Crescent - Burkeville

The property was erroneously excluded in the ANSD map as a noise sensitive area and was not discovered until the property applied for a rezoning application (RZ 08-406864). The purpose is to add this property to the ANSD map as initially intended.

A component of the OCP ANSD policy is to ensure that internal noise levels achieve the following standards with doors and windows closed:

Internal Noise Levels	
Portions of Dwelling Units	Noise Levels (decibels)
Bedrooms	35 dB
Living, dining and recreation rooms	40 dB
Kitchen, bath, hallways, and utility rooms	45 dB

The owners of 80/100 Lancaster Road have indicated in their rezoning application that they intend to comply with these noise levels on new construction.

Through the conditions of rezoning, the applicant is to register a covenant on title that identifies the parcel as an aircraft noise sensitive use and also indemnifies the City and VIAA to noise complaints.

Air Cooling Requirements In New Building Construction

The ANSD policy recognizes the need for human comfort in residential units and provides direction to developers to:

- a) Design a building envelope to mitigate external noise from infiltrating the interior space; and
- b) Design a heating and cooling system that will provide occupants a level of year-round comfort while allowing the building envelope to mitigate external noise.

However, no design method will keep out external noise if the occupants have to open windows and doors to achieve levels of comfort, especially during the summer months. To help with this, the ANSD policy requires developers to design a cooling system for the internal environment to achieve a comfort level for its occupants without having to resort to opening up windows and/or doors.

The intent of the ANSD policy is to provide flexibility to allow developers a choice in their cooling options, which are:

- a) Provide a central air conditioning system that would regulate air temperature and flow to certain standards (see below), or
- b) Provide an alternative cooling system that would meet the same standards.

OCP Schedule 1 outlines the ANSD policy as intended. It lists air conditioning as a primary choice, but provides flexibility by allowing for alternative cooling systems, as long as they provide a comfortable interior space without having the occupants open windows and doors.

OCP Schedule 2.11A (West Cambie Area Plan) is less flexible and currently specifically calls for “air-conditioning” to be incorporated into the construction of the building, without an alternative. This was not the intent of the OCP ANSD policy. The proposed Bylaw 8561 will provide the flexibility.

#### Thermal Comfort Level Standards

When designing cooling systems, the following standard applies:<sup>1</sup>

- American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 55-2004 “Thermal Environmental Conditions for Human Occupancy”.

ASHRAE is an international technical society whose mandate is to advance the arts and sciences of heating, ventilation, air-conditioning and refrigeration. The ASHRAE 55-2004 is a widely recognised standard used when determining indoor comfort levels.

#### *The approach to ASHRAE 55-2004 (Thermal Comfort Levels)*

Human comfort levels have been researched and quantified in ASHRAE 55-2004. In general terms, human comfort is based on the surrounding conditions to air temperature, radiant temperature, humidity, air speed and control over these variables. Metabolic rate and clothing insulation are also people factors that must be considered in this alternative. The primary goal of this approach to human comfort is to achieve a rating based on the ASHRAE 55-2004 PMV (Predicted Mean Vote) scale between -0.5 and +0.5, which is considered to satisfy 95% of people tested.

The comfort conditions are based on the following criteria:

- a) Maximum indoor air temperature of 29 C.
- b) Relative humidity of 60% maximum is maintained in the unit.
- c) Air velocity in suite of 0.5 m/s maximum is achieved.
- d) Activity rate in the suite is minimal (seated, relaxed).
- e) Clothing level is light (maximum trousers and shirt).

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<sup>1</sup> Examples: the design standards and approach to ASHRAE 55-2004 are contained in a report submitted to the City from Stantec Consulting Ltd. (Abbotsford, BC) for Polygon Development Ltd. (Vancouver, BC) for:

- DP 06-352741 (Meridean Gate) June 5, 2007;  
- DP 07-359314 (Odlin Road Townhouses) April 18, 2007; and  
- DP 08-432218 (Cambridge Park) January 30, 2009

To better clarify the required standard used to design air cooling systems, staff recommend that the OCP ANSD policy be amended to clarify that the standard is the ASHRAE 55-2004 "Thermal Environmental Conditions for Human Occupancy," and subsequent updates.

### Recent Examples

Recent redevelopment approvals in West Cambie include multiple family developments that have provided alternatives to a centralized air conditioning system based on the flexible OCP ANSD policy. In all cases, the developer submitted reports that outline a cooling system that can achieve a level of comfort for occupants. The systems that have been approved are:

- a) In two apartment projects, the developer proposes air conditioning in the common corridors that would feed into the apartment units. The units would have ceiling fans in the bedrooms and living area, in addition to bathroom fans, to help circulate the cooled air on a continual basis.
- b) A townhouse project that would use an air exchange system to bring outdoor air from the north side (cool side) of the buildings where internal fans would circulate the air throughout the unit while exchanging the warmer, internal air outside. Ceiling fans in the bedrooms and living area would assist the circulation of air throughout the unit.

In both cases, the building envelope would be designed to limit outside heat from infiltrating the unit by insulating the wall, floor and roof system, as well as by providing energy efficient windows to help limit direct solar penetration during the summer months.

The intent of the ANSD policy is to provide developers with clear air cooling standards and techniques to achieve comfort levels. This approach enables developers to take advantage of the evolving technologies and cost savings.

### OCP Amendment Consultation


As per Policy No. 5403 (OCP Bylaw Preparation Consultation Policy), staff recommend that this report be sent to the Vancouver International Airport Authority (VIAA) for their awareness and comment prior to Public Hearing (e.g. January 13, 2010).

### **Financial Impact**

None.

### **Conclusion**

The proposed Bylaw provides improved clarity regarding air cooling standards and techniques.

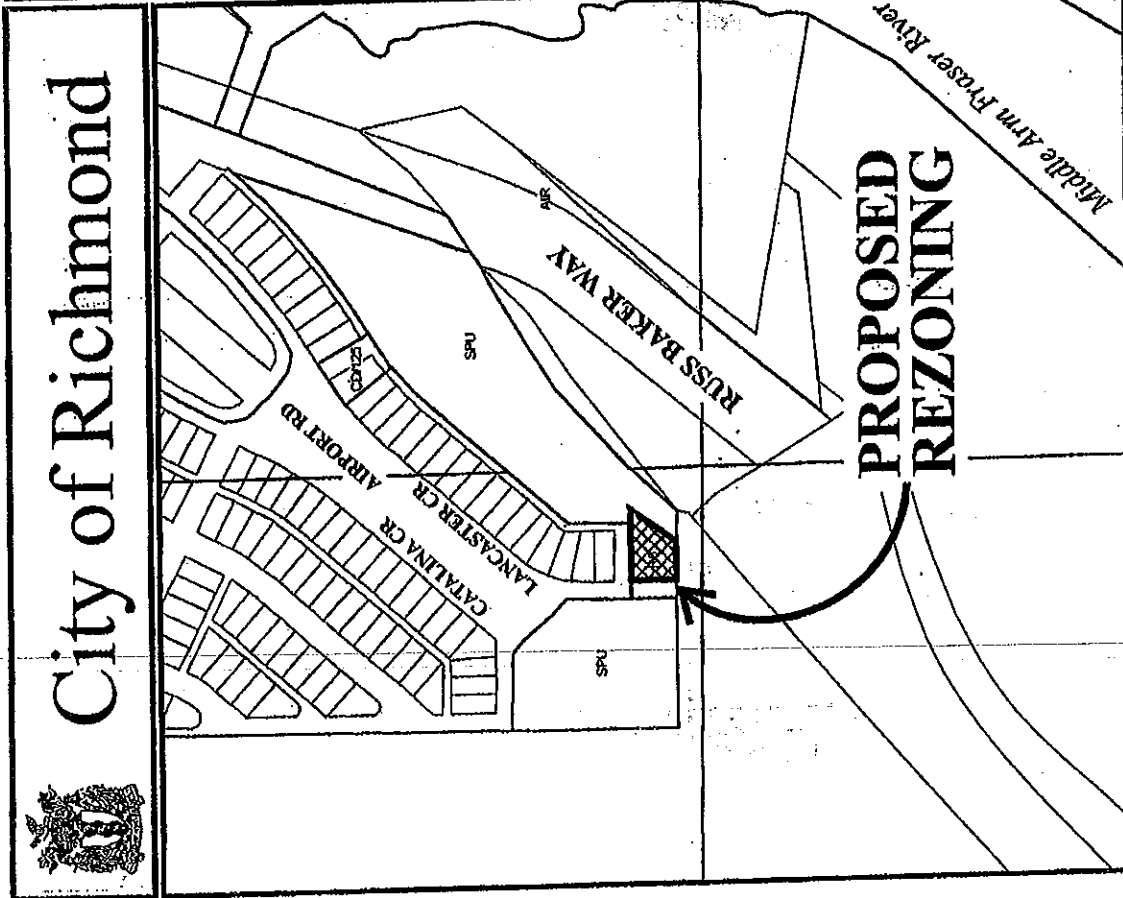


David Johnson  
Planner

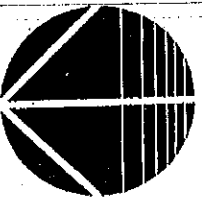
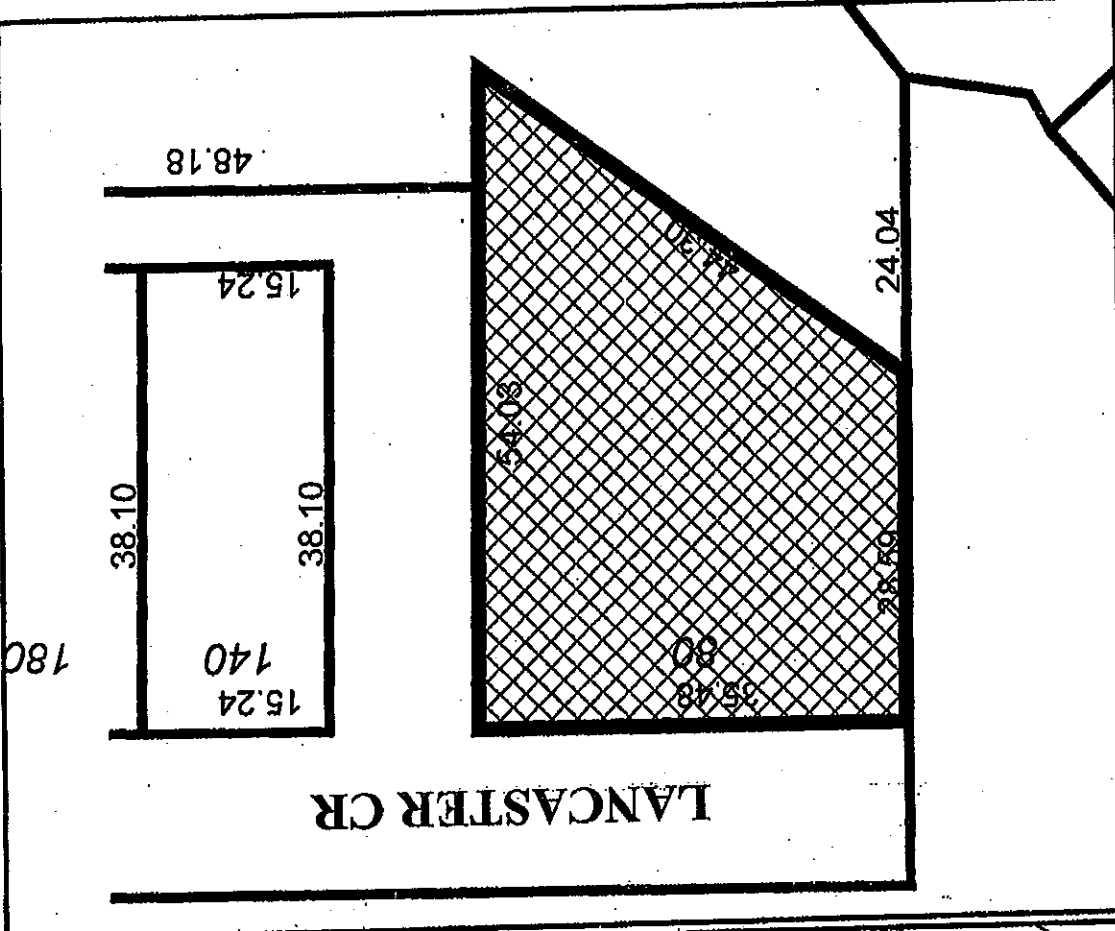
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Terry Crowe  
Manager, Policy Planning



City of Richmond



RZ 08-406864

Original Date: 02/20/08

Revision Date:

Note: Dimensions are in METRES



Richmond Official Community Plan Bylaw 7100, Amendment Bylaw 8561

The Council of the City of Richmond enacts as follows:

- 1. Richmond Official Community Plan Bylaw 7100 - Schedule 1, is amended by removing the symbol and text "No new ANSD rezonings until Area Plan is updated." from the OCP Aircraft Noise Sensitive Development Map.
2. Richmond Official Community Plan Bylaw 7100 - Schedule 1, is amended by adding Lot "A" (RD80948) Block "N" Section 30 Block 5 North Range 6 West New Westminster District Plan 9740 (80/100 Lancaster Crescent) to Area 2 (pink in colour) of the Aircraft Noise Sensitive Development Map.
3. Richmond Official Community Plan Bylaw 7100 - Schedule 1, Section 5.4, Policy 3, OCP ANSD Table, Note 4 by replacing the existing text with:

The standard required for air conditioning systems and their alternatives (e.g. ground source heat pumps, heat exchangers and acoustic ducting) is the ASHRAE 55-2004 "Thermal Environmental Conditions for Human Occupancy" standard and subsequent updates as they may occur.

- 4. Richmond Official Community Plan Bylaw 7100 - Schedule 2.11A (West Cambie Area Plan), Section 8.1.6, is amended by repealing the text under "Lessening the Impact of Aircraft Noise" in the Development Permit Guidelines that reads:

Incorporate air conditioning in the construction of the building;

and replacing it with the following:

Retain a registered professional who is qualified in the design and installation of an air conditioning, or an alternative cooling, system that meets the ASHRAE 55-2004 standard, or subsequent updates as they may occur.

- 5. This Bylaw is cited as "Richmond Official Community Plan Bylaw 7100 Amendment Bylaw 8561".

FIRST READING

PUBLIC HEARING WAS HELD ON

SECOND READING

THIRD READING

Four horizontal lines for recording dates and readings.





ADOPTED

\_\_\_\_\_  
MAYOR

\_\_\_\_\_  
\_\_\_\_\_  
CORPORATE OFFICER