CITY OF RICHMOND

REPORT TO COUNCIL

TO: Richmond City Council **DATE:** Nov. 4/2004

FROM: Cllr. McNulty, Chair **FILE:** 0153-01
Planning Committee

RE: **OCP AIRCRAFT NOISE SENSITIVE DEVELOPMENT POLICY**

The Planning Committee, at its meeting held on Tuesday, November 2nd, 2004, considered the attached report, and recommends as follows:

COMMITTEE RECOMMENDATION –

(1) ***That Official Community Plan Amendment Bylaw No. 7794, which amends the following schedules in the Official Community Plan (Bylaw 7100):***

(a) ***Schedule 1, the main OCP,***

(b) ***Schedule 2.2A (Dover Crossing Sub-Area Plan),***

(c) ***Schedule 2.2B (Terra Nova Sub-Area Plan),***

(d) ***Schedule 2.10 (City Centre Area Plan),***

(e) ***Schedule 2.11A (West Cambie Area Plan),***

(f) ***Schedule 2.11B (East Cambie Area Plan),***

(g) ***Schedule 2.12 (Bridgeport Area Plan), and***

(h) ***Schedule 2.13A (McLennan Sub-Area Plan),***

by introducing a number of text and map amendments to better manage aircraft noise sensitive development, as presented in the report "OCP Aircraft Noise Sensitive Development Policy" dated October 29, 2004 from the Manager, Policy Planning, be introduced and given first reading.

(2) ***That Bylaw No. 7794, having been considered in conjunction with:***

(a) ***the City's Financial Plan and Capital Program; and***

(b) ***the Greater Vancouver Regional District Solid Waste and Liquid Waste Management Plans,***

is hereby deemed to be consistent with said program and plans, in accordance with Section 882(3)(a) of the Local Government Act.

(3) ***That Bylaw No. 7794, in accordance with the City Policy on Consultation During OCP Development, be referred for comment to be received before November 22, 2004:***

(a) ***Vancouver International Airport Authority (VIAA),***

(b) ***Agricultural Land Commission,***

(c) ***Richmond School District Board,***

(d) ***Musqueam First Nation,***

(e) ***Transport Canada,***

(f) ***Urban Development Institute, and***

(g) ***Greater Vancouver Home Builders' Association.***

(4) That in addition to the usual OCP considerations at first reading, Bylaw 7794 be referred to a Special Public Hearing in the Council Chambers at 7:00 pm on Tuesday, November 23rd, 2004.

(5) That staff be requested to comment on the possibility of making any changes to the proposed OCP policy.

Cllr. McNulty, Chair
Planning Committee

Attach.

VARIANCE

Please note that Committee added Part 5 only.

STAFF REPORT

PURPOSE

The purpose of this report is to recommend an OCP Bylaw amendment to enable Council to more consistently manage aircraft noise sensitive development (e.g., residential, live/work, work/live, day care and hospital uses).

ORIGIN

On August 24th, 2004, Planning Committee approved the following motion:

That Items 1 through 4 as follows be referred to staff for further examination and consultation with the YVR:

1. *That Bylaw No. 7794, which amends the following schedules in Official Community Plan Bylaw 7100:*
   - *Schedule 1, the main OCP,*
   - *Schedule 2.2A (Dover Crossing Sub-Area Plan),*
   - *Schedule 2.2B (Terra Nova Sub-Area Plan),*
   - *Schedule 2.10 (City Centre Area Plan),*
   - *Schedule 2.11A (West Cambie Area Plan),*
   - *Schedule 2.11B (East Cambie Area Plan),*
   - *Schedule 2.12 (Bridgeport Area Plan), and*
   - *Schedule 2.13A (McLennan Sub-Area Plan),*

   by introducing a number of text and map amendments to better manage aircraft noise sensitive development, (as presented in the report dated August 16, 2004, from the Manager, Policy Planning), be introduced and given first reading.
2. *That Bylaw No. 7794, having been considered in conjunction with:*
   - *the City's Financial Plan and Capital Program; and*
   - *the Greater Vancouver Regional District Solid Waste and Liquid Waste Management Plans,*

   is hereby deemed to be consistent with said program and plans, in accordance with Section 882(3)(a) of the Local Government Act.
3. *That Bylaw No. 7794, in accordance with the City Policy on Consultation During OCP Development, be referred for comment to the:*
   - *Vancouver International Airport Authority (VIAA),*
   - *Agricultural Land Commission,*
   - *Richmond School District Board,*
   - *Musqueam First Nation,*
   - *Transport Canada,*
   - *Urban Development Institute, and*
   - *Greater Vancouver Home Builders' Association.*
4. *That the "Implementation Strategy – Aircraft Noise Sensitive Development Policy" (Attachment 14 to the report dated August 16, 2004, from the Manager, Policy Planning), be approved, effective upon the adoption of Bylaw 7794.*

Prior to the question being called a discussion ensued that identified the need for a careful approach and review of the information due to the long term implications and major impacts that would result for the community at large. It was suggested that staff review aircraft noise management models.

The question was then called and it was CARRIED.

FINDINGS OF FACT

1. The Consultation Process

To implement Planning Committee's August 26, 2004 referral, City and VIAA staff met and discussed the matter on approximately twenty occasions, including two meetings between senior staff of both organizations at the City CAO and VIAA CEO level.

2. City-VIAA Record of Understanding (ROU)

The progress made between the City and VIAA is summarized on the Aircraft Noise Sensitive Development Map (**Attachment 1**) and in the Record of Understanding (ROU) (**Attachment 2**). It goes a long way to ensure that the viability of the airport is better protected and that the City of Richmond still has development flexibility in and around the City Centre area.

As well, an area in the City Centre around City Hall has been identified by the VIAA and is regarded by City staff as suitable for a possible increase in building height with respect to airport operations (see **Attachment 3**). VIAA has agreed to co-operate with the City to pursue federal approvals. Any actual increase in building height would be determined during the review process.

The City-VIAA Record of Understanding and the City's proposed OCP Bylaw policy which implements it, is to be presented to the VIAA Board on October 28, 2004. Senior VIAA staff believe that the VIAA Board will be receptive to the proposed OCP Bylaw, as it significantly recognizes and addresses many of their concerns.

In view of Transport Canada guidelines (to have no residential development above the 30+ NEF contour), it may not be possible for the VIAA to formally "agree" to the proposed OCP Bylaw policy. A gauge of VIAA support is likely to be their lack of vigorous opposition.

City staff will present a verbal update at the Planning Committee meeting on November 2, 2004.

3. Main Elements In Proposed City OCP Policy)

The main elements of the proposed City OCP policy are:

(1) Residential development is prohibited (Red in the proposed OCP Bylaw amendment), in the small area under the north runway in the vicinity of the casino. Staff have reviewed this proposal and have determined that it is acceptable because the:

- Prohibited area is currently designated in the OCP for a mix of commercial, business and industrial uses which allows only limited residential development;
- This area would be well suited for non-residential development (e.g., an entertainment and hotel precinct; office, industrial uses);

(2) Residential development is prohibited under the south runway, in the middle of the City Centre. Staff have reviewed this proposal and have determine that it is acceptable because the:

- Prohibited area is currently designated in the OCP for either, no residential development, or for a mix of commercial, business and industrial uses which allows only limited residential development;

As well, in the prohibited residential areas of the City Centre, the:

- City Centre Area Plan currently contemplates a variety of diverse neighbourhoods which support mixed-use, not just residential development;
- Loss of potential residential development in these areas does not jeopardize the City's growth targets, as there is sufficient residential capacity elsewhere (e.g., in the south end of the City Centre), to accommodate projected growth targets to 2021; and
- Some of these areas are well suited for office, commercial and entertainment development.

(3) Residential development is prohibited under both the north and the south runways, in East Richmond, where there are no current residential uses. Staff have reviewed this proposal and have determine that it is acceptable because in the :

- Bridgeport Road Corridor and Industrial North-East sub-areas, residential is not currently permitted, and long-range plans are for the area to remain designated for business and industrial uses; and
- Along Highway 91 and Knight Street, the future uses are to remain agricultural and open space (e.g., Richmond Nature Park) and business park industrial (e.g. Crestwood and the Richmond Auto Mall).

(4) The areas in the City Centre, which are identified for future residential development, are subject to collaboration between the City and VIAA as part of the scheduled City Centre Area Plan and RAV review, beginning in late 2004. These areas will permit residential use, probably in a mixed use form.

(5) The City's River Road site and precinct can proceed based on the formula:
- Residential use: Up to 2/3 of the buildable square feet (BSF);
- Non-residential use: The remaining BSF (e.g., 1/3).

This arrangement can accommodate the proposed Oval and residential use on the remainder of the site.

(6) The West Cambie Area plan update (which is currently in the "draft preferred option stage" and is proposed to be brought before Planning Committee on November 16, 2004), can proceed in its present form.

(7) The current 2004 Aberdeen residential rezoning proposal can proceed based on the formula:
- Residential use: Up to 2/3 of the buildable square feet (BSF);
- Non-residential use: The remaining BSF (e.g., 1/3).

This arrangement can accommodate the 2004 residential rezoning proposal which is limited to the conversion of the previously approved hotel.

(8) The 2004 SunTech rezoning proposal requires substantial modification to meet the formula:
- Residential use: Up to 2/3 of the buildable square feet (BSF);
- Non-residential use: The remaining BSF (e.g., 1/3).

(9) The 2004 Wall rezoning proposal can proceed based on the formula:
- Residential use: Up to 2/3 of the buildable square feet (BSF);
- Non-residential use: The remaining BSF (e.g., 1/3).

(10) An area in the City centre by City Hall (e.g., generally bounded by Blundell Road, No. 3 Road, Garden City Road and Westminster Highway) has been identified as suitable for a possible additional building height increase (see **Attachments 1 and 3**). The VIAA has agreed to work with the City to obtain federal approvals.

(11) Aircraft noise mitigation standards have been vastly enhanced by:

- Prohibiting residential uses in higher noise areas;
- Allowing only multifamily uses in higher aircraft noise areas (Pink on the OCP Map);
- Requiring, for multifamily uses, central air conditioning and central ventilation type treatments;
- Requiring aircraft noise mitigation for all aircraft noise sensitive uses (e.g., residential) above the 30 NEF contour;
- Significantly expanding the noise covenant, notification and building mitigation area, particularly north-east of the City Centre where aircraft activity will increase.

(12) Jointly working towards improving the wording of City aircraft noise mitigation covenants and public notices;

(13) Exploring the possibility of requiring the noise covenant at the City's Building Permit stage. If successful, this step will be a significant gain in improving the aircraft noise insulation of the building stock in the City, instead of just at the rezoning and subdivision stage.

4. Comparison Of Richmond's Approach To Other Approaches (Attachment 4)

The proposed Richmond approach is, for example:

- similar to other Canadian approaches, for example, Ontario, Calgary, Edmonton, and Winnipeg, (see Aircraft Noise Sensitive Development Policy Comparison Table), which have modified the Transport Canada guidelines, for example:
  - in Winnipeg, by allowing new residential development, in areas with existing zoning for residential;
  - in the Winnipeg City Centre (Portage Avenue), by allowing new residential development in to a maximum unit density (85 units per hectare);
  - in Edmonton, by allowing new multi-family residential, in the NEF 30-35 contour; and
  - in Ontario, by allowing replacement and infill residential uses, in all NEF contours.

- more stringent than Winnipeg's requirements,
- less stringent than the Transport Canada guidelines which recommend no residential development above the 30+ NEF contour. Those Canadian municipalities which follow the Transport Canada guidelines fully are in the Province of Ontario.

Although Transport Canada recommends against aircraft noise sensitive land uses above the 30 NEF contour, the proposed OCP Bylaw policy is consistent with the Transport Canada caution that residential development within the 30 to 35 NEF contour should be subject to a noise impact study and insulation requirements, if the municipal authority considers these types of land uses. The proposed OCP Bylaw aircraft noise sensitive development policy will better implement these federal guidelines.

5. VIAA and City Priorities

The City-VIAA discussions and the proposed OCP Bylaw on which it is based, better harmonize a wide range of extremely diverse and challenging City and VIAA issues including:

- VIAA Priorities
  - continuing to be a World Class Gateway airport which can operate and expand, as a viable 24-hour per day (day time and night time) business operation;
  - not having residential development above the 30 NEF contour, with increasing concerns in the higher NEF areas;
  - minimizing resident development under high aircraft traffic areas (e.g., below the north and south runways);
  - not to be subject to aircraft operation curfews and restrictions which would limit the VIAA's ability to operate and expand the airport;
  - minimizing community pressure, complaints and legal challenges due to aircraft noise.
  - continuing VIAA-City co-operation.
- City Priorities
  - co-ordinating and balancing a wide and diverse range of multi-stakeholder social, economic and environmental interests;
  - achieving the City's Vision (appealing, livable, well managed);
  - improving social and economic development, and environmental management;
  - maximizing Richmond-Airport-Vancouver (RAV) light rapid transit and 2010 Winter Olympic opportunities;
  - supporting the VIAA in its long term efforts to operate and expand the Vancouver International Airport as a viable World Class Gateway, 24-hour per day (day time and night time) business operation;
  - developing a vibrant City Centre;
  - developing an exciting waterfront (e.g., along the Middle Arm);
  - developing more livable environments and neighbourhoods (e.g., residential, industrial, commercial, office, recreation), thus minimizing nuisance due to aircraft noise;

- providing more consistency in how it manages aircraft noise sensitive development;
- minimizing complaints and legal challenges due to aircraft noise;
- exploring an increase in building height limitations due to the airport; and
- continuing City-VIAA co-operation.

6. **Increased Building Height In Relation to Airport Operations (Attachment 3).**

Note that, while aircraft noise is a "nuisance issue", building height increases are a "safety" issue and the federal government is the approving authority.

During City-VIAA discussions, the VIAA identified two areas for further exploration for possible increases in building height, one in the Terra Nova area, and one in the south City Centre, near City Hall.

City staff consider that the Terra Nova area is unsuitable, as it has been planned, newly developed and recently serviced for low height developments.

City staff consider that the south City Centre area has potential as it is in the City Centre, where additional height is already anticipated and near the proposed RAV line which encourages it. This area is shown on the proposed OCP Bylaw map for further exploration. The VIAA has agreed to explore the possibilities with the City.

ANALYSIS

1. Benefits of the Proposed OCP Bylaw Aircraft Noise Sensitive Development Policy

The benefits of the proposed OCP Bylaw include a better recognition and harmonizing of City, VIAA, developer and stakeholder concerns, including significant gains in:

- The City's co-ordination of diverse interests;
- Increasing development and community certainty;
- Working towards addressing VIAA concerns;
- Minimizing residential development under high aircraft traffic areas (e.g., below the south and north runways approaches) and above the 30 NEF contour;
- Minimizing aircraft operation curfews and restrictions which would limit the VIAA's ability to operate and expand the airport;
- Improving aircraft noise mitigation measures;
- Minimizing complaints and legal challenges due to aircraft noise; and
- Exploring possible building height increases.

2. Next Steps

(1) City Implementation Strategy - Aircraft Noise Sensitive Development Policy **(Attachment 5)**

The City has identified a practical Implementation Strategy to achieve the City's OCP Bylaw policy. It identifies a review of the City Centre Area Plan in 2005. Staff are already implementing the Strategy and will continue to do so.

(2) Ongoing City-VIAA Co-Operation (**Attachment 6**)

The City and VIAA have agreed to continue co-operating to address common aircraft noise, building height, planning and land use concerns. Staff will continue co-operating with the VIAA along these lines.

3. Reference (Attachment 7)

For reference purposes, the City staff report dated August 16, 2004 to Planning Committee is attached, as it contains the City's aircraft noise research and findings on which much of this report is based.

4. Special Public Hearing

There are two options for the required OCP Bylaw public hearing, namely:

Option 1 - The Normally Scheduled Public Hearing

If Council gives first reading to the proposed OCP Bylaw on November 8, 2004, the normal public hearing would be held on December 20, 2004.

Option 2 - A Special Public Hearing - **Recommended**

On September 27, 2004 staff were requested to determine if a special public hearing for the proposed OCP Bylaw could be held sooner than the normal public hearing to allow for ample public comment. Clerks staff have advised that, if Council gives first reading to the proposed OCP Bylaw on November 8, 2004, the earliest special public hearing date could be November 23, 2004.

Staff recommend that Council authorize a Special Public Hearing on November 23, 2004 in order to provide the public with ample opportunity to comment on the proposed OCP Bylaw. This earlier special public hearing opportunity could enable Council to approve the proposed OCP Bylaw earlier and subsequently address the many pending planning and development initiatives (e.g., the West Cambie area plan update, rezonings)

5. Additional Consultation Opportunities

Once the proposed OCP Amendment Bylaw 7794 receives first reading, staff will send it to the following stakeholders, for comment and response, before November 22, 2004, prior to the Special Public Hearing proposed for November 23, 2004, 7 PM in Council Chambers, City Hall:

- Vancouver International Airport Authority (VIAA),
- Agricultural Land Commission;
- Richmond School District Board;
- Musqueam First Nation Band;
- Transport Canada;

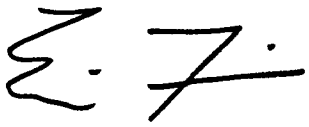
- Urban Development Institute;
- Greater Vancouver Home Builders' Association.

FINANCIAL IMPACT

- No impact.
- For the proposed planning studies (e.g. the West Cambie Area Plan update and City Centre Area plan update, Oval precinct planning) identified in this report, funding is approved and budgeted.

CONCLUSION

- The City has undertaken complex aircraft noise sensitive development and noise mitigation research, in extensive consultation with the VIAA, stakeholders, community and developers regarding how it may be more consistent in managing aircraft noise sensitive development.
- An OCP Bylaw amendment that substantially implements the City-VIAA Record of Understanding and the City research findings is recommended.



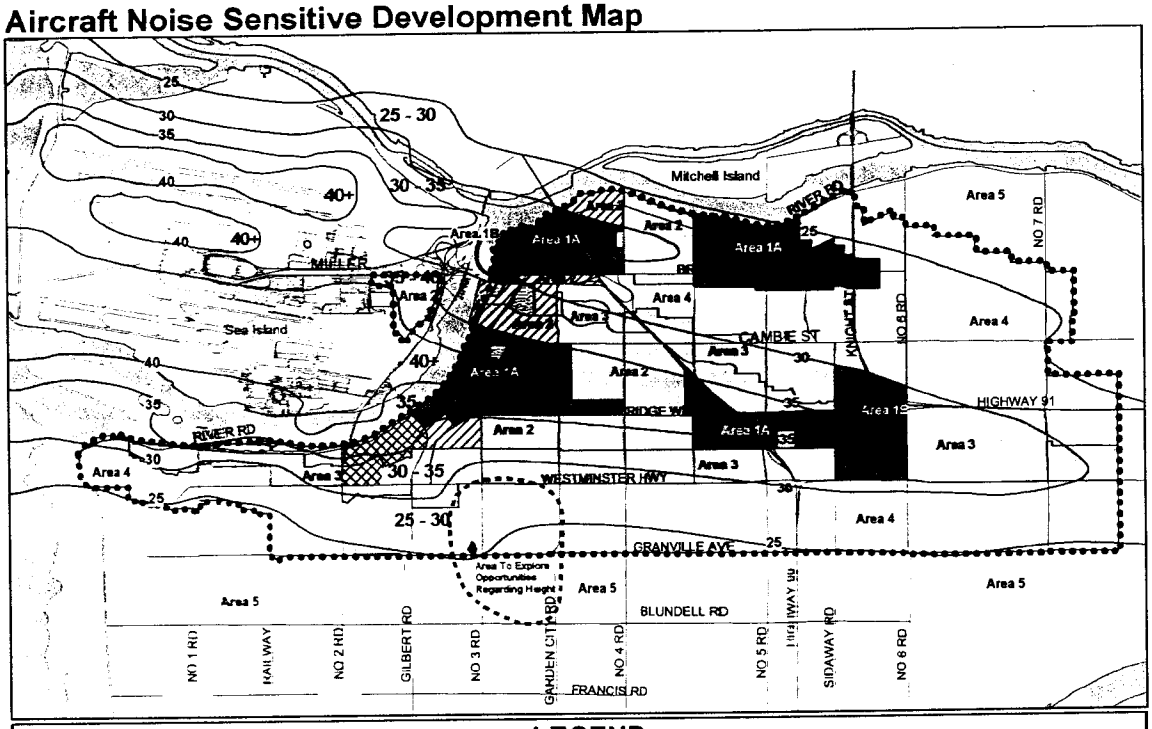
Eric Fiss, Policy Planner (4193)
EF:cas

October 29, 2004

ATTACHMENT 1

Aircraft Noise Sensitive Development Map

Aircraft Noise Sensitive Development Map



LEGEND

Aircraft Noise Sensitive Development Policy (ANSD) Areas
(see Aircraft Noise Sensitive Development Policy Table)

No New Aircraft Noise Sensitive Land Uses:

AREA 1A

New Aircraft Noise Sensitive Land Use prohibited.

AREA 1B

New residential land uses prohibited.

Areas Where Aircraft Noise Sensitive Land Uses May be Considered: Subject to Aircraft Noise Mitigation Requirements.

AREA 2

All Aircraft Noise Sensitive Land Uses (except new single family) may be considered (see Table for exceptions).

AREA 3

All Aircraft Noise Sensitive Land Uses types may be considered.

AREA 4

All Aircraft Noise Sensitive Land Uses types may be considered.

No Aircraft Noise Mitigation Requirements:

AREA 5

All Aircraft Noise Sensitive Land Uses types may be considered.

City Hall

2015 Noise Exposer Forecast (NEF) Contours

Extent of aircraft noise insulation

Objective: Current rezonings may proceed prior to Area Plan updates, based on the formula:
- Residential use: Up to 2/3 of the buildable square feet (BSF);
- Non-resdential use: The remaining BSF (e.g., 1/3)

No new ANSD rezonings until Area Plan is updated

Objective: To support the 2010 Olympic Speed Skating Oval
- Residential use: Up to 2/3 of the buildable square feet (BSF);
- Non-residential use: The remaining BSF (e.g., 1/3)

On Fraser River above 30 NEF residential (e.g. house boats) may be considered

Area to explore opportunities regarding height.
Potential would be subject to application process.

SJ 10/29/04

ATTACHMENT 2

SUMMARY
RECORD OF UNDERSTANDING
AIRCRAFT NOISE SENSITIVE DEVELOPMENT

1. **Purpose**
To summarize the understanding between the City and VIAA regarding City improvements to better manage aircraft noise sensitive development and mitigate aircraft noise through a comprehensive policy.

2. **City Policy Improvements**
Based on discussions between the City and the VIAA, the City will undertake the following in its efforts to address the concerns raised by the VIAA and to better balance the needs of the City, VIAA and stakeholders:

(1) Define "aircraft noise sensitive uses" namely:

Use Category	Meaning
Residential	defined as all residential uses, including live/work and work/live uses, nursing homes.
School	defined as public and private places in which K-12 education is offered, as per provincial requirements.
Day Care	defined as licensed day care uses.
Hospital	defined as places which provide medical services, as per provincial requirements where patients stay overnight or for longer periods of time.

(2) Identify Prohibited Areas – RED on OCP Map

- Areas where all aircraft noise sensitive uses are prohibited;
- Areas where residential development is prohibited in many VIAA priority avoidance areas.

(3) Identify Other Aircraft Noise Sensitive Development Areas – PINK, ORANGE, YELLOW on OCP Map

- Areas where some aircraft noise sensitive uses are limited (e.g., only multi-family permitted in certain high noise areas) and conditions are imposed.

(4) Identify City Centre Re-Planning Conditions

- Areas where no aircraft noise sensitive development rezonings will be considered, until after the City Center is re-planned (after late 2005). Residential will be allowed in this area but will be subject to the preparation of a detailed area plan and will probably be in the form of mixed use.

(5) Identify Conditions for the West Cambie Area Plan – the Alexandra Quarter Section

- No residential uses are to be allowed along the west and south edges to reduce aircraft noise nuisance. These areas are proposed for non-residential use in the latest draft Area Plan.

(6) Identify Conditions For Current (2004) Noise Sensitive Development Rezoning Proposals:

- For current aircraft noise sensitive rezoning proposals (i.e., Aberdeen, SunTech, Wall) a formula was used, namely:
  - Residential use: Up to 2/3 of the buildable square feet (BSF);
  - Non-residential use: The remaining BSF (e.g., 1/3).

(7) Identify Conditions For The 2010 Olympic Winter Games Speed Skating Oval Site and Precinct:

- For the proposed Olympic Speed Skating Oval site and precinct:
  - Residential use: Up to 2/3 of the buildable square feet (BSF);
  - Non-residential use: The remaining BSF (e.g., 1/3).

(8) Identify Conditions For The Bridgeport Road Median:

- For the road median between Bridgeport Road and Sea Island Way:
  - West end (above the 30+ NEF) - no residential uses are to be allowed, due to current aircraft noise, possible future increases in aircraft noise due to expanded airport operations and as the area has livability limitations due to high levels of traffic, and
  - Reminder (below 30 NEF) - aircraft noise sensitive development may occur after City Centre re-planning.

(9) Possible Building Bylaw Aircraft Noise Mitigation Requirements

- The City may be able to amend the City's Building Bylaw, subject to Provincial approval, to require noise mitigation at the Building Permit stage. This will be investigated.

(10) Improved City Aircraft Noise Mitigation Measures

- The City and VIAA have agreed to work co-operatively to:
  - Improve the legal wording and conditions of the existing City noise covenant; and
  - Consider new legal tools to improve aircraft noise mitigation requirements.

(11) Improved Public Awareness Measures

- The City and VIAA have agreed to work co-operatively to:
  - Improve the legal wording and of the existing City noise covenant; and
  - Consider new ways and legal tools to improve public awareness and notification of aircraft noise including possible disclosure statements.

(12) A Possible Increase In Building Height Due To The Airport

- The VIAA has identified areas within the City which are currently affected by the federal Aeronautical Zoning requirements, where it may be possible to allow increased building height due to the airport. Additional collaboration is required.
- Note that:
  - "Building height" is a safety issue, while aircraft noise is a nuisance issue; and
  - Transport Canada makes the final decisions regarding any building height increases, not the VIAA or City;
  - This matter will require additional collaboration among the City, VIAA, Transport Canada, developers and the community, before a decision to permit a building height increase can be reached.
  - It is acknowledged that the identified areas of possible building height increase, may or may not be suitable to the City due to City planning considerations.

(13)City – VIAA Ongoing Collaboration

It is the City's intention to continue co-operating with the VIAA including:

Initiative	Comment
1. City – VIAA Co-ordination	Continued City participation through the: - VIAA Board, - YVR Noise Management Committee, and - YVR Environmental Committee

2. Airport Planning	- As the VIAA updates its long-range airport land use and related plans, the City will continue to participate, as appropriate.
	- VIAA is encouraged to:
	  - identify a long term airport build-out plan,
	  - identify the long term airport & aircraft noise impacts; and
	  - improve its long-range land use, and
	  - continue its efforts regarding noise management, environmental and related plans.

3. Aircraft Noise Mitigation Research	As the federal government and others are responsible for establishing and improving national recognized aircraft noise assessment tools (e.g., NEF model and alternatives) and building design standards, the City will participate in such initiatives, as appropriate, including improved aircraft noise mitigation research and modelling, for example: - Interior Noise Level Limits, - Building Design Elements, and - Community Design Elements.
4. Public Awareness Research	The City will co-operate, as appropriate, to improve public awareness techniques and aircraft noise mitigation, for example, improved: - Noise Covenants, - Full Disclosure Statements, - Noise Insulation Standards, and - Acoustic insulation requirements at the Building Permit stage.

3. Status

Both parties acknowledge that the City, with significant input from the VIAA, has worked to develop a City policy that better:

- balances the interests of all parties,
- recognizes their respective interests and priorities,
- establishes common principles, and
- establishes much improved aircraft noise mitigation and management practices with respect to aircraft noise sensitive developments.

The City policy better:

1. formally recognizes and supports the importance of Vancouver International Airport as a World Class Gateway airport which operates 24-hours a day and is important to the World, province, region and City, both now and into the future;
2. protects land in high airport noise areas and under the flight path for no airport noise sensitive development;
3. improves density controls and other mechanisms to minimize the number of residents living in high airport noise areas; and,
4. establishes strong mitigation requirements, and
5. encourages the City to work to provide the best possible protection from legal and non-legal challenges against the City and the VIAA including attempts to restrict and curtail aircraft operations.

As the VIAA follows Transport Canada land use planning guidelines, which recommend against aircraft noise sensitive developments in the 30+ NEF contour area, the City policy, while a significant improvement, does not address all VIAA interests.

Both Parties acknowledge that ongoing City-VIAA co-operation and collaboration are required to improve the City's aircraft noise management policy and mitigation requirements, to better protect the interests of both the City and the VIAA.

Prepared by:
City of Richmond

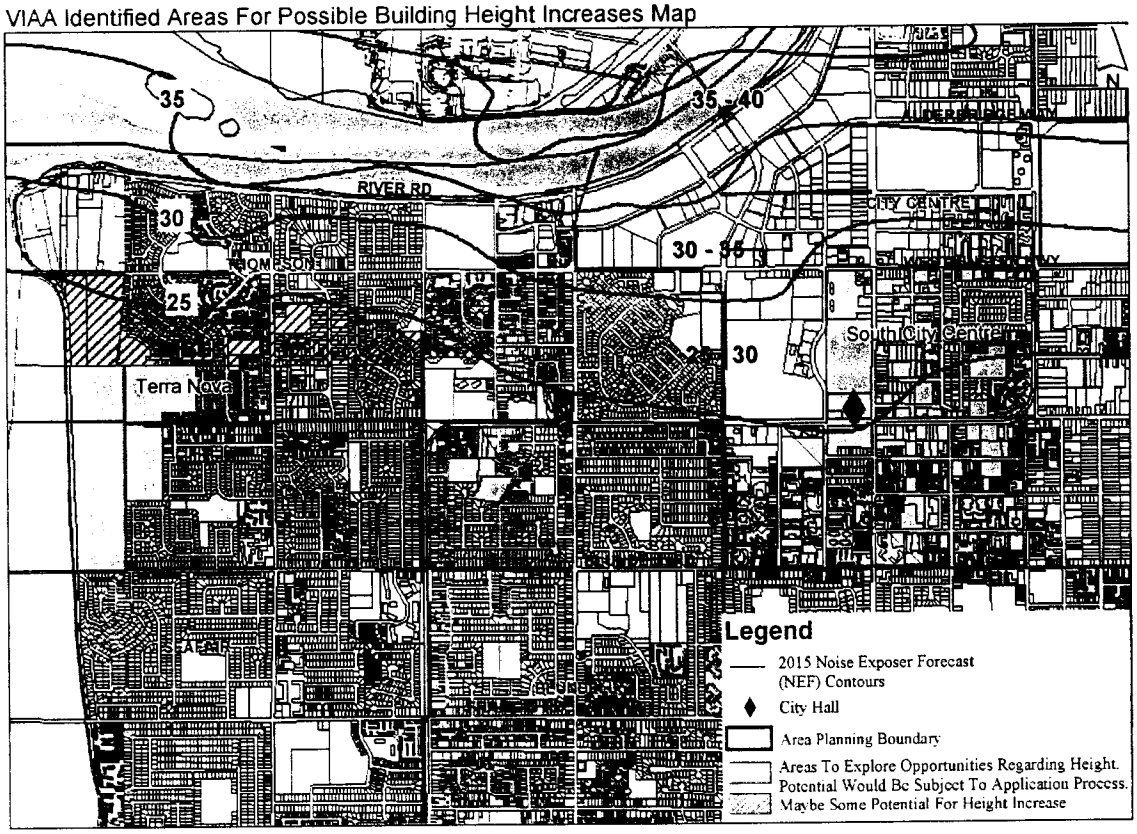
October 29, 2004

ATTACHMENT 3

VIAA IDENTIFIED AREAS FOR POSSIBLE BUILDING HEIGHT INCREASES MAP

- City staff regard the Terra Nova Area as unsuitable for a building height increase.
- City staff regard the South City Centre area as having potential for a building height increase.

VIAA Identified Areas For Possible Building Height Increases Map



Prepared by VIAA
Mapped by City of Richmond

October 29, 2004

ATTACHMENT 4

AIRCRAFT NOISE SENSITIVE DEVELOPMENT (ANSD) POLICY COMPARISON TABLE

Use	NEF	Jurisdiction						
		Transport Canada	Ontario	Edmonton	Calgary	Winnipeg	Richmond	Comments on Richmond Proposed ANSD Policy
Residential Uses								
Detached	>40	No	No	No	No	C[NOTE 4]	No	
	35-40	No	No	No	No	C[NOTE 4]	No	Infill and Replacement housing permitted, for example: in Burkeville, and portions of existing single-family subdivisions (Odlinwood, King George/Cambie).
	30-35	No	No	No	No	C[NOTE 4]	C	Allowed in areas currently designated and zoned for single-family residential.
	25-30	C[NOTE 1]	-	C	C[NOTE 3]	C[NOTE 4]	C	
Multi-Family	>40	No	No	No	No	C[NOTE 5]	No	
	35-40	No	No	No	No	C[NOTE 5]	C	New development allowed in West Cambie
	30-35	No	No	C	No	C[NOTE 5]	C	New aircraft noise sensitive land uses prohibited in Area 1, based on Wyle Report findings.
	25-30	C	-	C	C	C[NOTE 5]	C	
Replacement	>40	No	C	No	C	C	No/C	Limited to infill in portions of Burkeville in NEF 40
	35-40	No	C	No	C	C	C	Based on data from Wyle Report, New single-family land uses prohibited in majority of 30-35 contour, with infill and replacement permitted in Odlin, Oaks, and Tait.
	30-35	C	C	C	C	C	C	
	25-30	C	-	C	C	C	C	
Other Uses (e.g., schools, day cares, hospitals)								
	>40	No	No[NOTE 2]	No	No	-	N0	
	35-40	No	No	No	No	-	C	Alexandra Area in West Cambie
	30-35	C	No	C	C	-	No/C	New aircraft noise sensitive land uses prohibited in Area 1 based on Wyle
	25-30	C	-	C	C	-	C	

NOTES:

1. "C" means allowed subject to conditions (e.g., acoustic report and noise mitigation measures).
2. Ontario allows redevelopment or infilling of other noise sensitive uses above 30 NEF subject to conditions
3. Calgary and Edmonton require the construction of buildings to conform to the exterior acoustic insulation requirements of the *Alberta Building Code 1997 (similar to CMHC guidelines)*.
4. Winnipeg allows new residential development in accordance with existing zoning designations.
5. Winnipeg allows rezonings to convert detached housing to multi-family fronting Portage Avenue to a maximum density of 85 unit/ha (35 units/ac)

Source: Canadian Examples of Residential Development and NEF Limits, Supplemental Submission, Pryde Schropp McComb, Inc., August 23, 2004

Prepared by the City of Richmond

October 29, 2004

ATTACHMENT 5

IMPLEMENTATION STRATEGY
AIRCRAFT NOISE SENSITIVE DEVELOPMENT POLICY

1. **Purpose**
   The purpose of the Implementation Strategy is to establish initiatives by which the City of Richmond, with the VIAA and stakeholders can implement the OCP Aircraft Noise Sensitive Development Policy.

2. **Initiatives**
   The following City initiatives are to be implemented, subject to Council approval, budgets and external events (e.g., RAV planning, senior government initiatives).

INITIATIVES FOR IMPLEMENTING THE OCP AIRCRAFT NOISE SENSITIVE DEVELOPMENT POLICY		
Timing	**Objective**	**Estimated Timing**
1. Development Application Review (See OCP Single-Hatched Area)	- No rezonings which involve aircraft noise sensitive land uses will be approved until after area planning is completed.	- Complete in late 2005, subject to approved policies and requirements.
2. Process Rezoning Applications: - **Aberdeen Centre** - **SunTech** - **Wall Financial**	- Process current (2004) aircraft noise sensitive development rezoning applications based on OCP aircraft noise sensitive policies and other City policies - Encourage developers to implement innovative aircraft noise sensitive mitigation standards.	- May proceed now, subject to OCP aircraft noise sensitive polices and other City policies and requirements.
3. West Cambie Area Plan Update	- Improved West Cambie vision and policies incorporating OCP aircraft noise sensitive policies	- Continue planning generally based on the draft Preferred Land Use Option - Complete and implement in 2005
4. A No 3 Road Transit-Oriented Corridor Development Strategy, including a revised City Centre Area Plan (from West Bridgeport to City Hall)	- Improved City Centre vision and policies incorporating OCP aircraft noise sensitive policies and RAV.	- To start in November 2004, and - To be completed by late 2005.
5. RAV Planning	- Improved City Centre transportation incorporating OCP aircraft noise sensitive policies.	- Ongoing
6. Oval Planning	- To build a viable 2010 Olympic speed skating facility incorporating OCP aircraft noise sensitive policies.	- Completed by 2007
7. Building Bylaw Review	- To determine if aircraft noise mitigation standards can be required at the Building Permit stage - To implement, if possible.	- By March 2005
8. OCP Indoor – Outdoor Amenity Urban Design Guidelines	- To modify the OCP indoor - outdoor amenity guidelines to address aircraft noise.	- Completed by Spring 2005

Prepared by the City of Richmond

October 29, 2004

ATTACHMENT 6

ONGOING CITY-VIAA CO-OPERATION

Initiative	Comment
1. City – VIAA Co-ordination	Continued City participation through the: - VIAA Board, - YVR Noise Management Committee, and - YVR Environmental Committee

2. Airport Planning	- As the VIAA improves its long-range airport land use and related plans, the City will continue to participate, as appropriate.
	- VIAA is encouraged to:
	  - identify an long term airport build-out plan,
	  - identify the long term airport & aircraft noise impacts; and
	  - improve its long-range land use, noise management, environmental and related plans.

3. Aircraft Noise Mitigation Research	As the federal government and others are responsible for establishing improved aircraft noise management models (e.g., NEF model and alternatives) and standards, the City will participate in such initiatives, as appropriate, including improved aircraft noise mitigation research and modelling, for example: - Interior Noise Level Limits, - Building Design Elements, and - Community Design Elements.
4. Public Awareness Research	The City will co-operate, as appropriate, to improve public awareness techniques and aircraft noise mitigation, for example, improved: - Noise Covenants, - Full Disclosure Statements, - Noise Insulation Standards, and - Acoustic insulation requirements at the Building Permit stage
5. City –VIAA Accord Update	The City will co-operate with the VIAA to improve the existing City –VIAA Accord.

Prepared by the City of Richmond

October 29, 2004

ATTACHMENT 7

AUGUST 16, 2004 CITY REPORT TO PLANNING COMMITTEE

OCP AIRCRAFT NOISE SENSITIVE DEVELOPMENT POLICY

City of Richmond
Urban Development Division

Report to Committee

To:	Planning Committee	**Date:**	August 16, 2004
From:	Terry Crowe Manager, Policy Planning	**File:**	0153-01
Re:	**OCP AIRCRAFT NOISE SENSITIVE DEVELOPMENT POLICY**		

Staff Recommendation

1. That Official Community Plan Amendment Bylaw No. 7794, which amends the following schedules in the Official Community Plan (Bylaw 7100):

   - Schedule 1, the main OCP,
   - Schedule 2.2A (Dover Crossing Sub-Area Plan),
   - Schedule 2.2B (Terra Nova Sub-Area Plan),
   - Schedule 2.10 (City Centre Area Plan),
   - Schedule 2.11A (West Cambie Area Plan),
   - Schedule 2.11B (East Cambie Area Plan),
   - Schedule 2.12B (Bridgeport Area Plan), and
   - Schedule 2.13B (McLennan Sub-Area Plan),

   by introducing a number of text and map amendments to better manage aircraft noise sensitive development, as presented in the report "OCP Aircraft Noise Sensitive Development Policy" dated August 16, 2004 from the Manager, Policy Planning, be introduced and given first reading.

2. That Bylaw No. 7794, having been considered in conjunction with:

   - the City's Financial Plan and Capital Program; and
   - the Greater Vancouver Regional District Solid Waste and Liquid Waste Management Plans

   is hereby deemed to be consistent with said program and plans, in accordance with Section 882(3)(a) of the Local Government Act.

3. That Bylaw No. 7794, in accordance with the City Policy on Consultation During OCP Development, be referred for comment to the:

   - Vancouver International Airport Authority (VIAA),
   - Agricultural Land Commission,
   - Richmond School District Board,
   - Musqueam First Nation,
   - Transport Canada,
   - Urban Development Institute, and
   - Greater Vancouver Home Builders' Association.

4. The Implementation Strategy – Aircraft Noise Sensitive Development Policy **(Attachment 14)**, be approved, effective upon the adoption of Bylaw 7794.

Terry Crowe
Manager, Policy Planning

TC:ef

Attach.(15)

FOR ORIGINATING DIVISION USE ONLY				
ROUTED TO:	CONCURRENCE		CONCURRENCE OF GENERAL MANAGER	
Engineering	Y ☑	N ☐		
Law	Y ☑	N ☐		
Economic Development	Y ☐	N ☐		
REVIEWED BY TAG	YES ☐	NO ☐	REVIEWED BY CAO	YES ☐ NO ☐

STAFF REPORT

PURPOSE

The purpose of this report is to recommend an OCP Bylaw amendment and an Implementation Strategy to enable Council to more consistently manage aircraft noise sensitive land uses (e.g. residential, assembly, child care, health care facilities, schools, live/work, work/live uses).

ORIGIN

On April 26, 2004, Council approved the following motion:

1. *That the report entitled: "Preliminary Findings: City Airport Noise and Residential Development Policy Consistency Research", (dated April 14, 2004 from the Manager, Policy Planning), together with the consultant's report, be received for information and be forwarded to the following:*

   (a) Vancouver International Airport Authority (VIAA);
   (b) Central Mortgage and Housing Corporation (CMHC);
   (c) Urban Development Institute (UDI);
   (d) Greater Vancouver Home Builders' Association (GVHBA);
   (e) Richmond Health Services (RHS);
   (f) Advisory Committee on the Environment (ACE),
   (g) The public (e.g., community groups and associations);
   (h) Transportation Canada;
   (i) The Provincial Government;
   (j) Aviation Stakeholders; and
   (k) All airlines operating out of Vancouver International Airport,

   for their comment by June 30, 2004, and that staff report back to Planning Committee by the first week of September, 2004.

2. *That staff proceed with processing, all existing and new rezoning applications, to the full extent possible, in the absence of an interim noise policy.*

3. *That staff consult with groups within the higher noise contour areas regarding the impact of airport noise and mitigation measures, and for their comments on the report.*

FINDINGS OF FACT

(1) Distribution of the City Research Findings:

The report, "Preliminary Findings: City Airport Noise and Residential Development Policy Consistency Research", April 2004 was made available:

- To the public at City Hall and on-line through the City's web site, and
- By mailing it to 50 organizations and individual stakeholders.

A complete mailing list of the stakeholders who received information and were invited to provide feedback is contained in **Attachment 1**.

(2) Consultation Process:

- A Public Meeting
  - A public meeting was held on June 2, 2004, from 7 to 9 PM, in the Council Chambers at Richmond City Hall.
  - Advance notice of the meeting was advertised in the local newspaper and on the City Notice Board (**Attachment 2**).
  - Twenty individuals attended the meeting, including City residents, VIAA staff, and representatives from Transport Canada.
  - City staff provided an overview of the City's April 2004 consultant findings; the City's consultant, Bernhard Schropp, provided a PowerPoint presentation, and there was a question and answer period.
  - Comments generally focussed on the City's April 2004 consultant findings, recent improvements to aircraft noise with the introduction of quieter aircraft, and questions about future changes to airport operations and the NEF contours, which might impact residents.
- Community Organisation
  - Staff contacted the Oaks Community Association and offered to meet with them to present the research findings. The Association did not request a meeting.
  - Note that the above Public Meeting was well advertised so that all community groups could attend.
- City – UDI Liaison Committee
  - Staff met with nine members of the Richmond Liaison Committee for the Urban Development Institute (UDI) on June 3, 2004 at City Hall.
  - Staff provided an overview of the City's April 2004 consultant findings; the City's consultant, Bernhard Schropp, provided a PowerPoint presentation, followed by a general discussion of concerns and issues.
- YVR Aeronautical Noise Management Committee
  - Staff attended the YVR Aeronautical Noise Management Committee on June 9, 2004, at the airport, to present the City's April 2004 consultant findings, for discussion and comment.
- City – VIAA Co-operation
  - City staff have had ongoing meetings with VIAA Community and Environmental Affairs staff.
- Public Inquiries
  - City staff have answered various resident and developer enquiries.

(3) Responses:

- The City received 23 responses to the request for feedback.
- Stakeholders who provided feedback are listed in **Attachment 1**, and the responses are contained in **Attachment 3**.

(4) City Informal Community Survey:

- As part of the community consultation, Council requested that those residents who live in dwelling units which have been constructed with aircraft noise mitigation measures be asked how they perceived and experienced living in an area with aircraft noise.
- An informal questionnaire was sent to some of these residents, selected at random and anonymously, within four general neighbourhoods. The map of these areas and the questionnaire are contained in **Attachment 4**.
- Using the City's GIS database, only dwellings constructed after 1989 (both detached and multi-family) were selected, covering the period of time in which noise insulation measures have been in effect. Further, the selection was limited to owner occupied dwellings. A randomizing computer program was used to anonymously make the selections.
- The questions asked about their awareness of aircraft noise and its impact on their indoor and outdoor living environments.
- 205 surveys were mailed out. 82 completed responses were received (40%).
- The City's consultant, Urban Systems, has compiled the informal survey results and prepared a summary (**Attachment 5**).

(5) West Cambie Area Planning Process:

- In the separate West Cambie Area Planning process, feedback from Open Houses held June 24 and June 26, 2004, the public commented generally on how they felt about airport noise, and provided anecdotal comments regarding their tolerance for living with exposure to aircraft noise. Approximately 80 people responded.

(6) VIAA Airport Noise Research:

- VIAA completed two studies:
  - The Intervistas Report, which addressed worldwide aircraft and airport noise mitigation measures, and
  - The Wyle Labs Report, which provided additional information regarding which 2011 NEF areas are more or less likely to experience aircraft noise impacts from general annoyance, speech interference and sleep disruption due to assumed aircraft noise.
- These two studies are available in separate binders for Council in the Council Room, through Clerks, on the City web site (http://www.city.richmond.ca/), or from the Vancouver International Airport Authority (http://www.yvr.ca/). Copies for public review are available at the City's Front Counter.

(7) VIAA and City Staff Cooperation:

Throughout this research, City staff and VIAA staff have met, shared information, and collaborated.

ANALYSIS

(1) City Consultant's Reviews and Comments on Feedback

The City's consultant, Urban Systems Ltd., provided comments (see **Attachment 5**) on the following:

- Responses to the City's request for feedback;
- The City's informal community survey; and
- The VIAA's Intervistas and Wyle Labs reports.

(2) General Feedback

All findings may be categorized as follows:

1. Support for Transport Canada Guidelines
   - Those that requested that the City follow Transport Canada NEF guidelines. The guidelines recommend that there be no residential or similar aircraft noise sensitive development above the NEF 30 contour in order to minimize future airport noise and residential development conflicts.
   - This group comprised the bulk (14 of the total 23) responses received and included various airport stakeholder groups and government agencies (e.g., the Vancouver International Airport Authority [VIAA], Transport Canada, the BC Ministry of Transportation, the Vancouver Coastal Health Authority).
   - Overall, this group, which expressed general disagreement with the City's April 2004 research findings and conclusions, comprised 70% of the total responses.
2. Support For Residential Development Above the 30+ NEF Contour
   - Those that supported residential development above the NEF 30 (17% of total responses), and
3. Technical Details
   - Those that discussed technical details (e.g. NEF noise metrics, process, enforcement).

(3) Urban Development Institute (UDI) Comments

- UDI concerns (see letter in **Attachment 3**) related to the interpretation of technical data, balancing interests, the technical feasibility of implementing the City's April 2004 study findings, costs, process, population projections and market acceptance.
- Summary
  - Some of UDI's concerns can be addressed at this time (e.g., establishing appropriate noise mitigation measures and policies).
  - Other concerns regarding balancing VIAA and City planning interests, OCP concerns, technical and financial considerations regarding the City's April 2004 research findings can be considered in the proposed Implementation Strategy (e.g., ongoing research, OCP and area planning studies [e.g. West Cambie Area Plan, RAV, No. 3 Road Transit Oriented Development Strategy]).

(4) Informal Survey Findings

- A questionnaire was sent to 205 households, selected at random, within four communities within the higher aircraft noise contours (**Attachment 4**). Ten questions were presented, as well as an opportunity to provide other comments. The City's consultant's summary and review of the findings is contained in **Attachment 5**.
- In summary, those who responded indicated the following:
  - Most people had lived in their homes for approximately 6.1 years, and the dwellings were, on average, 8.3 years old;
  - Only 12.2 % of respondents knew if noise insulation measures had been incorporated into their homes;
  - The majority clearly were aware of aircraft noise in their neighbourhoods (97.6%);
  - Indoors:
    - 56.1% indicated that their level of annoyance was "moderate";
    - 22% stated that it was considered "severe"; and
    - 21% indicated "infrequent". (Note that these terms were not scientifically defined).
  - Outdoors:
    - 45.1% indicated that the level of annoyance was "moderate";
    - 34.1 % stated it was "severe"; and
    - 15.9% indicated it was "infrequent".
  - More respondents were exposed to airport noise inside the home during the day (90.2%), than were exposed to aircraft noise inside the home at night (78%);
  - A majority (82.9%) indicated general exposure to aircraft noise outside (e.g. backyards), while a minority (40.2%) indicated exposure at neighbourhood facilities (e.g. schools).
- Summary
  - City staff consider that many of these issues can be addressed with improved community planning, research, noise mitigation measures, and public information.

(5) West Cambie Area Planning Process: Aircraft Noise Comments

- In the separate West Cambie Area Plan process, the public commented generally on how they felt about airport noise. Approximately 80 people responded.
- Of the nine proposed West Cambie Area planning principles, ensuring that new development minimizes aircraft noise was ranked ninth, and last, in their priority of concerns, as shown on the following table:

Proposed West Cambie Area Planning Principles	Agree Strongly or Somewhat Agree
1. Create viable land parcels	87%
2. Ensure a connected and safe traffic circulation system	87%
3. Ensure compatibility with neighbouring areas	84%
4. Ensure effective implementation	84%
5. Define Edges and intersections	69%
6. Foster memorable identity through urban design	67%
7. Provide community connections and civic facilities	67%
8. Promote sustainable change (social, economic, environmental)	62%
9. Minimize noise conflicts with airport operations	**51 %**

Source: West Cambie Area Plan Study, City Spaces Consultants, July 29, 2004

- Summary
  - People appear willing to live in the higher noise contours, above NEF 35, under the flight path;
  - Staff consider that with improved aircraft noise sensitive development policies, community planning, research, noise mitigation measures and public information that aircraft noise sensitive development (e.g., residential) can occur in these areas with minimal complaints and legal challenges.

(6) VIAA Airport Noise Research

- The airport submitted two recently completed studies on "Airport and Vicinity Residential Land Use Planning":
  1. "Global Trends and Practices", prepared by Intervistas Consulting Inc., which addressed general practices and international perspectives; and
  2. The "Wyle Report", prepared by Wyle Acoustics Group, Wyle Laboratories, which provided additional information on annoyance, speech interference, and sleep disturbance.
- Comments on the Intervistas Report:
  - This information was received for general information.
  - It did not provide specific additional information to that which had already been used by the City's consultant in their research and in preparing research findings.
- Comments on the Wyle Report:
  - The Wyle Report provided additional information regarding annoyance, speech interference, and sleep disturbance with respect to the 2011 NEF model. The premises for their recommendations are:
    - the NEF model, which assumes a variety of land uses and insulation standards;
    - that there are limits to sound insulation construction;
    - open windows make the sound insulation ineffective; and
    - back yard enjoyment is jeopardised in areas of high aircraft noise.
  - The City's consultant, Wakefield Acoustics Ltd., has reviewed the Wyle Report (**Attachment 6**). They indicate that there is room for flexibility in establishing an approach to aircraft noise sensitive land use management.

- This information was useful in considering how the 2015 NEF contours may be affected and modified due the different degrees of speech interference and sleep disturbance, arising from aircraft noise. Several areas of aircraft noise differences were identified in consultation with VIAA staff and are documented (see **Attachments 7, 8, 9, 10, and 11**).
- This information supplemented the City's research and contributed to the proposed aircraft noise sensitive development policy map (**Attachment 12**).

(7) Comments On the NEF Area

- The Transport Canada guidelines recommend no aircraft noise sensitive land uses (e.g., residential) above the 30+ NEF contour.
- To provide a perspective regarding the impact of the Transport Canada (TC) guidelines on City growth and development, the following information is provided:

30+ NEF Area (Lulu Island)	Area Affected	Comment

Size of the 30+ NEF area is:	- 3,305 acres:
	  - (or 1,338 hectares),
	  - or 5.16 square miles)
		If the TC guidelines were fully followed, City development and growth would be seriously impacted.

Currently, the OCP policies allow for:		

In the 30+ NEF area, currently, the OCP policies allow for possible residential development in (80%):	- 2,623 acres, or
	  - (1,062 hectares), or
	  - (4.1 square miles)
		If the TC guidelines were fully followed:
		- existing residential development would not have occurred, and
		- no additional residential development could be considered.

In the 30+ NEF area, currently, the OCP policies allow for possible non residential development in (20%):	- 682 acres, or
	  - (276 hectares), or
	  - (1.06 square miles)
		- Would comply with TC guidelines; however
		- Would jeopardize City 's options to adapt to changing circumstances.

- Consequently, having no aircraft noise sensitive land uses in the 30+ NEF area does not balance interests and would jeopardize City development.
- However, it is important to note that:
  1. the City does not intend to totally cover the 30+ NEF area with aircraft noise sensitive land uses, as land is required for other uses (e.g., commercial, community facilities, parks, offices, agricultural);
  2. the City needs to keep its options open, for itself and the community, in light of current City development opportunities (RAV) and
  3. upcoming community planning initiatives (e.g., West Cambie, No 3 Road Corridor Transit Development Strategy, City Centre update) will better clarify where aircraft noise sensitive lands uses may and may not occur.

(8) NEF Feedback Analysis - Conclusions

- Based on the City's research, feedback, VIAA studies and information and the City's consultant's comments, City staff have made the following conclusions:
  - Using the 2015 NEF map and VIAA research on speech interference and sleep disturbance, a new map has been prepared entitled "Aircraft Noise Sensitive Development Areas" **(Attachment 11)**, to approximate NEF areas where various aircraft sensitive noise land uses may and may not be accommodated.
  - With new OCP policies which:
    - better match aircraft noise sensitive land uses with higher aircraft noise areas, and
    - establish better indoor noise mitigation standards, notification and covenant requirements,

    aircraft noise sensitive land uses can occur, above the NEF 30, subject to conditions, which aim to create livable areas, and minimize aircraft noise complaints and legal challenges.
  - That the above conclusions do not preclude the City from being flexible and that the City may modify the application of the NEF model and Transport Canada guidelines because:
    - based on the research findings prepared by the City's consultants, the NEF model has weaknesses including that it:
      - underestimates effects of ground attenuation on aircraft noise (e.g., topography, vegetation);
      - greatly penalizes night-time operations, resulting in larger contours; and
      - is a computer model predicting noise generated by aircraft traffic on a peak operating day, but does not include supplemental metrics to predict annoyance due to speech interference and sleep disturbances.
    - the Transport Canada land use guidelines are generally premised on limiting aircraft noise exposure within development areas for conventional single family detached frame dwellings, with open windows, and private back yards, and assumes conventional acoustic mitigation measures. These premises can be addressed through improved OCP policies which:
      - better match aircraft noise sensitive land uses to higher aircraft noise areas; and
      - require improve aircraft noise sensitive noise mitigation measures.
    - the Transport Canada land use guidelines can be interpreted flexibly where a municipality is satisfied that aircraft noise acoustic insulation features, if required, have been incorporated into the building design;
- Where the City considers allowing aircraft noise sensitive land uses, the City will have, over the City current policies:
  - more restrictive community planning requirements (e.g. restrictions on the location and type of aircraft noise sensitive uses [e.g., residential]);

- more stringent indoor noise mitigation requirements and (e.g. indoor ventilation and central air conditioning in certain high aircraft noise areas); and
- improved indoor amenity requirements to mitigate the loss of outdoor enjoyment (e.g. larger amenity rooms in multi-family housing dwellings and possibly enclosed balconies).

(9) Indoor Aircraft Noise Mitigation Standards

- Some responses requested that the City use appropriate indoor aircraft noise mitigation standards (e.g., not "zero noise" in bedrooms and not 0 NEF, but rather the appropriate decibel measure in any policy changes.
- The existing OCP policy correctly uses the appropriate decibel term.
- The proposed OCP policy will continue to use the appropriate decibel term

Options

(1) Option 1 – The Status Quo – Current City Approach

- Description

  Currently, the City does not have a comprehensive policy to manage aircraft noise sensitive development.

  The City has been managing aircraft noise sensitive land uses inconsistently within the same NEF contours.

  Pros
  - maximum flexibility for planning
  - decisions on land use can be made on a case by case basis

  Cons
  - inconsistent
  - generates uncertainty for all parties
  - does not address aircraft noise sensitive land use mitigation measures, as well as it could
  - limited coordination with stakeholders.

(2) Option 2 – The Basic NEF Model Approach

- Description

  This option is based on Transport Canada's NEF model and guidelines and:
  - does not accept land uses affected by aircraft noise (especially residential) above the NEF 30 contour; and
  - emphasizes avoiding complaints and lawsuits;
- Pros

- Strongly supported by broad based stakeholders;
- Consistent with federal standards and guidelines;
- Consistent with international standards and guidelines;
- Based on the assumptions in the NEF model, appears to be a good approach to minimize complaints and lawsuits;
- Has proven to be an effective management tool in long range airport planning; and
- Appears legally defensible.

• Cons

- Does not appropriately balance all interests;
- It is tied exclusively to the NEF model, which is based on projected annual aircraft operations, averaged over the day with penalties for night operations, and does not communicate the actual and specific noise impacts accurately and measurably to the public;
- The NEF model primarily assumes single family dwellings;
- Jeopardizes significant economic development opportunities for the City including:
  - RAV - achieving transit development benefits
  - City growth
  - Economic development
  - Waterfront development
- Appears overly protective (e.g., no aircraft noise sensitive development in 3,305 acres of the City;
- Does not best recognize existing City development patterns and new development opportunities and limits;
- Does not incorporate recent research (e.g., the Wyle report) regarding different areas of perceived annoyance, speech interference and sleep disturbance, due to aircraft noise; and
- Does not incorporate improved aircraft noise mitigation standards for aircraft noise sensitive land uses (e.g., residential), above the NEF 30 contour.

(3) Option 3 – The Aircraft Noise Sensitive Development Policy Approach – (Recommended)

Description

- This option is based on the premise that there is flexibility in interpreting the NEF model and applying Transport Canada guidelines, and that improved aircraft noise sensitive policies, mitigation measures and urban design guidelines can result in livable areas where noise sensitive land uses can occur with limited annoyance, speech interference and sleep disturbance, and with few complaints and legal challenges.
- This Option:

- Establishes areas where the City would prohibit aircraft noise sensitive land uses;
- Establishes areas where the City would consider (i.e., allow and not allow depending on the specifics) certain aircraft noise sensitive land uses (especially residential);
- Establishes improved noise mitigation standards;
- Requires covenants to achieve increased public awareness and aircraft noise insulation;
- Allows for single-family infilling increases where 702 Policy currently permits (e.g. rezoning and subdivision within the Single-Family Housing District (R1) range of areas [A to K]);
- Improves public information; and
- Involves additional community planning and research.

- Pros
  - Relative to the City's current aircraft noise mitigation policies and practice, Option 3 is better because it:
    - Provides clarity and consistency for making aircraft noise sensitive land use decisions;
    - Prohibits aircraft noise sensitive land uses in some areas;
    - Better matches noise sensitive land uses and areas, than does the NEF model;
    - Provides improved aircraft noise mitigation standards;
    - Increases the area where covenants and aircraft noise insulation are required;
    - Increases the area of public awareness;
    - Establishes an ongoing Implementation Program of aircraft noise research, planning and public information; and
    - Continues the co-operation and collaboration with the VIAA.
  - Although Transport Canada recommends against aircraft noise sensitive land uses above NEF 30, this Option is consistent with the Transport Canada caution that residential development within the 30 to 35 NEF contour should be subject to a noise impact study and insulation requirements if the municipal authority considers these types of land uses. The proposed OCP aircraft noise sensitive development policy will better continue these requirements.
- Cons
  - Not consistent with Transport Canada NEF land use guidelines;
  - Will add additional aircraft noise sensitive land uses into the higher NEF contours (e.g. 30 to 40 NEF).
  - Will likely result in more residents in aircraft noise sensitive areas who may experience aircraft noise annoyance, speech interference and sleep disturbance.

- May result in increased complaints and possible legal challenges to the VIAA and City.
- May jeopardize the long range capabilities, expansion and 24-hour use and operation of the airport; and
- Likely to be strongly opposed by broad based stakeholders (e.g., Transport Canada, VIAA; the BC Ministry of Transportation, the Vancouver Coastal Health Authority).

Rationale For Option 3

Option 3 is recommended because it:

- Is the best option to balance all interests: social, economic and environmental;
- Accommodates and balances the interests of the City including:
  - City growth;
  - RAV benefits; and
  - Social, economic and environmental development.
- Better accommodates and balances the interests of the Airport and City:
  - Provides areas where aircraft noise sensitive development (e.g., residential) will be prohibited;
  - Identifies areas where noise sensitive uses may be considered, subject to a wide range of requirements;
  - In areas were aircraft noise sensitive land uses may be considered, a mix of uses will be considered.
  - Establishes increased noise mitigation standards;
  - Expands the City's aircraft noise notification and insulation area; and
  - Establishes an Implementation Program to improve research, integrate aircraft noise and community planning, and enhance public information regarding aircraft noise.
- Accommodates and balances the interest of City residents and developers:
  - provides areas where additional aircraft noise sensitive (e.g., residential) opportunities may be considered;
  - provides improved liveability requirements in aircraft noise sensitive areas; and
  - provides improved aircraft noise mitigation measures.

OCP BYLAW AMENDMENT CONSULTATION

The preparation of this OCP Bylaw amendment has been consistent with the City's Policy 5039 "Consultation During OCP Development".

During the research and preparation of the proposed OCP Bylaw amendment, the City provided appropriate consultation opportunities to a wide range of agencies and the public using a variety of means including:

- making the City's April 2004 aircraft noise research and report available on the City's Website and at the Front Counter;
- publishing a public notice of a City public meeting to discuss the City's research findings;
- holding a City a public meeting, to explain the City's research and answer questions;
- sending mailouts which distributed the City's April 2004 research and inviting comments;
- meeting with several agencies to discuss the research and options;
- sending out an informal community survey regarding aircraft noise and inviting comments;
- welcoming feedback, particularly by June 30, 2004;
- holding discussions even after the preferred June 30, 2004 feedback deadline; and
- meeting several times with the VIAA staff.

As well, City informed a wide range of people that, consistent with Council's April 23, 2004 referral, the proposed OCP Bylaw amendment would be presented at the August 24, 2004 City Planning Committee meeting, at 4 PM, Anderson Room, City Hall.

Once the proposed OCP Amendment Bylaw 7794 receives first reading, staff will:

- make it available to the public; and
- send it to the following stakeholders, for comment and response, prior to the Public Hearing (e.g., on September 20, 2004, 7 PM in Council Chambers, City Hall):
  - Vancouver International Airport Authority (VIAA),
  - Agricultural Land Commission,
  - Richmond School District Board,
  - Musqueam First Nation Band
  - Transport Canada
  - Urban Development Institute
  - Greater Vancouver Home Builders' Association.

At the Public Hearing all interested parties can provide their comments regarding the proposed OCP bylaw amendment.

OCP Administration

(1) Aircraft Noise Sensitive Development Policies
For clarity, the proposed OCP bylaw amendment places all aircraft noise sensitive development policies and urban design guidelines in one place in the OCP.

(2) A Note Regarding Building Height Due To The Airport
This report addresses only aircraft noise sensitive development.

In preparing the OCP Bylaw amendment staff noticed that the Area Plans refer to the regulation of building height due the airport in different ways. For administrative clarity, the proposed OCP Bylaw places the City's existing "building height due to airport flight operations" policy in one place, in the OCP. This administrative change is not a policy change.

The previous Council directive to staff to explore, with the VIAA, the possibility of varying the existing building height requirements due to the airport is not part of this report and will be addressed at a later date.

The Findings

Introduction

Based on Option 3 – Aircraft Noise Sensitive Development, the following have been prepared:

1. Rationale Aircraft Noise Sensitive Development Policy (**Attachment 13**), which explains the proposed OCP Bylaw 7794, as the Bylaw is a technical document;
2. An OCP Bylaw 7794;
3. An Implementation Strategy (**Attachment 14**) which identifies how the aircraft noise sensitive development policy will be implemented, including:
   - City initiatives (e.g., West Cambie Area Plan update, No 3 Rd Transit Oriented Corridor Development Strategy, Waterfront Planning);
   - City - Partner initiatives (e.g., RAV); and
   - the City's development application review and approval process (e.g., during rezoning and subsequent subdivision, Development Permit and Building Permit approvals).

Documents To Be Approved

Staff recommend that the following be approved:

(1) The proposed OCP Bylaw 7794; and then

(2) The Implementation Strategy (**Attachment 14**).

Benefits Of The Recommended OCP Bylaw 7794 and Implementation Strategy

The recommended OCP Bylaw 7794 and Implementation Strategy:

1. Increases clarity and certainty;
2. Identifies aircraft noise sensitive uses;
3. Identifies areas where aircraft sensitive uses will be prohibited;
4. Identifies areas where aircraft sensitive uses may and may not be considered;
5. Enables the continued infilling of single family areas
6. Establishes enhanced indoor aircraft noise mitigation standards;
7. Increases the aircraft noise insulation and public notification area;
8. Allows the City and community to leave their options open to take advantage of future opportunities (e.g., RAV)
9. Provides a better framework to manage residential development, for example:
   (1) in aircraft noise areas, housing stock which is currently not insulated or poorly insulated for aircraft noise, may be replaced (e.g., through the rezoning and subsequent subdivision process) with better insulated residences;
   (2) in some cases, in aircraft noise areas, the housing stock may be replaced (e.g., through the rezoning and subsequent subdivision process) with non-residential development;
10. Enables more effective aircraft sensitive noise land use planning to occur; and
11. In some areas, current aircraft noise sensitive development applications which meet the approved OCP Bylaw 7794 and requirements may proceed.

Ongoing City Airport Stakeholder Co-operation

It is the City's intention to continue co-operating with the airport stakeholders including:

Initiative	Comment

1. City – VIAA Co-ordination	- Continued City participation in the:
	  - VIAA Board,
	  - YVR Noise Management Committee, and
	  - YVR Environmental Committee

2. Airport Planning	- As the VIAA improves its long range airport land use and related plans, the City will continue to participate, as appropriate. - VIAA is encouraged to improve its long range land use, noise management, environmental and related plans.

3. Aircraft Noise Research	- As the federal government and others are responsible for establishing improved aircraft noise management models (e.g., NEF and alternatives) and standards, the City will participate in such initiatives, as appropriate including aircraft noise mitigation research, for example:
	  - Interior Noise Level Limits
	  - Building Design Elements
	  - Community Design Elements

4. Public Awareness Research	- The City will co-operate, as appropriate, to improve public awareness techniques regarding aircraft noise and mitigation, for example improved:
	  - Covenants
	  - Full Disclosure Statements
	  - Noise Insulation Standards

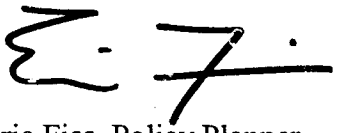
FINANCIAL IMPACT

Regarding the recommended OCP Bylaw 7794 and Implementation Strategy:

- For 2004, dollars are approved and budgeted (e.g., the 2004 existing aircraft noise research, the West Cambie Area Plan update, the No 3 Road Transit Oriented Corridor Development Strategy); and
- For future years, any City costs will be first approved by Council and partnerships will be sought.

CONCLUSION

- The City has undertaken aircraft noise sensitive land use and noise mitigation research and consultation regarding how it may be more consistent in managing aircraft noise sensitive land uses.
- An OCP bylaw and Implementation Strategy are recommended.



Eric Fiss, Policy Planner

EF:ef

LIST OF ATTACHMENTS

Attachment 1	List of Stakeholders Who Received the Report and Were Invited to Provide Feedback
Attachment 2	Public Meeting Notification
Attachment 3	Stakeholders' Letters Received
Attachment 4	Informal Community Survey Cover Letter, Map of Mailing Areas, and Questionnaire
Attachment 5	City Consultant's Reviews and Comments On Feedback and Summary of City Informal Community Survey
Attachment 6	City Consultant's Review and Comments On Wyle Laboratories Report
Attachment 7	Map - 2015 NEF Contours
Attachment 8	Map - 2015 NEF Contours with Wyle Report Zones
Attachment 9	Map - 2015 NEF Contours with Wyle Report Speech Interference Contours
Attachment 10	Map - 2015 NEF Contours with Wyle Report Sleep Disturbance Contours
Attachment 11	Analysis Map - 2015 NEF Contours with Wyle Report Speech Interference and Sleep Disturbance Contours
Attachment 12	Aircraft Noise Sensitive Development Policy Map
Attachment 13	Rationale - OCP Aircraft Noise Sensitive Development Policy
Attachment 14	Implementation Strategy – Aircraft Noise Sensitive Development Policy Consistency

OCP Bylaw 7794 – re: Airport Noise Sensitive Development Policy

ATTACHMENT 1

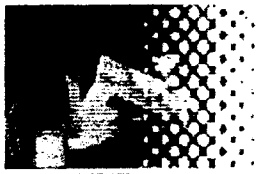
Referral List: For Comments by June 30th, 2004
Preliminary Findings: City Airport Noise and Residential Development Policy Consistency Research, April 14, 2004

	Contact	Date Sent	Attendance at the June 2, 2004 Public Meeting	Response
1	Mr. Larry Berg President and CEO Vancouver International Airport Authority	May 20		Letter, June 30, 2004
2	Mr. Mark Holzman Acting Director Policy & Research Division Central Mortgage & Housing Corporation	May 20		
3	Ms. Maureen B. Enser, Executive Director Urban Development Institute – Pacific Region	May 20	Meeting: UDI - Richmond Liaison Committee June 3, 2004	Letter, June 29, 2004 (Bob Ransford, Chair)
4	Mr. Louis Ranger Deputy Minister of Transport Transport Canada	May 20		Letter, June 14, 2004
5	Mr. Kevin Falcon Minister of Transportation	May 20		Letter, June 30, 2004
6	Dr. James Lu Medical Health Officer Richmond Health Services	May 25		Letter, June 10, 2004
7	Ms. Anne Murray VP, Community & Environmental Affairs Vancouver International Airport Authority	May 20	Anne Murray Fred Tewfick Mark Cheng	Letter, June 30, 2004 Reports: "Airport Vicinity Residential Land Use Planning Practices," Wyle Laboratories "Aircraft Noise & Vicinity Residential Land Use Planning: Global Trends and Practices," Intervistas
8	The Honourable David Anderson Minister of the Environment Central Mortgage & Housing Corporation	May 20		
9	Mr. Peter E. Simpson Executive Vice President Greater Vancouver Home Builder's Association	May 20		
10	Ms. Cynthia Hawksworth Director, Planning & Programs Ministry of Community, Aboriginal & Women's Svcs.	May 20		Letter, June 24, 2004
11	Mr. Andrew Huige, President The BC Aviation Council	May 20		
12	Mr. Rick Gage President Canadian Business Aircraft Association	May 20		Letter, June 30, 2004
13	Advisory Committee on the Environment	May 25	Presentation to Committee, June 16, 2004	
14	Mr. Dan Doyle Deputy Minister of Transportation The Province of British Columbia	May 25		
15	Mr. Fred Jones	May 28		Letter, June 30, 2004

	Contact	Date Sent	Attendance at the June 2, 2004 Public Meeting	Response
	Vice President Flight Operations Canadian Airports Council			
16	Mr. Craig Richmond President The British Columbia Aviation Council	May 26		
17	Mr. Don McLeay Director Employee Safety & Environmental Affairs Air Canada	May 25		
18	Mr. Kevin McAuley Advisor of Environmental Development and Dangerous Goods Westjet Airlines Ltd.	May 25		
19	Mr. Alan Gershenhorn President United Parcel Service (Canada) Ltd.	May 25		
20	Ms. Deborah J. Nebert Senior Manager Federal Express (Canada)	May 25		
21	Mr. Ralph Gilpin-Payne Director Flight Operations Support Cargojet Airways Ltd.	May 25		
22	Ms. Peggy Willingham Environmental Affairs Alaska Airlines	May 26		
23	Mr. Bruce Spencer Cargo Manager Western Canada Cathay Pacific Airways	May 26		
24	Mr. Greg Carter Director of Flight Operations Kelowna Flightcraft	May 26		
25	Mr. Graham Riddell Manager Air Operations Purolator couriers Ltd.	May 26		
26	Mr. Bob Palmer Acting Vice-President Flight Operations Harmony (HMY) Airways Ltd.	May 26		
27	Ms. Mary Loeffelholz Regional Director - Airport Access & State Affairs Northwest Airlines	May 26		
28	Mr. James Watson City of Richmond Citizen Representative - YVR Aeronautical Noise Management Committee	May 26		Facsimile June 29, 2004
29	Mr. Tom Chan City of Richmond Citizen Representative - YVR Aeronautical Noise Management Committee	May 26	Yes	Letter, June 26, 2004
30	Mr John Wong The Oaks Residents Association Unit 1000 – 8888 Odlin Crescent	May 26		
31	Ms. Meg Brown Citizen Representative, Vancouver YVR Aeronautical Noise Management Committee	May 28	Presentation to Committee June 9, 2004	Letter, June 17, 2004, by Anne Murray, Chair, YVR ANMC
32	Mr. Jack Cameron	May 28		

	Contact	Date Sent	Attendance at the June 2, 2004 Public Meeting	Response
	Citizen Representative, Corp. of Delta YVR Aeronautical Noise Management Committee			
33	Mr. Randy Ash Senior Environmental Health Officer Vancouver Coastal Health Authority	May 28		Facsimile June 30, 2004
34	Mr. Scott McPherson Canadian Business Aircraft Association	May 28		
35	Mr. Don McLeay Director, Environmental Affairs AIR CANADA	May 28		Letter, June 30, 2004
36	Mr. J. Clifford McKay President and CEO AIR TRANSPORT ASSOC. OF CANADA	May 28		Letter, June 30, 2004
37	Mr. Alan Grimston Citizen Representative, Vancouver YVR Aeronautical Noise Management Committee	May 28		
38	Mr. Daryl Hargitt Musqueam Indian Band	May 28		
39	Mr. Claudio Bulfone Inspector Civil Aviation TRANSPORT CANADA	May 28	Yes	Letter, June 11, 2004
40	Capt. Kevin Kandal Air Canada Jazz	May 28		
41	Ms. Teresa Ehman Manager, Environmental Affairs AIR CANADA	May 28		
42	Mr. Fred Luettger Manager IFR Operations - Vancouver ACC - NAV CANADA	May 28		
43	Mr. Norman Tam Tangram Developments			Facsimile May 13, 2004
44	Ms Georgene & Mr. Leonard Dunlop 9340 Odlin Road		Yes	Letter, June 25, 2004
45	Mr. Vic Farmer 5728 Vermilyea Court			Letter, May 27, 2004
46	Mr. Gunther Matschnigg Senior Vice President, Safety, Operations & Infrastructure International Air Transport Association Montreal			Letter, June 30, 2004
47	Jacqueline Kost ACC Chair Vancouver International Airport Airline Consultative Committee	To various airlines, above		Letter, June 22, 2004
48	Mr. George Struk 9600 Cabie Rd			Letter, June 30, 2004
49	Mr. Danny Leung Fairchild Developments Ltd.			Letter, June 8, 2004
50	Mr. Douglas Kennedy BKL Consulatants Ltd.			Letter, June 8, 2004

ATTACHMENT 2



City of Richmond
British Columbia, Canada

Public Meeting: City Airport Noise and Residential Development Policy Consistency Research

20 May 2004

The City of Richmond invites you to a Public Meeting where City staff will explain the preliminary findings on its current research on City Airport Noise and Residential Development Policy Consistency.

When: June 2, 2004, 7:00 p.m.
Where: Council Chambers, Richmond City Hall, 6911 No. 3 Road

The meeting is open to the public.

The staff report to Council, dated April 14, 2004, and the full consultant's study is available on the City's website.

Anyone wishing to comment on the study is asked to submit them by June 30, 2004.

For any additional questions, please contact: Eric Fiss at 604-276-4193.

BACK TO TOP

Committee members request the City take into careful consideration its views by developing a policy that will not negate past and future efforts of the Committee to improve the noise environment around the airport. Current committee membership is attached for your information.

On behalf of all Committee members, thank you once again for your presentation and the opportunity to comment.

Sincerely,

Anne Murray
Chair, YVR Aeronautical Noise Management Committee
Vice President
Community & Environmental Affairs

Attachment

cc: YVR Aeronautical Noise Management Committee Members

ATTACHMENT 3

Vancouver International Airport Authority
Administration de l'aéroport international de Vancouver
P.O. Box 23750
Airport Postal Outlet
Richmond, B.C. Canada V7B 1Y7
Website: www.yvr.ca

June 17, 2004

Mr. Terry Crowe
Manager, Policy Planning
City of Richmond
6911 No. 3 Road
Richmond, BC V6Y 2C1

Dear Mr. Crowe,

RE: City of Richmond Residential Development Policy Consistency Study

Thank you to you and Mr. Eric Fiss for your presentation on the preliminary results of the City of Richmond's Residential Development Policy Consistency Study at the 9 June 2004 meeting of the YVR Aeronautical Noise Management Committee.

Committee members agree that compatible land use planning practices are an internationally and nationally recognized tool in successful airport noise management strategies. As such, members were very interested in the preliminary results of the City of Richmond's study.

While some members of the Committee advised they would submit their own comments on specific aspects of the study and consultation process, there was consensus that a letter be sent from the Committee to the City of Richmond stating the Committee's position on the issue of residential land uses in the vicinity of airports.

Based on discussions at the meeting, the Committee confirms its opposition to increased residential development in high noise areas and its continued support for the Transport Canada national land use guidelines *(Land Use in the Vicinity of Airports TP 1247E).* This document recommends against residential development within areas exposed to +30 NEF, stating that individual complaints may be vigorous and possible group action and appeals to authorities may occur in these areas. In addition, the guidelines also recommend developers in the area of 25-30 NEF inform all prospective tenants or purchasers of residential units of possible impacts from aircraft noise.

Aeronautical Noise Management Committee

Mr. Alan Grimston, City of Vancouver Citizen Rep.
Ms. Meg Brown, City of Vancouver Citizen Rep.
Mr. James Watson, City of Richmond Citizen Rep.
Mr. Tom Chan, City of Richmond Citizen Rep.
Mr. Jack Cameron, Corporation of Delta Citizen Rep.
Mr. Eric Fiss, City of Richmond
Mr. Randall Ash, Vancouver Coastal Health
Mr. Fred Jones, Air Transport Association of Canada
Mr. Donald McLeay, Air Canada
Mr. Kevin Kandal, Air Canada Jazz
Mr. Bill Bickell, YVR Airline Operations Committee Representative (HMY Airways)
Mr. Scott Macpherson, Canadian Business Aircraft Association
Mr. Claudio Bulfone, Transport Canada
Mr. Fred Luettger, Nav Canada
Mr. Lorne Anderson, Nav Canada
Mr. Robert Duncan, Musqueam Indian Band

Vancouver International Airport Authority
Ms. Anne Murray, Vice President, Community & Environmental Affairs
Ms. Laura Patrick, Manager, Environment
Mr. Brett Patterson, Director, Aviation Operations
Mr. Mark Cheng, Environmental Specialist
Mr. Fred Tewfik, Environmental Analyst

Vancouver International Airport Authority
Administration de l'aéroport international de Vancouver
P.O. Box 23750
Airport Postal Outlet
Richmond, B.C. Canada V7B 1Y7
Website: www.yvr.ca

30 June 2004

Mr. Eric Fiss
Policy Planner, Urban Development Division
City of Richmond
6911 No. 3 Road
Richmond, BC V6Y 2C1

Dear Mr. Fiss:

RE: Comments on the City of Richmond's Airport Noise & Residential Development Policy Consistency Preliminary Report

Thank you for the opportunity to comment on the above report. Please accept the following in response to your letter dated 12 May 2004.

Our comments will address the City's preliminary report, the process to develop the policy, and the policy itself. These comments are summarized below and are further elaborated on in Attachment A.

- We are pleased that the City of Richmond has recognized the need for a clear, consistent policy regarding aircraft noise and compatible land use planning.
- We recommend that the City develop a policy which outlines areas where residential development is relatively unaffected; where residential development should be restricted and subject to specific, strong and mandatory conditions; and areas where residential development should be prohibited due to aircraft noise.
- Such a policy should use existing Transport Canada guidelines that recommend no new residential development in areas of +30 NEF.
- We are disappointed with and oppose many of the conclusions and recommendations of the preliminary report especially the premise that high density residential developments can occur anywhere regardless of the level of aircraft noise and possible negative community reaction.
- If the City proceeds to develop a policy that is contrary to the national guidelines, they should give serious consideration to the different levels of impacts

associated with aircraft operations within the +30 NEF. Residential development is not recommended anywhere within that contour but some areas are clearly worse than others. We provide a report prepared by Wyle Laboratories, entitled "Airport Vicinity Residential Land Use Planning Practices", which details this information.

- We do not believe that the preliminary report provides the City with the necessary information on which to base important, long term and irrevocable policy decisions.
- We provide a report prepared by InterVistas Consulting, entitled "Aircraft Noise & Vicinity Residential Land Use Planning: Global Trends and Practices", which contains supplementary information on airport land use planning practices including the risks and impacts of incompatible land use.
- Examples of conditions that should be imposed on residential developments are provided; however, more work on this is clearly required.

Thank you for the opportunity to comment on your preliminary report and provide this additional information. We would like to work with the City to develop a policy that ensures an economically vibrant and highly livable City and Province.

Please feel free to contact either myself at (604) 276-6357, or Mark Christopher Cheng at (604) 276-6366, should you have any questions regarding the contents of this letter.

Sincerely yours,

Anne Murray
Vice President
Community & Environmental Affairs

cc: Ms. Olga Ilich, Director, Vancouver International Airport Authority
Mr. Larry Berg, President and CEO, Vancouver International Airport Authority
Mr. Joe Erceg, GM Urban Development, City of Richmond
Members, YVR Aeronautical Noise Management Committee

Attachment A: Vancouver International Airport Authority Response to the City of Richmond's Airport Noise & Residential Development Policy Consistency Preliminary Report

The Airport Authority is pleased to have the opportunity to provide comments on the City's preliminary report, the process to develop the policy, and the policy itself. The following comments are intended to clearly communicate the risks of permitting new residential development in high airport noise areas as well to supplement your report by offering new and innovative metrics to assist with responsible land use planning practices.

The Airport Authority takes the issue of airport noise management very seriously, and has a comprehensive noise management program to balance the often competing demands of residents for quiet residential areas and the convenient access to 24-hour airport services. The objectives of this program are achieved through a variety of means, including: published noise abatement procedures; airside directives; the use of a noise monitoring and flight tracking system; receiving and responding to community complaints and concerns; and regular consultations with the YVR Aeronautical Noise Management Committee, on which the City of Richmond has two citizen and one staff member.

Since its formation in the early 1990s, the members of the YVR Aeronautical Noise Management Committee have worked with great dedication to improve the noise environment around the airport. Gains achieved through work by the Committee and the noise management program will be lost if more residential development is permitted in high noise and air traffic areas.

The issue of residential developments in high airport noise areas is of great importance to the Airport and members of the aviation community. Compatible land use planning is recognized at the international and national level as a critical component of any successful airport noise management strategy and is key to sustaining economic growth and our collective ability to serve the needs of our community.

The International Civil Aviation Organisation, of which Canada is a member state, established a policy stating that a balanced approach to airport noise management consists of four principle elements: compatible land use planning; noise reduction at source; noise abatement procedures; and, operating restrictions. Through this approach, it is the responsibility of local planning authorities to contribute to efforts to make airport noise management strategies successful.

As you are well aware, the Transport Canada NEF system is the official metric for airport noise assessment in Canada. The purpose of the NEF system is to assist with land use planning decisions by delineating areas of high aircraft noise exposure and predicting human annoyance to airport operations within different contours areas. Based on an assessment of community response predictions to aircraft noise, Transport Canada in their document entitled *TP 1247E - Land Use*

in the Vicinity of Airports prescribes that new residential construction or developments within +30 NEF should not be undertaken, as individual complaints may be vigorous along with possible group action and appeals to local authorities.

Comments on the City's Preliminary Report

- The recommendations contained in Table 7 of the City's preliminary report are of concern. These recommendations are in direct conflict with guidelines established by Transport Canada and airport land use planning practices around the world. As such, the Airport Authority does not agree with these recommendations, as non-compatible land uses around the airport will increase the risk of public pressure to change, restrict, or curtail current operations and future growth. Such actions have a direct affect on the ability of the airport and airlines to serve the needs of the province.

- While the Airport Authority strongly supports the application of the Transport Canada land use planning guidelines and will continue to discourage residential developments in high noise areas, if the City is to proceed with approving residential developments in high noise areas over the objections of the Airport Authority and the aviation community, we wish to provide some information and comments that will assist the City in drafting their policy (see further sections).

- The preliminary report does not sufficiently assess the magnitude of risk to the City, the Airport, and the air operators resulting from the choice to proceed with increased residential developments in high airport noise areas. This information is crucial for the City to make informed choices during the creation of a policy.

- With regards to recommendations of nuisance easements and restrictive covenants in Table 8 of the preliminary report, while legal notices may prevent an individual from suing either the City or the Airport, they are not effective in preventing individuals or groups from complaining and exerting pressure on local politicians to demand changes to airport operations in the future. A mechanism that offers protection from non-legal actions must be incorporated into the policy.

- The NEF system is based on time-averaging the annual aircraft operations at an airport and cannot be directly measured, and was never designed to be a tool to communicate the impacts of aircraft noise to the public. We note there is ongoing research in other countries, notably Australia, investigating the use of supplementary noise metrics to help communicate the impacts of aircraft operations on the community. Communication materials for new residents should include the use of supplementary noise metrics to help match community expectations with actual noise impacts in the area.

- The preliminary report does not quantify the likelihood of new residents experiencing annoyance despite all sound insulation efforts.

- Page 54 of the preliminary report lists recommendations for indoor noise exposure levels for buildings located in high airport noise areas of: 0 NEF for the bedroom; 5 NEF for the living, dining, and recreation areas; and 10 NEF for the kitchen and bathroom. It is important to note that these levels do not translate to 0, 5, and 10 dBA respectively and may be misleading to a reader unfamiliar with noise metrics. The report should clearly state what the actual corresponding interior noise levels would be, and further study is required to determine what the anticipated community response would be to those levels.

- With respect to the summary of the 1998 BBN Technologies social survey contained on page 42 of the preliminary report, we emphasize the findings that residents living near YVR are more willing to describe themselves as highly annoyed by aircraft noise and are less tolerant of aircraft noise than similar groups studied elsewhere. This is a clear indication, based on justifiable scientific research, of the increased risk posed to the Airport by increased residential developments in close proximity to the airport.

- We believe there has been an incorrect interpretation of the Transport Canada land use guidelines in Table 4 of the preliminary report. The table states that the Transport Canada land use guidelines considers residential development in areas between 30-35 NEF as "conditionally acceptable - not normally recommended however with appropriate insulation and a noise impact assessment study, residential construction could be permitted." It is our understanding that Transport Canada treats the 30-35 NEF areas the same as the +35 NEF area, in that residential housing is <u>not</u> deemed to be suitable. We request the City clarify this issue directly with Transport Canada, as this would impact the conclusions in Table 7 of the preliminary report.

- We believe the summary of the Canada Mortgage & Housing Corporation (CMHC) guidelines on page 25 of the preliminary report are also incorrectly interpreted as the CMHC guidelines are intended to mirror the Transport Canada guidelines.

- We note that the authors of the preliminary report have added a footnote to Table 6 that appears to suggest that the proposal to allow residential towers anywhere is a result of the terms of reference of the City's study. In the absence of the study's terms of reference, would the authors of the report come to the same conclusion based on their professional opinion and knowledge of subjective response to airport noise.

Comments on the Process

The period given to provide comment on the preliminary report and the process to develop a policy is also of concern to us. While we appreciate that the City expanded the list of groups to be consulted with and extended the comment deadline to 30 June 2004, we wish to register our concern that many in the aviation community did not receive the package from the City until early June 2004.

In fact, many individuals did not receive the package until well after the City's Open House on 2 June 2004. While we understand the City's desire to develop a policy in an expeditious manner to address pressure from developers, we cannot emphasize strongly enough that proper consultation with the aviation community is required to ensure all views are received to develop a balanced policy.

We also understand that City staff intend to present a draft policy to the City's Planning Committee on 24 August 2004 and that normal practice is for the City to post a draft policy and supporting documents on the City website on a Friday for presentation to Planning Committee the following week. This short time period does not provide ourselves and the rest of the aviation community an opportunity to properly review the material in order to form a response in time to make a statement or presentation at the Planning Committee meeting. As there will be great interest on the contents and direction of the draft policy, a longer period to review and comment is requested.

Comments on the Policy

As you are aware, the Airport Authority has retained two expert consultants to provide important information that is missing from the City's report. Their reports are intended to provide information on the impacts of the City's decision, as well as provide useful information to assist with the drafting of a balanced and responsible policy. Enclosed with the accompanying letter and this attachment are copies of the following reports:

Aircraft Noise & Vicinity Residential Land Use Planning: Global Trends and Land Use Planning, prepared by InterVistas Consulting. This report provides a summary of the different land use planning practices adopted around the world, as well as outlining the risks and impacts caused by a lack of compatible land use planning.

Airport Vicinity Residential Land Use Planning Practices, prepared by Wyle Laboratories. This report uses supplementary noise metrics, i.e. those other than annualized averaged metrics, to further delineate zones of high airport noise exposure around YVR. The goal of this study was to provide a map delineating areas where residential developments would be worse than others.

Based on their years of experience with airport noise issues, Wyle Laboratories examines three critical elements of livability (**speech interference, annoyance,** and **sleep disturbance**) and quantifies the impact on each element with respect to airport noise. The City's preliminary report does not include or address any of these elements of livability.

Given that the City have indicated an intention to proceed to increase residential developments in high noise areas over the objections of the Airport Authority and the aviation community, in creating its policy we recommend the City address the following:

- Use the material provided by Wyle Laboratories to understand where increased residential developments would be worse than others, and not permit residential in areas clearly identified as not being appropriate.

- The policy must address the following issues regarding sound insulation:

    a. What mechanism is there to ensure construction methods and materials meet required standards during construction?
    b. What mechanism is there to ensure that actual interior noise levels meet the requirements for each room?
    c. What happens if it is determined that the required interior noise levels are not met after construction?
    d. What happens if the acoustical performance of building materials degrades over time such that the required interior noise levels cannot be achieved?

- Incorporate urban and building design elements to minimize noise and impacts of air traffic.

- When residents apply pressure to curtail or restrict current or future operations, the Airport Authority's expectation is that the City would support the Airport Authority recognizing the importance of the Airport to the local and provincial economies and the need for 24 hour operations.

While the City is creating a policy based on the NEF contours for projected traffic in the year 2015, it is important that the policy accounts for the anticipated growing demand beyond 2015 for air services and the new airport infrastructure required to meet this demand. Poor land use planning decisions made today will have a detrimental impact on building new infrastructure required to meet the demands of the growing population and businesses in the City and the province.

While we understand the benefits of residential development to the City, the increase of such developments in high airport noise areas also comes with a severe risk of harming the important interdependent social and economic relationships between the City and the aviation community. As the lifecycle of

residential dwellings will span over generations to come, it is important that the policy decisions made in the near term, reflect the City's vision and desire of a livable and sustainable future.

We believe the City of Richmond and the Airport Authority share the same common objective of ensuring the City remains enjoyable for residents, while recognizing the importance of the airport to the local and provincial economy. We look forward to continued collaboration with the City to work towards a policy that will best serve the interests of the City and the airport.

Thank you again for the opportunity to provide comments.

Eric

TO: MAYOR & EACH COUNCILLOR
FROM: A/CITY CLERK

pc: GM-UD
Manager, Policy Planning

YVR

Vancouver International Airport Authority
Administration de l'aéroport international de Vancouver
P.O. Box 23750
Airport Postal Outlet
Richmond, B.C. Canada V7B 1Y7
Website: www.yvr.ca

Larry Berg
President and Chief Executive Officer

6125-03-02

PHOTOCOPIED & DISTRIBUTED
DATE: July 2/04

June 30, 2004

Mr. George Duncan
Chief Administrative Officer
CITY OF RICHMOND
6911 No. 3 Road
Richmond, BC
V6Y 2C1

CITY OF RICHMOND
DATE
JUL - 5 2004
RECEIVED
URBAN DEVELOPMENT

To Staff - copies already sent to George Duncan. [illegible] 07/05/04

Dear Mr. Duncan:

RE: City of Richmond's Airport Noise & Residential Development Policy Consistency Preliminary Report

I am writing in response to a letter from Mr. Eric Fiss dated 12 May 2004 requesting comments on the above report. I would like to commend the City for recognizing the need for a consistent policy on aircraft noise and residential development and addressing the issue in a proactive and public manner.

We take our role of managing noise from airport operations very seriously. Compatible land use planning around Vancouver International Airport (YVR) is a crucial element to minimizing the level of disturbance in the community. We are very concerned with some of the recommendations in the preliminary report as they directly contradict national and international policies related to land use planning around airports including the Transport Canada land use planning guidelines. In particular, we are opposed to the premise that high density residential development can be built within high noise areas.

To move forward on this important issue the City of Richmond should develop a policy identifying areas where residential development is relatively unaffected by aircraft noise; where residential development should be restricted and subject to mandatory conditions as a result of aircraft noise; and areas where residential development should be prohibited.

Such a policy should use existing Transport Canada guidelines that recommend no new residential development in areas of +30 NEF. These areas should instead be used for other airport compatible developments that will provide continued economic benefit to the

City. Clearly there are certain types of development that benefit strongly from close proximity to the airport.

If the City decides on a policy which allows residential development contrary to the national guidelines, consideration should be given to the different levels of impact associated with aircraft operations within the +30 NEF. Residential development is not recommended anywhere within that contour but some areas are clearly worse than others. My staff will be providing more detailed information.

This issue is very important to both the City and the airport, hence we must continue working in a collaborative manner to develop a policy to ensure we meet our common goal of an economically vibrant and highly livable City and province.

Sincerely yours,

Larry Berg
President & Chief Executive Officer

cc: Mayor and Council, *City of Richmond*
Mr. Joe Erceg, GM Urban Development, *City of Richmond*
Ms. Olga Ilich, Director, *Vancouver International Airport Authority*
Ms. Jacqueline Kost, Chair, *YVR Airline Consultative Committee*
Ms. Anne Murray, V.P. Community & Environmental Affairs, *Vancouver International Airport Authority*
Mr. Don McLeay, Director Employee Safety & Environmental Affairs, *Air Canada*
Mr. Louis Ranger, Deputy Minister, *Transport Canada*
YVR Noise Management Committee

Transport Canada | Transports Canada

Safety and Security | Sécurité et Sûreté

Civil Aviation Aerodrome Safety
Suite 620 - 800 Burrard Street
Vancouver, B.C.
V6Z 2J8

Your file / Votre référence
0153-01

Our file / Notre référence
T-5140-P169-1
RDIMS 804670

June 11, 2004

Mr. Eric Fiss, Policy Planner
City of Richmond
Urban Development Division
6911 No. 3 Road
Richmond, BC
V6Y 2C1

Dear Mr. Fiss:

This is in reference to your letter of May 12, 2004 inviting comments on the City of Richmond's preliminary research regarding airport noise and residential development. As a member of the Noise Management Committee at Vancouver International Airport and the Minister of Transport's representative, I thank you for the invitation to respond.

I am aware that an invitation for Transport Canada comments has also been sent to the Deputy Minister. He will be responding to your invitation and in that regard, any comments that I make, are intended to supplement those of the Deputy Minister.

General Comments

As a general comment, Transport Canada appreciates the recognition accorded by the study that the Noise Exposure Forecast (NEF) system continues as a vital land use planning tool. Land use compatibility zoning around airports is a challenge however it remains the primary tool available to address aircraft noise concerns.

We concur with Mr. Crowe's comments made at the recent public meeting that the City of Richmond land use zoning should be applied in a consistent manner. We also concur that aircraft noise concerns will arise from areas outside the NEF contours published for Vancouver International Airport.

Specific Comments

Land use compatibility tables published in the Transport Canada document TP1247E entitled "Land Use in the Vicinity of Airports" are the national recommendations for

lands use zoning near airports. This guidance is internationally recognized as a tool for sound land use planning.

The study makes an assumption that application of TP1247E is "not tenable" in that residential development exists in areas of Richmond already exposed to higher than desirable levels of aircraft noise. We appreciate that there may already be residential uses in areas of high aircraft noise in Richmond but feel that continued development in these areas will only exacerbate the situation. Designation of land use that is incompatible with guidance should not be repeated, as it will only lead to perpetuating the risk of legal action. Failure of application of desirable land use policies in the past does not predicate that this should take place in the future.

The Canada Mortgage and Housing Corporation (CMHC) guidance material is dated and based on old technology and should not be quoted. CMHC itself has not been involved in the aviation noise and compatible housing arena for several years. This fact led the Department of National Defence and Transport Canada to co-sponsor the National Research Council of Canada (NRC) conducted IBANA study, which is referenced in the consultant's report. Transport Canada does not publish development or noise mitigation guidance for residential construction in areas where aircraft noise exposure values exceed NEF 35. This is not an omission but assumes that such construction will not occur because of outdoor liveability problems. Transport Canada recommends against new residential developments in such areas. Outdoor liveability concerns apply to first-time and subsequent building occupiers.

It should be noted that the NRC study analyzed constructions in wood frame buildings. It did not address towers or multiple unit complexes. Accordingly the study seems to have omitted this fact.

The consultant study states that Transport Canada recommends against residential housing inside the NEF 35 contour. Transport Canada has never supported new residential construction inside the NEF 30 contour, however it recognized that communities faced various pressures which resulted in housing being permitted in this zone provided that acoustic insulation was incorporated in the design. This was interpreted by the development community to be conditional support for new development provided that the acoustic treatment was applied. In 1996 Transport Canada clarified its position that it did not support new construction inside the NEF 30 contour and that land use authorities should satisfy themselves that such construction is compatible with the operation of an airport.

Adverse public reaction to high noise area residential construction developments has not yet occurred, as prospective occupiers are not yet in place. It is the role of the planner to anticipate the future use and reaction. We therefore strongly encourage the City of Richmond to adopt Transport Canada's guidelines for land use in the Vancouver International Airport.

Thank you again for your invitation for comment. If you have any questions, please don't hesitate to contact me via telephone at: 604-666-5494 or via e-mail at: bulfonc@tc.gc.ca.

Yours truly,

Claudio Bulfone
Civil Aviation Investigator / Noise Management
Transport Canada Representative to
Vancouver International Airport Authority Noise Management Committee

Transport Canada | Transports Canada

Deputy Minister | Sous-ministre

Place de Ville
Ottawa
K1A 0N5

Your file | Votre référence

Our file | Notre référence

JUN 14 2004

Mayor Malcolm Brodie
City of Richmond
Mayor's Office
6911 No. 3 Road
Richmond, BC
V6Y 2C1

Dear Mayor Brodie:

I am writing in response to a letter received from Mr. Eric Fiss dated May 12, 2004, inviting comments on the City of Richmond's preliminary research regarding airport noise and residential development. As the department responsible for development and regulation of aviation in Canada and the owner of the lands at Vancouver International Airport, Transport Canada thanks you for the invitation to respond. As Deputy Minister of Transport, I have great interest in the issues your city is discussing and feel that it is important that I communicate with you directly.

Transport Canada is pleased that the City of Richmond seeks to review, refine and make consistent policies with respect to land development adjacent to Vancouver International Airport. The airport, which is Canada's second busiest, is Canada's major aviation gateway to the Pacific and one of the largest single contributors to the British Columbia economy. It is in the City of Richmond's and Canada's national interest that the airport continue to remain viable.

Transport Canada publishes land use guidance in a document entitled "Land Use in the Vicinity of Airports" which recommends land uses around airports that are compatible with aircraft and airport operations. This guidance has been promoted for over 35 years.

Land use zoning in line with Transport Canada guidance has proven to be a most effective means to address community response to noise annoyance. Accordingly, we urge local land use authorities to exercise their zoning powers to ensure activities adjacent to the airport are compatible with airport operations.

The protection afforded airports in Canada through compatible land use actions taken by communities is the envy of the developed world. This is a credit to cities and municipalities like Richmond for recognizing the importance of major transportation infrastructure elements in Canada's continuing development.

.../2

Vancouver International Airport Authority and Transport Canada have expended considerable resources defending a civil legal action brought forward by a number of Richmond residents concerning noise from aircraft operations. While the Airport Authority and Transport Canada were ultimately successful in their defence, continued development in areas considered to be incompatible would increase the risk of new legal action in the future.

My officials have been in contact with the City of Richmond and will continue to provide any assistance required to assist in achieving compatible development in the City.

Thank you again for involving Transport Canada in this endeavour.

Yours sincerely,

[illegible] signed by
[illegible] Ranger
[illegible]

Louis Ranger

cc. Mr. Eric Fiss, Policy Planner, Urban Development Division
Ms. Anne Murray, Vice President, Community & Environment Affairs, VIAA

BRITISH COLUMBIA

JUN 30 2004

Eric Fiss, Planner
City of Richmond
6911 No. 3 Road
Richmond BC V6Y 2C1

Reference: 124351
Your File: 0153-01

FACSIMILE: 604 276-4052

Dear Eric Fiss:

Re: Research Regarding Airport Noise and Residential Development

I am writing in response to your letter of May 12, 2004, about the City of Richmond's preliminary research regarding airport noise and residential development.

The Vancouver International Airport (YVR) is an important component of the transportation system that facilitates and contributes to the economy of the province. Its economic impact is significant and, as you know, the City of Richmond is a major beneficiary.

In order to derive the maximum utility from YVR, ensuring compatible land use in the vicinity of the airport is essential. Several airports worldwide have had restrictions placed on their operations or have been forced to relocate in large part as a result of encroaching incompatible development. In today's global marketplace, with the opportunities it provides, we cannot afford to jeopardize the utility of YVR, as has been done at airports elsewhere in the world.

As referenced in your research, Transport Canada has national guidelines on compatible land use around airports. While I realize that these are only guidelines, they are based on extensive scientific research.

I note that your consultants advise that residential developments can be accommodated in all noise exposure forecast (NEF) areas in the vicinity of YVR, contrary to the Transport Canada guidelines. In fact, if we interpret the reports correctly, the consultants seem to recommend a higher density of residential development the closer one gets to the airport (housing limited to residential towers or multiple dwellings in the highest noise exposure areas). This seems inconsistent with the meaning of compatible.

.../2

Ministry of Transportation
Office of the Minister

VANCOUVER 2010

Mailing Address:
Parliament Buildings
Victoria BC V8V 1X4

The benefits achieved through the use of noise abatement procedures and the use of quieter aircraft as a result of technological advances are minimized if residential development is permitted to occur in high noise and air traffic areas.

The efforts of the City of Richmond to formulate a consistent policy for dealing with applications for development in high noise areas is commendable, as is the City's goal "to be the most appealing, liveable and well-managed City in Canada."

I encourage the City to continue to discuss the findings of the preliminary research with the Vancouver International Airport Authority and the users of the airport, and to develop a policy that uses national and international guidelines as its basis in order to protect the utility of YVR. I understand that the City and the Vancouver International Airport Authority have established a working relationship to address airport noise and compatible land use issues.

To move along a path of permitting residential developments in high noise areas would be an irreversible decision that would in all likelihood result in pressure for unacceptable operating constraints on YVR. The economy of the province relies on being able to make the best use of YVR, whose location is a real asset to our competitiveness.

A few other provinces, namely Alberta and Ontario, have taken a more direct approach to the subject of land use planning in the vicinity of airports, directly through legislation or through the issuance of land use zoning guidelines for local government. I am hopeful that the City, through its working relationships with the airport authority and airport users, will be able to develop a high noise area land use policy that best meets the needs of all parties.

Thank you again for providing me with the preliminary findings of the research you have conducted so far. I look forward to reviewing the draft policy on residential development.

Sincerely,

Kevin Falcon
Minister

BRITISH COLUMBIA

June 24, 2004

Eric Fiss
Policy Planner
City of Richmond
6911 No. 3 Rd
Richmond BC V6Y 2C1

Dear Mr. Fiss:

Thank you for giving me the opportunity to review the draft reports summarizing the City of Richmond's preliminary research regarding airport noise and residential development. Having looked over the reports, I have a better understanding of the actions that the city is investigating regarding airport noise and residential development.

The Ministry of Community, Aboriginal and Women's Services has no comments at this time on the preliminary research summarized in the reports. However, we do encourage the City to continue to discuss the findings of the preliminary research with the Vancouver Airport Authority and affected airline companies. As I have mentioned to you previously, the Ministry is available to assist in discussions between the City and the Vancouver Airport Authority regarding any issues that may arise from the review of the preliminary findings if requested.

Yours sincerely

C Hawksworth

Cynthia Hawksworth
Director, Planning Programs
Intergovernmental Relations and Planning Division

pc: Joe Erceg, General Manager, Urban Development
Anne Murray, Vice President, Community and Environmental Affairs, VIAA
Terry Crowe, Manager Policy Planning
Suzanne Carter-Huffman, Senior Planner
Gary Paget, A/ADM, Local Government Department, MCAWS

Ministry of Community, Aboriginal and Women's Services

Intergovernmental and Planning Division

Phone:
Fax:

www.gov.bc.ca/mcaws

Vancouver CoastalHealth
Promoting wellness. Ensuring care.

Richmond Health Department
Public Health Inspection

Richmond Health Services
7000 Westminster Highway
Richmond, BC V6X 1A2
Tel: (604) 233-3147 Fax: (604) 233-3175

June 10, 2004

City of Richmond
6911 No. 3 Road
Richmond, B.C. V6Y 2C1

Attention: Mr. Eris Fiss, Policy Planner

Dear Mr. Fiss:

Re: Preliminary Research Findings: Airport Noise and Residential Development Policy

Thank you for forwarding the above noted report and inviting the Richmond Health Services to comment on the findings.

We have reviewed the documents and our comments are as follows:

1. The Consultant's report indicates that the primary goal is to strike a balance between the needs of the City and the YVR. We believe that Health, as a need of the City, is not given adequate consideration.

   The consultant's primary task is identified as developing "a how to plan for residential developments while having a regard for airport noise concerns". This in our opinion is premature. The initial task or question should be whether residential developments be permitted at all in the areas under consideration.

   We are also concerned with the City Council's motion of May 26, 2004, that directs staff to proceed with new rezonings to the full extent possible in the absence of a Noise Policy. It is our understanding that a significant number of applications have already been submitted and if they are processed prior to the Noise Policy being completed, the Policy once completed may be of questionable value.

2. The review and comments of an earlier Health Department report has been taken out of context and used by the consultant from a perspective that was not intended when it was written. The report was written in the mid-nineties in response to a rezoning that included areas with an NEF greater than 35. The Health Department is on record recommending against the rezoning for residential uses. The recommendation was based on the elevated NEF levels, and the history of Noise Complaints from the existing residents confirmed by site visits. It was clear that future residents would be severely impacted by airplane noise.

The comments quoted from the earlier Health Department report - "Municipal Council should be given the opportunity of reviewing staff's concerns regarding noise levels and deciding whether it is appropriate to restrict or allow residential developments ..."- were meant for Council to review factor's such as NEF and to consider the Health Department's recommendation. This should not be construed as support for residential development within the areas in question. It should be noted that Council of the day did not agree with the Health Department recommendation.

3. The Consultant's report acknowledges that this study does not include traffic noise and suggests that it should be considered separately. The City Center area being considered for the rezoning is heavily impacted by traffic noise and will possibly be subjected to additional noises from the Rapid Transit Line. A Noise report that ignores traffic noise for an area such as the City Center may be of limited value.

4. NEF's are not always the best or only parameter that should be considered. If it was, the Bridgeport area would be approved today. Actual real life data are always better than theoretical noise gradient plots based on numerous and compounding assumptions. We would therefore recommend that the actual numbers and frequencies of flights over an area and the associated noise levels not only be considered, but be used whenever possible as the preferred (benchmark) noise information in the consultant's report. The YVR Authority has in place noise monitors in various areas of the City. The consultant should be able to, with the assistance of the Airport Authority, determine the numbers and frequencies of flights during set time periods and the associated noise levels. Data from the monitors should be able to not only give a snap shot of the current noise patterns and levels, but also the historical trend over time.

5. Schools and Day Cares are not suitable for areas located under the flight paths. We therefore do not recommend that they be established.

If you have any questions on the above please call Art Hamade at (604) 233-3176 or the undersigned at (604) 244-5129.

Yours truly,

James Lu, M.D.
Medical Health Officer

AH:vr

AIR CANADA

Mr. Eric Fiss
Policy Planner
City of Richmond
6911 No. 3 Road
Richmond, BC
V6Y 2C1

Dear Sir:

This is in response to your May 12, 2004 letter regarding the Preliminary Findings of the City Airport Noise and Residential Development Policy Consistency Research.

Air Canada recognizes the need of any community near an airport to have an effective land use policy which provides a consistent approach to residential development, in particular development in high noise areas. We also appreciate the opportunity to comment on the reports provided as per the invitation in your letter.

The Noise Exposure Forecast (NEF) model in combination with the Transport Canada land use guidelines (TP 1247E) has provided the basis for effective land use planning around Canadian airports for many years.

It is imperative that the Transport Canada guidelines are adhered to for residential developments. To deviate from the published guidelines and allow the construction of residential housing will result in long-term problems.

Proper responsible land use planning around airports is an extremely critical element in mitigating the impact of aircraft noise. However it is an element which is in many cases ignored by authorities and communities. Today's aircraft are as quiet as technology can produce and future aircraft will not be significantly quieter as the technology has been exhausted. Moreover, the noise abatement procedures we are currently utilizing cannot produce any further benefits in noise reduction. Therefore responsible land use planning is essential. The International Civil Aviation Organization (ICAO) has recently published guidelines for the application of a balanced approach addressing airport noise concerns. ICAO recognizes that land use planning is an important element in mitigating the impact of aircraft noise and urges authorities to implement effective land use planning and management to ensure that gains achieved by the introduction of quieter aircraft and the use of effective operational procedures are not lost by the encroachment of residential development.

In our experience, population encroachment on an airport results in restrictions being placed the airport's operations. Currently the airlines enjoy 24-hour access to the Vancouver airport, which in turn offers the community improved services as well as valuable employment. Air Canada has extensive aircraft maintenance facilities at the airport which benefit greatly from the current unrestricted environment. When operating restrictions are placed on an airport it is not only the traveling public that suffers but also the operations and maintenance activities.

Encroachment of residential population also restricts future growth of operations at the airport. This is not only detrimental to the airlines but also to the airport and the community it serves.

From experience, notices at sales offices or clauses on property deeds to alert potential buyers that the property is in a noise-sensitive area do not work. It is the position of Air Canada that it would be incumbent on the local authorities to address the potential concern of the residents.

In closing, the City of Richmond has the responsibility to protect any potential homeowner by restricting residential development in the areas above NEF 30 through effective land use planning; to do otherwise would be irresponsible.

Yours sincerely,

Don McLeay
Director Employee Safety and Environmental Affairs

cc Anne Murray, Vice President, Community & Environmental Affairs, VIAA
Jacqueline Kost, Chair of Vancouver Airport's Airline Consultative Committee
Duncan Dee, Senior Vice President, Corporate Affairs, Air Canada
Mike Prosser, Community Relations Manager, Vancouver 3221
Lyse Charette, Director Provincial Government & Community Relations, Dorval 1235

18 June, 2004

Mr. Eric Fiss
Planner
City of Richmond
6911 No. 3 Road
Richmond, B. C.
V6Y 2C1

Sir:

RE: City Airport Noise and Residential Development Policy Consistency Research

In response to the City's request for comments, please find the following from the Vancouver Airport's Airline Consultative Committee (ACC). Your attention and consideration of our comments are greatly appreciated.

Yours truly,

Jacqueline Kost
ACC Chair

Att:

Airline Consultative Committee Vancouver International Airport
Resolution 8 - June 2004

Whereas airlines operating at Vancouver International Airport (YVR) and represented by the Airline Consultative Committee (ACC) actively address aircraft noise issues through:

- Continual investment in new, quieter aircraft to reduce aircraft noise at source;
- Compliance with noise abatement procedures on the ground; and
- Compliance with all existing noise attenuation flight restrictions.

And whereas, the City of Richmond benefits from $5 Billion in annual economic activity as a result of the presence and business activity of the air services provided by the airlines operating at YVR through: direct and indirect employment for Richmond residents (26,000 total jobs at YVR created through over 400 businesses and organisations working with the airport and airline community); convenient air transport of people and goods, and as a stimulus for the location of people and businesses in Richmond;

And whereas, compatible land use planning is a prudent management technique required to protect the viability of the aviation industry with all its related benefits;

And whereas it is the responsibility and in the best interests of local authorities, such as the City of Richmond, to address and minimize residential encroachment into areas impacted by noise generated by various modes of transportation but especially noise from aircraft;

And whereas the City of Richmond has prepared a draft report looking at how to proceed with residential developments in high noise areas;

The Vancouver International Airport Airline Consultative Committee hereby resolves that:

The City of Richmond, on a priority basis, develop and implement clear, comprehensive controls to prohibit any new residential development in areas affected by high aircraft noise (NEF 30+) consistent with Transport Canada and ICAO recommendations and standards.

In absence of these necessary controls, the City must agree to indemnify the airport and airlines, by means of a covenant to the deed on property within the residential development area, from any legal action taken as a result of this encroachment and will not be subject to any further operating restrictions due to the same. Furthermore, the City should establish real estate disclosure requirements to ensure that its residents are fully informed in their purchasing decision.

Per: Jacqueline Kost

Title: Jacqueline Kost, ACC Chair

Dated: June 18, 2004

Airline Consultative Committee
Vancouver International Airport

Cc: YVR ACC members (list attached)

VANCOUVER AIRLINES
CONSULTATIVE COMMITTEE

Committee Representatives, June 2004

Jacqueline Kost, Air Canada, Chair
Bob Brattson, Westjet Airlines
Rod Ramage, Air Transat
Geoff Scripture, Continental Airlines
Chris Cowan, Flightcraft
Ken Stephens, Horizon Air
Michael Skrobica, ATAC
Eugene Hoeven, IATA
Vincent Li, Cathay Pacific
Scott Fenwick, Jazz
Jackie Chrystal, Horizon Air
Mark Bucholz, United Airlines
Raymond Moore, American Airlines
Bill Bickell, Harmony Airways
Mary Loeffelholz, Northwest Airlines
Ken Knudsen, Aloha Airlines
Jennifer Schoi, Korean Air
Matt Falkner, Sky Service
Mark Berg, Alaska Air
Walter Muurmans, Martin Air USA
Mandy Green, Zip
Michael Lo, China Airlines
Singapore Air

And all other airlines doing business at Vancouver International Airport

AIR TRANSPORT ASSOCIATION OF CANADA
ASSOCIATION DU TRANSPORT AÉRIEN DU CANADA

ATAC

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June 30, 2004

Mr. Eric Fiss
Planner, City of Richmond
6911 No. 3 Road
Richmond, BC
V6Y 2C1

Fax: 604-276-4052

Dear Mr. Fiss:

Thank you for your letter dated May 12 2004, wherein you invited this Association to comment on the document entitled "Preliminary findings: City Airport Noise and Residential Development Policy Consistency Research". We appreciate the extension to the deadline for comment that will allow ATAC, and other interested stakeholders some opportunity to comment on the preliminary findings. Let us say first that we applaud Council's efforts to develop a residential development policy. We are concerned however, that a more in-depth examination of the critical issues raised by the policy will be limited by the short period of time that it will be available for review and comment, before it is to be presented to Council.

The Air Transport Association of Canada has been in existence since 1934 and its air operator members collectively generate 98% of the Canadian air transport-related revenue today. This association is very actively involved in noise control issues at many of Canada's airports and actively participates on five Noise Management Committees across Canada, including the Committee at Vancouver International Airport (YVR). We have a keen and vested interest in the evolution of the noise environment at YVR.

A residential development policy will guide Council on future residential development decisions and will provide the residents, the airport authority and the carriers that serve the airport with a clear indication of how applications for residential development in the vicinity of the airport will be evaluated. Clearly, decisions taken by council on residential development have a major impact on airport development, airport capacity, and on the ability of our operator-members to provide service to the greater Vancouver area. Our airline operator-members pay dearly the price for ill-conceived or ad hoc decisions with respect to residential development in the vicinity of airports. A residential development policy will cast the potential for future growth of the airport.

We know that noise abatement procedures generally add time, fuel, distance, and cost to the most efficient arrival and departure routings and vertical profiles. Hours-of-operation for airports are frequently driven by concerns from the

surrounding residential communities, and ultimately the capacity of the airport and its potential for future growth can be choked by the cumulative application of these restrictions. ATAC's operator-members have invested millions of dollars on newer and quieter aircraft. Our members believe, in part, that the return-on-investment for these aircraft will be in the form of enhanced airport access, and more fuel efficient routings and profiles. Quieter aircraft naturally enhance access through expanded airport hours and more efficient operational procedures at Canada's airports. Incompatible land use planning on the part of local government could very well eviscerate a large part of the efficiency enhancing potential that these expensive new aircraft offer. The incentive to purchase new, quieter aircraft can be reduced by land use planning that will tend to raise a *higher* number of complaints from the surrounding community.

Access to YVR is currently provided on a 24-hour basis, to the benefit of the Canadian airline community, the customers they serve, and the local economy. Any further limitation on access to the airport imposed as a result of residential development encroaching on the airport will have a significant negative impact on the airlines that serve YVR, their employees, customers, and others in the province that rely on the airport as an important economic driver for the local and provincial economy. There is no doubt that allowing residential development to encroach on the airport, as proposed, will result in businesses locating elsewhere due to the limited air service, and to the attendant limitations on access to foreign markets.

Absent from the study is any discussion of the economic impact of implementing the recommendations. The report suggests only that "These must be considered or possibly studied further." This association believes that the impact will be significant, and negative. While we can appreciate the interest from Developers in the prime land surrounding the airport, it does strike this Association as odd that the City of Richmond would task the consultants to examine *how* the City could incorporate residential developments in high airport noise areas, rather than ask them if it would be *advisable* to allow this form of development to take place.

As you know, Transport Canada has encouraged communities to apply the guidelines set out below (TP1247E – Land Use in the Vicinity of Airports). These guidelines are based on scientific research and they recommend against residential develop within high noise areas. These guidelines, even strictly applied, still result in a considerable investment by the airline industry in noise mitigation measures in response to noise concerns. We are most concerned that the recommendations of your study violate those guidelines (at 30 to 35 NEF, 35-40 NEF, and 40-45 NEF). ATAC opposes the recommendations of the study and we caution you against allowing residential development inside the prescribed guidelines, and we recommend that the city examine more closely the effect of allowing the residential development to take place, in cooperation with the Vancouver International Airport Authority (VIAA). Once allowed to take place

inside the applicable NEF contours, residential development will present a significant and permanent constraint on airline and airport operations, and by extension, on the economic opportunities in the area.

NEF Level	Transport Canada Guidelines	City of Richmond Study
25 to 30 NEF	Consider notice & acoustical insulation	No land use restrictions. Noise covenant and mitigation required.
30 to 35 NEF	Residential should not be built (noise impact study & insulation if authority proceeds)	Noise sensitive uses allowed. Residential limited to: → Residential towers → Multiple dwellings → Single family → Live-work → Work-live Noise covenant and mitigation required.
35 to 40 NEF	Residential should not be built	Noise sensitive uses allowed. Residential limited to: → Residential towers → Multiple dwellings Noise covenant and mitigation Required. Outdoor areas not viable.
Greater than 40 NEF	Residential should not be built	Noise sensitive uses allowed. Residential limited to: → Residential towers Noise covenant and mitigation Required. Outdoor areas not viable.

The International Civil Aviation Organization (ICAO), in a paper entitled "A Balanced Approach" adopted a position on the subject of noise management which includes four principles of effective noise management. They include noise reduction at source, noise abatement procedures, operating restrictions, and effective land use planning and management. Air operators have limited control over the last of these tools, and they rely entirely on the application of responsible land use planning principles by local government that are consistent with a long-term vision for the important role of the airport to the local community. You can appreciate that once a residential community is established in a noise sensitive area, the carriers and the airport authority receive the brunt of complaints, and are left holding-the-bag for ill-conceived land-using planning decisions.

If the goal of your study is to assist Council to make the City of Richmond the most livable, and well-managed City in Canada, the Air Transport Association of Canada is concerned that the conclusions of the preliminary report run contrary to established science and internationally-recognized noise management practices. The recommendations certainly run contrary to the experience of this

association with sound noise management practices across the country spanning 30 years. ATAC believes that there is no doubt that if development is allowed to proceed on the basis of these recommendations that airport capacity will be constrained into the foreseeable future and the VIAA and ATAC's operator-members can look forward to a long and acrimonious relationship with the new residential community.

Although ATAC was unable to attend your presentation at the YVR Noise Management Committee on June 9 of this year, as a long-standing member of this Committee we completely support the position of the Committee set out in a letter to you dated June 17 2004. We are concerned that the progress and goodwill that the airline community has worked hard to earn over the years, will be lost if the development proceeds in accordance with the study's recommendations.

Sincerely,

J. Clifford Mackay
President & CEO

cc John Maxwell, Transport Canada
Anne Murray, Vancouver Airport Authority

C.A.C.
CANADIAN AIRPORTS COUNCIL
CONSEIL DES AEROPORTS DU CANADA

June 30, 2004

Mr. Eric Fiss
Planner, City of Richmond
6911 No. 3 Road
Richmond, BC V6Y 2C1

Dear Mr. Fiss:

The Canadian Airports Council (CAC) was formed in 1992 and currently represents the interests of 43 airports. A growing number of airports have formed Noise Management Committees for the purpose of cooperatively mitigating the effect of aircraft noise. The airlines, Transport Canada, community representatives, and the airport authority work togetner in a consultative forum to determine the best means to reduce the effect of aircraft noise on the local community. The federal government has encouraged airport operators to manage noise at a local level and to strive to find agreement between its neighbours and its customers at a local level that will balance the interests of the traveling public and the airlines against the rights of the residential community to enjoy their homes and property.

We are aware that the City of Richmond has commissioned a study to examine how the City may proceed with residential developments in high airport noise areas. We understand the City has received a consultant's report which recommends residential development inside the +30 NEF contour area in direct contradiction to Transport Canada guidelines (TP1247E – Land Use in the Vicinity of Airports). We are concerned about the recommendations set out in the study, which we would like to articulate for the benefit of Council.

We are concerned, first of all that the City would proceed to examine the means to allow residential development contrary to the guidelines established by Transport Canada since TP1247E represents a long-established scientific guideline for land-use planning that has served for many years as the starting point for the deliberations of Noise Management Committees across the country. We know that when the guidelines are violated, the airport authority can expect to cope with a radically higher volume of complaints from the surrounding community, which will ultimately affect the airport's ability to function effectively in a national airport system and to serve the future demand for air services by residents and businesses of the City and the region. The price for a violation of the Guidelines is paid for, for many years following-on a decision by the municipal government to violate them.

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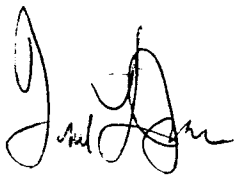
We are concerned that the Vancouver International Airport Authority, and other stakeholders have been provided with a very limited opportunity to comment on the recommendations of the study. We urge you to work cooperatively with the Airport Authority to determine if the development is advisable. We are concerned with the precedent that the development presents, not only for future decisions that will be taken by the City of Richmond, but for other airports experiencing similar pressure from developers hungry to exploit opportunities inside the noise contours.

In a paper entitled "A Balanced Approach" the International Civil Aviation Organization (ICAO) identified four principles of effective noise management. They include noise abatement procedures, noise reduction at source, operating restrictions, and lastly, effective land use planning and management. The latter principle is the first line of defence of against noise complaints and can prescribe the course of noise management at an airport in spite of the best efforts of other stakeholders. Good decisions with respect to land use planning will clearly compliment and enhance the hard work of the YVR Noise Management Committee to the benefit of the neighbouring communities, while poor land use planning practices will destroy past gains and hamper future efforts.

We are concerned that if the recommendations of the study are adopted by Council before the other affected stakeholders have had a full opportunity to consider the impact of the recommendations, that the decision to develop will later be irreversible, and the cumulative effect of the restrictions to operations that will be implemented at YVR will serve to only to constrain the capacity of the airport forever. The economic impact of the prospective development was not evaluated by your consultants and we believe that there will be a significant negative effect on the local and provincial economy if businesses cannot rely on continued liberal access to air service, and to markets inside the province and globally.

The Canadian Airports Council fully supports the position of the YVR Aeronautical Noise Management Committee set out in a letter to you dated June 17 2004, and look forward to receiving a draft residential consistency policy with sufficient time to review and formulate proper comments.

Sincerely yours,
Canadian Airports Council



Fred L. Jones BA LLB
VP Operations & Technical Affairs

cc: John Maxwell, Transport Canada
Anne Murray, Vancouver International Airport Authority

cbaa

CANADIAN BUSINESS AVIATION ASSOCIATION
99 METCALFE STREET, SUITE 304, OTTAWA, ONTARIO K1P 6L7
TEL: (613) 236-5611 FAX: (613) 236-2361 E-MAIL: info@cbaa.ca

June 30, 2004

Mr. Eric Fiss
Planner
City of Richmond
6911 No. 3 Road
Richmond, BC V6Y 2C1

Dear Mr. Fiss,

Re: PRELIMINARY FINDINGS: CITY AIRPORT NOISE AND RESIDENTIAL DEVELOPMENT POLICY CONSISTENCY RESEARCH

I refer to your correspondence dated May 12, 2004 and thank you for the opportunity to provide comment.

The Canadian Business Aviation Association (CBAA) represents the interests of the business aviation community in Canada and currently speaks for more than 175 companies and organizations that operate in excess of 350 business aircraft, as well as an additional 120 companies from the manufacturing and support sectors of the aviation industry.

Compatible land use planning is internationally recognized as a critical element to solve airport noise issues. As such, the International Civil Aviation Organization (ICAO), of which Canada is a member state, has established a balanced approach to noise management consisting of four principal elements: land use planning and management; noise reduction at source; noise abatement procedures; and operating restrictions. The aviation industry has influence on some of these elements, however it is the responsibility of the local land use planning authority to support efforts to achieve a successful airport noise management strategy. Noise abatement procedures and technological improvements to aircraft and engine design are negated without compatible land use planning. Gains achieved through the use of quieter aircraft or through operational procedures are lost if residential development is permitted to occur in high noise areas.

The findings of the preliminary report suggesting that residential developments can be accommodated in high airport noise with a high standard of livability are contrary to known research and international practices about community response to noise and responsible land use planning practices around airports. Permitting residential developments in high noise areas is an irreversible long-term decision.

CBAA opposes increased residential development in high noise areas and supports the Transport Canada national land use guidelines (*TP 1247E - Land Use in the Vicinity* of *Airport(s)*). This document recommends against residential development within areas exposed to +30NEF, stating that individual complaints may be vigorous and possible group action and appeals to authorities may occur in these areas. In addition, the guidelines also recommend developers in the area of 25-30 NEF inform all prospective tenants or purchasers of residential units of possible impacts from aircraft noise.

Access to airports is a fundamental requirement for the aviation industry. Scheduled carriers, cargo, and business aviation rely on 24-hour airport access. Any limitation or restrictions to airport access will have a direct negative impact on the aviation industry and subsequent growth of the City and surrounding areas. This will translate into lost business opportunities as a result of limitations of available air services and resultant degraded links to national and international markets.

CBAA strongly encourages the City of Richmond to use the balanced approach concept and adopt policies restricting residential developments in high noise areas consistent with standards developed by Transport Canada and the international community.

The aviation industry has a long-term interest in the development of a policy on residential development for the City of Richmond. CBAA respectfully requests inclusion in any review process.

We look forward to further involvement in the development of this policy.

Regards,

Rich Gage
President and CEO

cc: Scott Harrold
Scott Macpherson
Ted Macdonald
Anne Murray
Mark Cheng

Günther Matschnigg
Senior Vice President,
Safety, Operations & Infrastructure

June 30, 2004
Ref: 272/400/GM

Mr Malcolm Brodie
Mayor of the City of Richmond
6911 No 3 Road
Richmond, British Columbia
V6Y 2C1 Canada

Dear Mayor Brodie,

Re: City of Richmond's Noise Compatibility Study

As the Association of international airlines representing close to 280 carriers worldwide, IATA compliments you and your Council for launching an in-depth study and a broad consultation process on land-use planning and management in the city areas bordering Vancouver International Airport.

This issue is of utmost importance especially given that national and/or local authorities too often fail to address the required planning measures on time in order to prevent the encroachment of incompatible residential developments into noise-sensitive areas. These planning measures are an integral part of the *Balanced Approach* to noise management, unanimously adopted by Canada and the other 187 States, members of the International Civil Aviation Organisation (ICAO).

When the 2001 ICAO Assembly adopted this concept, it strongly urged all States and local authorities to ensure that potential noise level reductions gained from the introduction of quieter aircraft were not compromised by inappropriate land-use or encroachment into noise-sensitive areas.

We would like to draw your particular attention to this aspect and urge the city of Richmond to prevent any residential development in noise sensitive areas that could be based on short-term considerations – especially given that land-use management is and should remain a long-term planning tool.

In this context, IATA fully supports the resolution adopted on 8 June 2004 by the Airline Consultative Committee of Vancouver International Airport, in particular the following resolving clause:

The city of Richmond be requested to, on a priority basis, put in place clear, comprehensive controls to prohibit any new residential development in areas affected by high aircraft noise (NEF 30+) consistent with Transport Canada and ICAO Standards.

Yours sincerely,

Guenther Matschnigg
Senior Vice President, Safety, Operations & Infrastructure

00 Place Victoria
.O. Box 113
lontreal, Quebec
anada H4Z 1M1

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www.iata.org

Fiss, Eric

From: Ash, Randy [VC] [Randy.Ash@vch.ca]
Sent: June 30, 2004 5:00 PM
To: Fiss, Eric
Subject: City Airport Noise and Residential Development Policy Consistency Research

Hi Eric,

Sorry for the lateness of this email but I wanted to drop you a quick note to voice my concerns regarding residential developments in high NEF areas.

* The fact that there are currently residential developments in these areas does not mean that there should be further development in these areas. The fact that Transport Canada's guidelines have not been followed in all cases is not reason to continue to ignore them or develop policies contrary to them. Rather the fact that these guidelines are recognized across Canada is all the more reason to develop policies consistent with the guidelines.

* While it may be technically possible to mitigate the airport noise in some if not all high NEF areas, that noise mitigation is effective only with doors and windows closed. Once people open windows or doors, or leave to go outside, the noise mitigation is no longer effective. This precludes suitable outdoor play areas for occupants with children.

* In general it is preferable to have child care and schools located in or nearby residential areas, if residential developments are allowed to go ahead in areas where it is not recommended, these residents will likely expect these facilities to be nearby. While the City of Richmond may initially not plan for schools or daycares in these areas, there will likely be pressure to back down on this position so that the residents in these areas have these services nearby. In areas with noise levels this high, child care facilities and schools are not recommended as at a minimum learning may be impaired.

* The residents that move into these areas may be well aware of the potential for noise impacts but this does not preclude them from complaining about the noise when it is either worse then they expected or the noise mitigation doesn't end up working as well as anticipated or for some other similar reason. If the City of Richmond has permitted the development to go ahead against recommendations from various departments, agencies etc., they may face lawsuits in addition to the complaints.

* The current plan for simultaneous takeoffs from the North and South runways relieves the City of Richmond of some of the impact by having 10% of the divergence of the planes head towards Vancouver. I suspect it will be argued that if the City of Richmond is willing to go against the Transport Canada guidelines, then the airport authority should reconsider the idea of providing relief in this fashion.

* While the report looks at airport noise, is should have considered traffic and the potential RAV line also as they will be significant additional noise sources

* If the City is determined to go ahead, they should use additional information as developed by the Airport Authority using additional noise criteria to better determine the areas that development may be suitable.

Thank you for the opportunity to comment.

Regards,

Randy
Randall Ash, B.Sc., C.P.H.I.(C.)
Senior Environmental Health Officer
Environmental Health Division
Vancouver Coastal Health
Phone: 604-714-5673
Fax: 604-736-8651

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June 29, 2004

Mr. Eric Fiss, Planner
City of Richmond
6911 No. 3 Road
Richmond, BC

Dear Mr. Fiss:

RE: City Airport Noise and Residential Development Policy Consistency Research

Thank you for the opportunity to provide comment on the subject of a recent Council Report, *City Airport Noise and Residential Development Policy Consistency Research.* We also appreciate the briefings that have been provided to the Urban Development Institute, both from Richmond staff and from the consultants who explained their research findings.

At the outset we would note that this is a complex subject, both in terms of interpreting and reconciling technical data and in terms of achieving the appropriate balance between the ongoing operations of the Vancouver International Airport and the strong demand for new housing.

We recognize the importance of the Vancouver International Airport and the significant contribution that it makes to the area's economy; at the same time we note that Richmond is a dynamic and expanding urban centre and a preferred choice for many to live and work. Given that both the airport and the City are essential components of our region, it is imperative that policies be created which accommodate the needs of the airport while meeting the growing need for new housing within the City of Richmond.

We note the direction from Richmond Council that the premise of the research was to assume residential could locate in all Noise Exposure Forecast (NEF) contours, if appropriate noise mitigation is employed. In terms of indoor noise mitigation, we note the consultants recommend a maximum indoor noise exposure of 0 within sleeping quarters and a maximum NEF of 5 in living areas.

If Council is considering a requirement that new development achieve these NEF standards, it raises a number of important and as yet, unanswered questions. First, is it

technically feasible to achieve a 0 NEF in sleeping quarters for those areas of Richmond subject to NEF levels of 30+? Secondly, even if it is technically feasible to achieve a 0 NEF level, is it justifiable from a cost perspective to build homes that would meet this noise standard. Unfortunately we are not in possession of information that might answer these fundamental questions.

Given we do not have the information necessary to answer these questions we are unable to provide specific recommendations in terms of in which NEF contours it might be appropriate to allow new residential development, be it single-family, multi-family or high-rise. In addition, we also have questions concerning the relationship of NEF standards to other more familiar noise standards such as CHMC noise guidelines and the BC Building Code acoustic standards.

If new residential development should be permitted within NEF contours we would also need clarification concerning the approval process and sign-off on building drawings. Would the City accept consultant's sign-offs in terms of (BP) drawings which indicate that if the building is constructed according to the drawings, it would meet the NEF requirements? Is the City considering some type of disclaimer to prevent future developer liability over noise if a building is constructed in accordance with drawings that have been signed-off by a noise consultant and accepted by Richmond?

In terms of market willingness to reside in NEF contours 30+, various developer members have informed us that their current sales and customer information for past residential projects built and sold within these contour areas indicates that buyers are aware of the airport noise before they purchase their home, and that they are not bothered by it. This is particularly true for Asian purchasers.

We note that the Vancouver International Airport Authority is seeking a restrictive policy on new residential development with NEF areas. At the same time we all recognize the strong demand for new residential development in Richmond. Accordingly we would like to find collaborative solutions and wonder if it might be possible to craft solutions that reduce the concerns of the airport while accommodating the need for new housing.

One approach that deserves consideration would be to adopt a no-net-loss policy on new housing stock. Richmond's Official Community Plan (OCP) estimates a population of 212,000 people by the year 2021 whereas the current population is approximately 170,000; this would therefore suggest that some 42,000 new residents will need to be accommodated within Richmond over the next 17 years. Importantly, how many of these new residents are projected to live in those areas subject to NEF levels of 30+?

If it should be unfeasible from a technical and financial perspective to develop new housing in NEF contours of 30+ that would meet the indoor noise mitigation standards as recommended by the consultant, it will be necessary to accommodate those new residents elsewhere in the City of Richmond. More particularly those foregone housing units in NEF contours of 30+ may need to be relocated in other part of Richmond through increases in allowable density or building height. In the spirit of cooperation we would

hope and request that the Vancouver International Airport Authority could become an advocate for the relaxation of current blanket height restrictions in Richmond that result from Transport Canada regulations around aeronautical safety.

We look forward to responses to the questions we have raised and more broadly, to consideration of other solutions that might orient new housing away from NEF contours of 30+ through a no-net-loss policy on new housing.

Yours truly,

Bob Ransford
Chair, UDI – Richmond Liaison Committee

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FAX TRANSMISSION

Date: May 13, 2004

Fax Number: (604) 276-4052

Attention: Mr. Terry Crowe

Company: City of Richmond

Re: April 14, 2004 NEF Staff Report and Attachment # 1

Sender: Norman C. Tam

We are transmitting 3 page(s) including this cover sheet.

Dear Terry,

Upon reviewing the Staff Report dated April 14, 2004 and the Research to Review City Airport Noise – Residential Policy Consistency – February 20, 2004 we would like to clarify what is the noise mitigation requirements for a property situated in the 25 to 30 NEF Contour.

The February 20, 2004 report stated "No work required" whereas the April 14, 2004 report stated "Noise covenant and mitigation measures required".

Enclosed for your reference is page 6 of the April 14, 2004 staff report and Attachment 1 of the February 20, 2004 report for your reference.

I look forward to your clarification.

Yours very truly,

Tangram Developments Ltd.

Norman C. Tam

Norman Tam

- NEF Model
  The NEF model has strengths (e.g., well recognized, a reasonable indicator of nuisance) and weaknesses (e.g., it estimates the extent of noise and nuisance; there are variations of noise within the same NEF contour).

- *Possible NEF Types of Development (see Consultant Research Report- Table 7)*
  In summary, Table 7 of the consultant research report states that Council may consider residential development in the following Noise Exposure Frequency (NEF) areas:

NEF Area	Type Of Development
Less than 25 NEF	- No land use restrictions. - No noise covenant or mitigation measures required.
25 - 30 NEF	- No land use restrictions. - Noise covenant and mitigation measures required.
30 - 35 NEF	- Noise sensitive uses limited to: o residential towers o multiple dwellings o single family o live-work o work-live o day care o assembly – TDB on a case by case basis - Noise covenant and new mitigation measures required as per consultant study.
35 - 40 NEF	- Noise sensitive uses limited to: o residential towers o multiple dwellings o assembly - TDB on a case by case basis - Noise covenant and new mitigation measures required as per consultant study. - Outdoor areas not considered viable for residential purposes.
40 - 45 NEF	- Noise sensitive uses limited to: o residential towers o assembly - TDB on a case by case basis - Noise covenant and new mitigation measures required as per consultant study. - Outdoor areas not considered viable for residential purposes.

ATTACHMENT 1

MODIFICATION TO THE TERMS OF REFERENCE
RESEARCH TO REVIEW CITY AIRPORT NOISE - RESIDENTIAL DEVELOPMENT POLICY CONSISTENCY - FEBRUARY 20, 2004

Study Premise
The research was based on the following premises:

NEF Contour	Assumptions Regarding Residential Uses	Indoor & Outdoor Airport Noise Mitigation Standards	Area Livability Criteria (In addition to existing OCP, Area Plan, Zoning Requirements)	Feasibility of Proposed Standards and Requirements
25 to 30	Residential uses will be allowed, subject to community planning, policies and requirements.	No work required	No work required	No work required

30 to 35	Generally, Transport Canada Guidelines state:
	- New residential uses should not be undertaken,
	- but if the 'responsible authority' chooses to do so then:
	  - appropriate acoustic noise insulation features should be considered, and
	  - a noise impact assessment study should be completed to show that residential development is not incompatible with aircraft noise.
	Residential uses will be allowed, under some conditions, subject to community planning, policies and requirements
		Require research and standards	Require research and standards	Work required

35 to 40	Generally, Transport Canada Guidelines state that residential development should not be undertaken. Residential uses will be allowed, under some conditions, subject to community planning, policies and requirements.	Require research and updated noise mitigation: - criteria - measures	Require: - research, and - updated area livability criteria.	Work required
Greater than 40	Generally, Transport Canada Guidelines state that residential development should not be undertaken. Residential uses will be allowed, under some conditions, subject to community planning, policies and requirements.	Require research and updated noise mitigation: - criteria - measures	Require: - research, and - updated area livability criteria.	Work required

June 26, 2004

Terry Crowe, Manager Policy Planning
Eric Fiss, Policy Planner
City of Richmond
6911 No. 3 Road
Richmond, BC
V6Y 2C1

Dear Sirs,

With respect to your request for comments concerning the "Preliminary Findings: City Airport Noise and Residential Development Policy Consistency Research" report, and in recognition of the pressures exerted on the City to permit the development of residential and other use facilities within areas previously deemed unsuitable for such developments, I wish to note the following points:

- I agree and support the City's intent to develop a consistent policy or practice governing the development of lands and areas that are impacted by noise generated by the Airport or by aircraft operations within the following NEF contours:

    - 25 to 30
    - 30 to 35
    - 35 to 40
    - 40+

- I am in agreement with the existing guidelines established by Transport Canada and by CMHC concerning residential developments within the following NEF contours and advocate that the City of Richmond utilize these as a baseline in considering any new developments, particularly as they apply to any form of residential use (single family, residential towers, multiple dwelling, live-work, work-live).

NEF	Transport Canada TP1247	CMHC, New Housing and Airport Noise
25 - 28	Normally acceptable	Conditionally acceptable. Provision of adequate sound insulation is recommended.
28 - 30	Normally acceptable	Conditionally acceptable. When sound insulation is considered to be adequate.
30 - 35	Conditionally acceptable. Not normally recommended however , with appropriate insulation and a noise impact	Conditionally acceptable. Unsuitable for housing unless adequate sound insulation is provided.

NEF	Transport Canada TP1247	CMHC, New Housing and Airport Noise
	assessment study, residential construction could be permitted. Developer should also be required to inform all prospective tenants of airport noise environment.	
> 35	Clearly unacceptable	Clearly unacceptable. Unsuitable for housing. CMHC will not support social housing projects.

- Consultants' Terms of Reference:

The Consultants note that "the terms of reference for the study state that residential will be permitted under certain circumstances over the 40 NEF contour.

I believe that the terms of reference provided to the Consultants by the City presuppose that residential development will occur when the City should have asked whether residential developments should occur in +30 NEF areas based on a set of evaluative criteria and the application of social and financial cost-benefit analysis as opposed to simply asking, in effect, "how do we make it happen".

After all, construction of a building for whatever designated purpose can be accomplished in virtually any noise impacted environment but would anyone want to reside there given the adjustments and accommodations that must be made to do so. And particularly as construction and the materials that form that construction deteriorate over time, allowing more noise to impact that living environment.

- The Appropriateness of Residential Towers:

The Consultants' recommendation that residential towers would be the most appropriate construction for "a high noise environment" is based on the premise that the "outdoor amenity space and the activities likely to take part in them are differentiated on the type or the nature of the indoor space itself and that "...a high-rise apartment/condo dweller will be less likely to expect to enjoy outdoor use of that property than an owner of a single family dwelling".

I do not agree with this circular logic. While a high-rise apartment/condo dweller may not utilize the common green space areas surrounding the building in the same manner as a single family dwelling owner's use of his private backyard,

they are likely to demand the inclusion of some private outdoor space, perhaps in the form of balconies for the same identical purposes that a single family homeowner would and to enjoy such use in equal proportion. Alternatively, the apartment/condo dweller is likely to want to have the option to use some portion of the common outdoor area to sit and simply enjoy the outdoors or to vent his unit for fresh air. To deny this possibility is to confine residents of buildings located in high noise impacted NEF areas to a synthetic sealed environment.

Of course, the risk to having established some outdoor space, whether that be public or private, is to invite residents located in such areas to complain, perhaps vigorously to the Airport and to Council. The advent of organized political or legal pressure to alleviate, reduce, or restrict the production of Airport noise and the activities that produce that noise may be reasonably assumed to occur and increase over time, notwithstanding the use of nuisance easements, covenants or other such measures to prevent lawsuits against the Airport.

This concern is detailed on page 42, where the Consultants note that "legal notices on title may protect the Airport and City from suit, but will not prevent individuals from exerting political pressure on local politicians to demand changes in airport operations".

From the Consultants' Report concerning Community Response Prediction and NEFs (page 43).

Community Response Prediction and NEFs	
Response Area	**Response Prediction**
>40 NEF	Repeated and vigorous individual complaints are likely. Concerted group and legal action might be expected.
35 - 40	Individual complaints may be vigorous. Possible group action and appeals to authorities.
30 - 35	Sporadic to repeated individual complaints. Group action possible.
< 30	Sporadic complaints may occur. Noise may interfere occasionally with certain activities of the resident.

Indeed, there is as the Consultants have noted "when considering outdoor noise mitigation standards, the only true mitigation is location".

- Substitution of Indoor Amenity Space for Common Outdoor Space:

The Consultants state (page 60) that as "an alternative to the relocation of noise sensitive outdoor land uses is to replace outdoor amenities with equivalent indoor amenities with the required acoustic insulation. However, this is not necessarily entirely possible and at some point becomes unreasonable and unlivable. Certainly one of the attractions to Richmond is its climate. The City has prided

itself on the garden city concept which it emulates. To enclose all amenities would take away from the City" and indeed the humanity of its residents.

Given these particular reasons, I believe that the City should adopt the guidelines outlined by Transport Canada TP1247 and CMHC and not allow the development of residential housing in +30 NEF impacted areas.

In the event that the City permits the development of lands for residential uses in +30 NEF impacted areas, I would strong urge the City to only permit such developments in the 30 - 35 NEF contour and not beyond and then only on the strict application of the subjects contained in Transport Canada's TP1247 for 30 - 35 NEF for residential developments together with the required notices on title.

Thank you.

Respectfully submitted,

Tom Chan
City of Richmond
Citizen's Representative to the Aeronautical Noise Management Committee

Fiss, Eric

From: Watson, James [jwatson@wcb.bc.ca]
Sent: June 29, 2004 1:57 PM
To: tom_chan@canada.com; Fiss, Eric
Cc: anne_murray@yvr.ca
Subject: RE: Comments - Airport Noise and Residential Development Study

Eric, I have been putting off a submission on this, and with the deadline looming I find that Tom has very succinctly and effectively covered off the concerns I would have presented as a Rep on the NMC.

I agree with Tom that the one positive coming out of this is that the City will be taking an official stance on the issue of community land use planning vis-à-vis airport noise. It is just unfortunate that the City chose to prejudice the results of the study by predetermining that there would be housing in the highest noise level areas. This fly's in the face of recommendations from all other interested stakeholders, with the possible exception of the development community. They are notable in that their involvement ends where the problems begin.

In my day job one of my areas is hearing loss compensation. Hearing loss is notable in that the majority of injury due to noise comes from exposure over time. While by no means suggesting that the exposure levels in Richmond could affect hearing, noise can have other long term health impacts (the reason I suspect that the Vancouver/Richmond Health Board does not support these proposals). I would also suggest that the nuisance or aggravation factor from noise is also very much influenced by exposure over time. In my capacity as representative I have dealt with many citizens who are convinced that the noise they are experiencing has increased considerably. Not all of the complaints are from those affected by the North runway, who have of course seen an increase. As some of the residents at the public hearing pointed out, the change in traffic and aircraft mix has mitigated noise in many areas. Unfortunately, it is very difficult to explain to a resident who has reached their "breaking point" that the facts often do not support their concerns. This is an issue for them of liveability, and no amount of statistical information or pre-knowledge is helpful. With their support of housing in +35 NEF noise areas the City is setting up an increasingly large number of residents for a compromised life style. This does not need to happen. When and if it does it does however at least the responsible party will be clearly identified.

I would appreciate if you could append my comments to Tom's submission to indicate my full support for his position, and to indicate a unanimity of opinion from the two appointed Citizen representatives.

Regards

James Watson

-----Original Message-----
From: tom_chan@canada.com [mailto:tom_chan@canada.com]
Sent: Sunday, June 27, 2004 5:58 PM
To: efiss@city.richmond.bc.ca
Cc: Watson, James
Subject: Comments - Airport Noise and Residential Development Study

Good afternoon Eric,

I have attached my comments for your review.

Thank you.

Tom

cc.: James Watson, Anne Murray

May 27, 2004

Via E-mail to efiss@city.richmond.bc.ca

Eric Fiss, MAIBC, MCIP
Community Planner
Policy Planning Department
City of Richmond
6911 No. 3 Road
Richmond, B.C. V6Y 2C1

Dear Mr. Fiss,

I am a new resident to the Richmond area, just having moved into the small new subdivision across from the seaplane base at Vermilyea Court late last year. I am very surprised at how much noise the seaplanes generate in the River Road area of Richmond during the day, especially during the early morning hours when many residents are trying to sleep. The seaplanes generate so much noise in the early morning that I have no idea how local residents can properly sleep any time after they begin their operations sometime around sunrise. In fact, in our area, the seaplanes seem to be much noisier than the wheeled aircraft landing and departing at the airport.

Since moving to Richmond, I have reviewed the various noise management and related reports on YVR's website. There appears to be numerous plans regarding the noise management of wheeled aircraft (acoustical barriers, engine run-ups, chapter 2 phase outs, etc.), but I have yet to find any similar plans regarding YVR's sea plane activity. I find this particularly puzzling since there appears to be ever increasing noise management technology requirements for wheeled aircraft, but none for the older, (and louder) seaplanes. The apparent lack of a specific noise management plan for the seaplanes may be particularly significant since I am told that YVR's seaplane activity has increased over the past year.

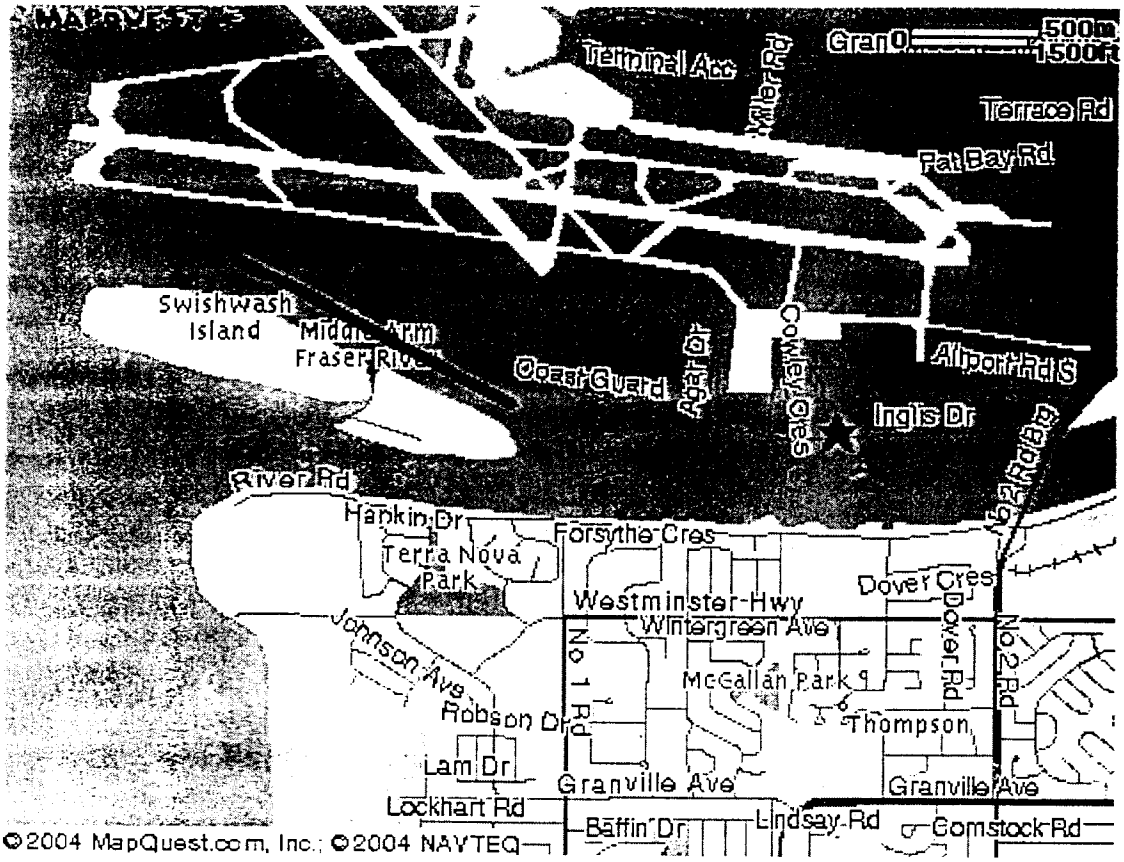
My questions are simply:

1. Are there any such meaningful noise restrictions or guidelines for the seaplanes and the seaplane base, now or planned?
2. Do the 2015 NEF contours accurately reflect the seaplane noise for those residents immediately adjacent to their operations on the Fraser River? The reason I ask this question is simply that I noticed the noise monitoring stations that gather data for the NEF contours are not located close to the seaplane operations. I truly feel the excessive noise generated by the seaplanes creates noise levels greatly in excess of that reported in the various Vancouver Airport Noise Management Reports that I reviewed.
3. Is there any planned increase to seaplane activity volumes in the future?

Finally, I would like to offer one suggestion, which I shared with various YVR personnel during a recent open house. They all thought it was a good idea and suggested that I contact the Richmond Citizens representative of the YVR Aeronautical Noise Management Committee in this regard. Hence, the purpose of initiating this email to you.

My suggestion arises from the fact that the seaplanes are very noisy and operate in close proximity to the homes of local Richmond residents. As a compromise, why would the seaplane operators not consider altering their early morning operational activity to the north channel of the Fraser River near Swishwash Island as diagrammed in bold pink in the map below? The noise impact reduction to local residents could be dramatic if such operations were moved to this area from sunrise to 8:00am on weekdays and sunrise to 9:00am on weekends. I understand from my meetings at the YVR open house that seaplanes are permitted to use this channel, and I have in fact observed them doing so on some occasions.

I also wonder if there should be some long term planning regarding the permanent relocation of the seaplane base to this more remote channel; perhaps somewhere near the Coast Guard station. Such a move would no doubt save the seaplanes from having to travel to this location for their takeoffs and landings, and would also dramatically decrease the effect of their noise on the local community.



I fully understand that living within the vicinity of the Vancouver Airport also means living with some airport noise. However, I trust that the Vancouver Airport shares my opinion that there is responsibility on their part to mitigate the impact of noise on local residents where there is such opportunity. I think that the simple suggestion of altering the location of the seaplane's early morning operations is one such opportunity, and I therefore look forward to your comments in this regard.

Sincerely,

Vic Farmer
5728 Vermilyea Court
Richmond, B.C. V7C 5W7
Home (604) 231-9765
Work (604) 303-7257

9340 Odlin Road,
Richmond, B.C.
June 25, 2004.

Dear Mr. Crowe,

After my husband and I attended the Public Meeting on June 2, regarding the impact of airport noise on residential development, we felt compelled to write to you and give our opinion of living under the flight path. We hope you will take the time to also read the other enclosed letters concerning this topic, as they will help you to see that our opinion has not changed over the years. There has been some progress, but many of the issues of twenty years ago continue to be the same today. They are not related to airport noise, but to a pervasive attitude from council to ignore the needs and wishes of the residents in the West Cambie Area.

First of all, I have lived at 9340 Odlin Road for more than fifty years. My parents chose to live here and we chose to buy their house because we knew what we wanted for the future, and this area would supply exactly that quality of life. For us this is the bottom line. We knew what we were getting into with regards to airport noise. We accepted "the bad" with "the good". To quote again from my letter of September 27, 1987, "As a senior official at the airport recently stated in the Richmond Review, 'One man's noise is another man's sound. Your reaction to it is personal and subjective.'" Let those who would rather listen to intermittent airplane noise than the constant din of truck traffic, live under the flight path. I agree that there should be some consistency to regulate development, but if people sign a disclaimer regarding the noise, I can't see what the problem is. There should be no issue regarding lawsuits--plug all the legal holes. Since the "Tait Residents" lost their case against YVR I would think a precedent has been set that should prevent any future cases.

Secondly, have you read recently of the appalling physical condition of our youth! There is a trend towards children playing video games rather than playing outside. If they are part of an organized team, children do become involved in some physical activity, but the parents have to drive them to the rink or the pool or whatever. Why has this happened? Perhaps it could be that children no long have yards to play in. Parents are constantly responsible for their children's activities and they don't always have the time to devote to driving them here, there and everywhere. It was with open mouths that we listened to the case being made for restricting new

residential growth in this area because the airplane noise was detrimental to the health and welfare of children. It was suggested that they should be provided with indoor amenities to make up for not being able to play outside. We would like to suggest that this is part of the problem, not part of the solution. My family's health has not suffered from living under the flight path and we all enjoy outdoor activities--none of us belongs to a gym!

Thirdly, we agree with many of the people who questioned the NEF findings as published in the report. Since the North Runway has opened we have experienced a decrease in airplane noise. Why then are the NEF readings the same today as they were twenty years ago? Add to that the quieter engines and surely we should see a drop in the NEF readings! Or, is there a hidden agenda since the big player, YVR, doesn't really want further residential development in this area?

Since technology is constantly improving, it can be assumed that more ways to decrease unwanted noise and to improve soundproofing will continue to be developed in the future. The importance of implementing policies which will ensure further development of the airport without creating more problems due to increased noise, will in all likelihood be covered by these improvements without restrictive policies.

In conclusion, we strongly support allowing Cambie West to remain residential and to allow further residential development of the area. Having said that, we do feel something needs to be done about the night traffic from the airport. The North Runway was planned on paper many years ago and the residents should have been aware that one day it would become a reality. Why then, should they not have an equal share of the night traffic? To us this is an issue that needs to be dealt with immediately as it does impact on the quality of sleep we have.

Thank you for encouraging public input into this important issue that directly affects our daily lives. We invite you to come for coffee one day and experience firsthand what it is like to live under the flight path. At the present time our garden is in full bloom and we feel like we live in a park. We are sure you will find a coffee break in our garden quite an enjoyable experience.

Yours truly,

Georgene Dunlop

To: Eric Fiss,
City of Richmond

I have just reviewed the City of Richmond document "Research to Review City Airport Noise – Residential Development Policy Consistency" and associated Attachment 3 "Modifications of The Terms of Reference".

Since it is doubtful the authors of the report are residents in Cambie West, I thought I might provide some perspective from a resident's view point.

I have lived in the area since 1986 and find it is a great area to live. Richmond City Centre is minutes away in a car, on a bicycle or on foot. Schools and Parks are plentiful. North-South and East-West road connectors are close by. Downtown Vancouver is readily accessible. The Fraser River Dyke trail is nearby. The Airport is minutes away. In short it is an excellent location.

Plane noise has always been present but is less noticeable than in the past.
In fact, I could only describe the overall level of noise from aircraft as dramatically lower when compared with the 1980's and 1990's. The DC8's and 707's are gone and updated engine technology applied to many of the modern planes reduces their noise output to a much more tolerable level. Noise generated by engines when slowing for landings is minimal. Only older generation engines on take-offs generate levels of noise that might be of a disruptive nature and as the years pass these older engines are being replaced. Whereas conversations would regularly need to be suspended in years gone by, now, even some outdoor conversations can continue during takeoffs due to the dramatic reduction in noise from some of the modern planes. As quieter engine technology is progressing and being encouraged by the many affected stake holders around the world it would seem appropriate that our planners take this improving noise trend into account when considering the livability of Cambie West for the next 50 years.

People are exposed to various noise influences in urban living. Residents should be given the choice of assessing the various influences /amenities of a given neighborhood and then of making their own choice. It seems unrealistic to shut the door to a quality high density residential neighbourhood in Cambie West due to NEF patterns. People are fully capable of taking the airport's proximity and noise influence into account, along with all the other factors that modern urban dwellers consider when choosing a home. Urban dwellers are not discouraged from settling in other neighbourhoods which are subject to various types of disruptive influences. Consider those who live near busy roads, hospitals, highways, trains, fire-halls, pubs, hospitals, schools, parks, or near commercial, retail or industrial businesses or those who live in congested areas like Vancouver's West End. People choose their home when their complex set of demands is satisfied by a particular neighbourhood. Cambie West's convenient location coupled with high quality buildings in a high density lifestyle would be very attractive. The RAV line with its close proximity, will further increase the desirability of Cambie West as a great place to live. Increased density in Cambie West would also assist in supplying the passenger loads needed to make RAV economically viable.

It seems the main concern of the airport is future complaints. From my observations walking through adjacent neighbourhoods, I feel it would be splitting hairs to categorize Cambie West as a neighbourhood that would be subject to more complaints than any of the recently constructed sub-divisions such as The Oaks , Odlinwood or Cambie –East. These adjacent residential neighbourhoods generally have contented residents who have chosen to live in these locations. If anything, Cambie West might have more contented residents if future development were of a higher overall quality and followed specific City of Richmond stipulated building guidelines to ensure a desired level of noise suppression. The Airport's concerns might be somewhat allayed knowing that proposed developments in Cambie West would be so carefully designed and constructed.
The Airport's concerns might be further allayed if the City of Richmond undertook to ensure information packages were available to potential new residents, that would inform them of the proximity, convenience and impact of the Airport and of all other Richmond amenities, thus ensuring fully informed potential purchasers / residents prior to their decision to buy or rent.

Cambie West is located in a desirable location in a desirable City and, with a decreasing land supply, this is a an ideal opportunity for the City of Richmond to make progressive decisions. These decisions could see the creation of a quality high density residential neighbourhood, that should, through it's intrinsic design and specific building codes, allay concerns of those who would see this superb location squandered for some lesser use.

George Struk
9600 Cambie Road

FAIRCHILD DEVELOPMENTS LTD.

June 8, 2004

City of Richmond
6911 No.3 Road
Richmond, B.C.
V6Y 2C1

Attention: Mr. Terry Crowe
Manager – Policy Planning Dept

Dear Terry,

Re : Draft Report by Pryde Schropp McComb Inc. on Airport Noise Policy

Fairchild Developments have reviewed the draft report by Pryde Schropp McComb Inc. with our consultants and are confident that our proposed condominium project at 8060 Cambie Road would satisfy the proposed noise control requirements.

Yours truly,

Danny Leung
Senior Vice President & General Manager

cc : City of Richmond – Joe Erceg
City of Richmond – Raul Allueva
City of Richmond – Suzanne Carter
City of Richmond – Eric Fiss
Bing Thom Architects – Francis Yan
BKL Consultants – Douglas Kennedy

#130 - 4400 Hazelbridge Way, Richmond, B.C., Canada V6X 3R8 Tel: (604) 273-1234 Fax: (604) 270-9963

BKL
Consultants in Acoustics

Principals:
Douglas S. Kennedy, P.Eng.
Michael R. Noble, M.Sc.
Douglas J. Whicker, P.Eng.

June 8, 2004

File: 2550-03B

City of Richmond
6911 No. 3 Road
Richmond, BC
V6Y 2C1

Attention: Terry Crowe Manager, Policy Planning

Dear Sir:

Re: Draft Report by Pryde Schropp McComb Inc. on Airport Noise Policy

As you know, BKL Consultants Ltd. has been working with Fairchild Developments Ltd. on their project at 8060 Cambie Road and after reviewing the draft report by Pryde Schropp McComb Inc., we are confident that the Fairchild development project would satisfy the proposed noise control requirements. However, as acoustical consultants, we do have some concern regarding the proposed use of NEF rather than Leq to describe interior noise levels and we wish to bring these concerns to the attention of the City and the report's authors.

1. The NEF was developed for describing aircraft noise out of doors. It was never intended for rating interior noise. Apart from its use by the Ontario Ministry of the Environment, we are unaware of any agencies using NEF to describe interior noise nor any research having been done to equate interior NEF values with annoyance, sleep disturbance, speech interference or any other effects. Leq, on the other hand is used throughout the world for describing both exterior and interior noise levels and forms the basis of extensive research on noise effects.

2. The computer program IBANA, which was designed by the Canadian National Research Council (NRC) to predict interior noise levels due to aircraft, does not predict interior NEF values. It predicts interior Leq values. Although there are approximate empirical relationships for converting NEF to Leq, these relationships were developed for exterior noise and they are not necessarily valid if applied to interior noise levels. Leq is based on A-weighted decibels (dBA) whereas NEF is based on Effective Perceived Noise Levels (EPNL) and the amount of outdoor-to-indoor attenuation in dBA is not necessarily equal to the outdoor-to-indoor attenuation in EPNL.

3. Use of NEF to describe interior noise will add further confusion to an already confusing subject. For example, at a recent meeting in City Hall held to discuss the draft report, City staff referred to NEF 0 as being "zero noise", which is both incorrect and misleading to the public. If NEF is to be used as an interior noise criterion there will even be situations where the interior noise levels will be negative, which would be an even more confusing concept. (Noise levels below 32 would all be negative if one attempts to describe them in terms of NEF).

4. The use of Leq(24) to describe exterior and interior levels of road and rail noise is well established in Canada and consistent with other agencies throughout the world (except perhaps for the absence of a nighttime weighting factor). If Leq(24) is also used to describe interior aircraft noise, then it is possible to combine predicted levels of interior road, rail and aircraft noise. It is not possible to add an interior NEF level to an interior Leq level so there would be no way of addressing the cumulative effect of interior noise from road, rail and air traffic.

Considering the above, we suggest that interior noise from aircraft be assessed as follows:

i) Convert the exterior NEF to Leq(24) using an empirical formula such as Leq(24) = NEF - 32. (IBANA provides this conversion.)
ii) Use IBANA to predict the interior Leq(24) by entering the characteristics of the building.
iii) Compare the results against CMHC Leq(24) criteria.
iv) If there is a significant amount of noise from road or rail traffic, predict the interior Leq(24) from these sources using CMHC or other prediction methods, then combine the interior Leq(24) values for different sources (i.e. add the values logarithmically) and compare the total Leq(24) against CMHC criteria.

We recently wrote to Dr. John Bradley, at NRC to ask for his opinion on some of the above concerns. Dr. Bradley was primarily responsible for developing IBANA and has done most of NRC's recent work on Transport Canada's NEF program. As indicated in the attached correspondence, Dr. Bradley agrees that Leq is a more appropriate descriptor than NEF for interior noise levels.

Sincerely,

BKL Consultants Ltd.
per

Douglas S. Kennedy, P.Eng.

Enclosures

Principals:
Douglas S. Kennedy, P.Eng.
Michael R. Noble, M.Sc.
Douglas J. Whicker, P.Eng.

MEMORANDUM

To: John Bradley IRC Date: April 21, 2004

From: Douglas S. Kennedy

Copies To:

Subject: IBANA-Calc

I have been using the IBANA-Calc program recently in connection with a proposed residential project near Vancouver Airport and a couple of questions have arisen, which you may be able to shed some light on. The first relates to your suggested conversion Leq24 = NEF + 32.0. It would seem to me that the relationship between these two metrics would depend very much on the ratio of daytime to nighttime flights since NEF incorporates a nighttime weighting factor whereas Leq24 does not. This is probably discussed in more detail in your paper "NEF Validation Study: (1) Issues Related to the Calculation of Airport Noise Contours" but unfortunately I do not have a copy of this paper on hand.

The second question pertains to the Ontario Ministry of the Environment's guidelines for land use near airports. MOE presents indoor noise criteria in terms of NEF/NEP and indicates that these indoor values are obtained using the conversion NEF = Leq24 - 31dBA. Hence, I have the same question as noted above. That is, isn't this conversion highly dependent upon the frequency of nighttime flights? Of even more concern to me is that NEF is an outdoor criterion which was never intended to be used for describing interior noise. If a particular aircraft frequency spectrum is assumed, then the IBANA-Calc program will subtract the appropriate amount of building attenuation in each third octave band and then combine the resulting third-octave band levels, applying the appropriate A-weighting factors, to obtain an interior A-weighted noise level. Since NEFs are based on Perceived Noise Levels rather than A-weighted noise levels, I am guessing that IBANA-Calc was never intended to calculate "interior NEF values". I think that MOE's use of NEF/NEP to describe interior noise is questionable on a technical basis and will be confusing to many. Just as people are beginning to become familiar with Leq(24) criteria, for example, 35 dBA for bedrooms, they are now presented with a totally different criterion (e.g. NEF 0 for bedrooms). In fact, I heard a city planner the other day refer to the new MOE aircraft noise criterion for bedrooms as being "zero noise in bedrooms". One big advantage to the fact that IBANA-Calc predicts interior Leq(24) values is that it is consistent with CMHC's Road and Rail noise criteria and in residences affected by both aircraft noise and road or rail noise, both sources can be predicted separately and then easily combined to give an overall interior level.

Part of my concern over the interior NEF issue is that the City of Richmond, which incorporates Vancouver International Airport, is now considering following MOE's lead on this subject. Any comments you may have will be appreciated.

BKL CONSULTANTS LTD.
#308 - 1200 Lynn Valley Road, North Vancouver, BC V7J 2A2
Tel: (604) 988-2508 Website: http://www.bkla.com/
Consultants in Acoustics
Email: sound@bkla.com

Doug Kennedy

From: Claire Treharne
Sent: Monday, May 10, 2004 3:00 PM
To: Doug Kennedy
Subject: FW: Reply to FAX from Douglas Kennedy

-----Original Message-----
From: Bradley, John [mailto:John.Bradley@nrc-cnrc.gc.ca]
Sent: Monday, May 10, 2004 2:15 PM
To: sound@bkla.com
Subject: Reply to FAX from Douglas Kennedy

Douglas Kennedy,

While I was away you FAXed some questions to me with respect to sound insulation against aircraft noise.

You first asked about conversions from NEF to Leq24. You are of course correct that the conversion would depend on the portion of the aircraft noise that occurs during the night time period. The other factor is that not all NEF values are equal. We concluded that NEF values from the Transport Canada noise contours and the US INM noise contours were different and that true measured values would be approximately intermediate. We also calculated conversions for different proportions of night time events. The report that included this work is on the IBANA-Calc CD and is called "NEF-1.pdf". The actual conversion used in the IBANA-Calc software was what we thought was the best compromise. However, effectively all of the calculations are in terms of Leq so you could change the effective conversion by entering the appropriate outdoor Leq values rather than the NEF value.

The indoor NEF=0 criterion for bedrooms seems to come from the old CMHC document "New Housing and Airport Noise". (It also introduced the AIF quantity that I always find confusing). I think I would agree with you that and Leq24 measure is a better choice for indoor sound levels.

John Bradley
Institute for Research in Construction
National Research Council
Montreal Rd., Ottawa, Canada, K1A 0R6
telephone: 613-993-9747
FAX: 613-954-1495

ATTACHMENT 4

RICHMOND

Island City, by Nature

June 16, 2004

Dear Richmond Residents,

***Re: Airport Noise Survey** (A Random Sample)*

On May 26, 2004, the Richmond City Council authorized a random survey regarding airport noise and how it affects residents who live in buildings which have been built to the City's airport noise insulation standards.

Your building has been identified as such a building. You have been selected randomly for this Survey.

Request
Would you please:

- take a minute and complete the attached Survey, and
- return the Survey to the City of Richmond in the enclosed pre-paid envelope, or you may fax it, or drop it off directly at Richmond City Hall, by **June 30, 2004, by 5 PM.**

Your answers will be kept confidential.

The survey results will be considered by Council, as it improves residential development policies and airport noise building mitigation standards.

Additional Information and Comments?
If you are interested in further background information, the City's preliminary airport noise research is posted on the Richmond City's web site at:

http://www.city.richmond.bc.ca/webnews/news_index.htm

You may comment on the City's airport noise - residential development research by providing your comments to me **by June 30, 2004, by 5 PM.**

If you have any questions, please contact me at:

- Tel: 604-276-4193
- E-mail: efiss@city.richmond.bc.ca

Your co-operation is appreciated.

Yours truly,

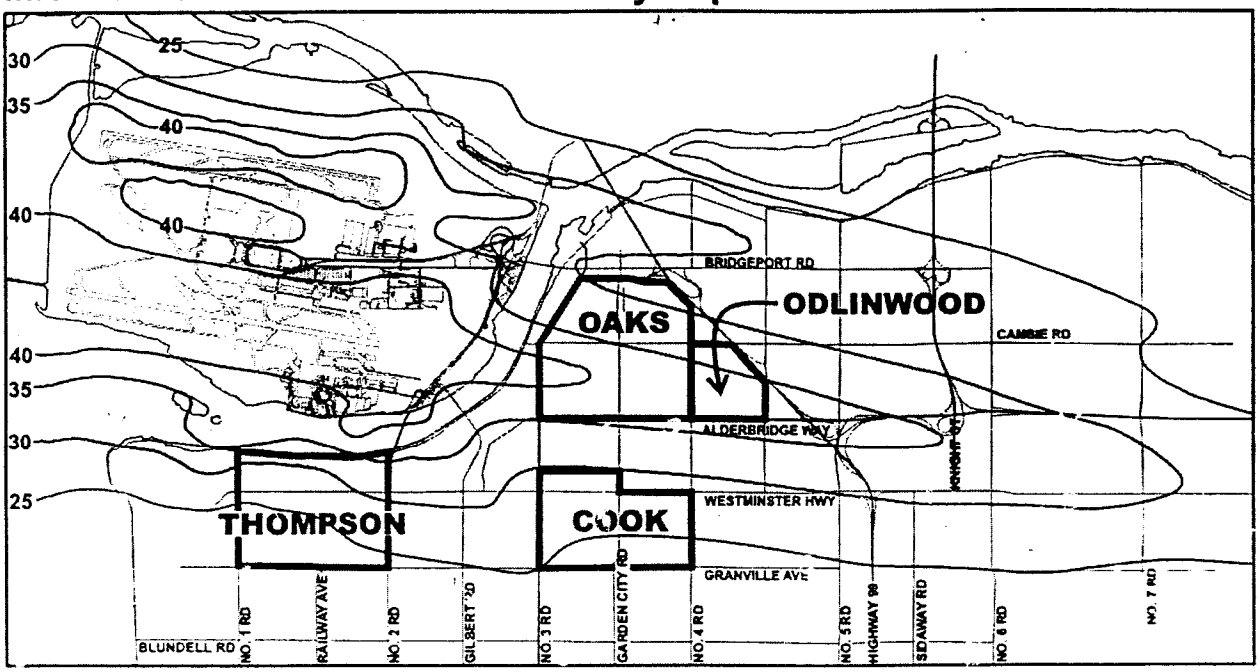
E. Fiss

Eric Fiss, Community Planner – Urban Design
Policy Planning Department
City of Richmond

pc:
Terry Crowe, Manager, Policy Planning

1301163

Informal Random Aircraft Noise Survey Map



RICHMOND

Island City, by Nature

June 16, 2004

Richmond City Airport Noise Public Survey
(A Random Survey)

1. How long have you lived at your current residence? _____ years
2. What is the number of people in your household? _____
3. What are the ages of people in your household? Please tick as many as apply:
   - ❑ Infant to 19 years of age
   - ❑ 20 to 59 years
   - ❑ 60 years and older
4. How old is your home? _____ years
5. How long have your lived at this address? _____ years
6. Do you know if airport noise insulation measures have been incorporated in the construction of your home? ☐ Yes ☐ No
7. Were the above airport noise insulation measures part of:
   - ☐ a renovation?; or
   - ☐ at the time of original construction?
   - ☐ Don't know.
8. Are you exposed to airport noise at your home? ☐ Yes ☐ No

   If so, in what ways? – Tick as many as apply

   Inside Your Home
   - ❑ During the day
   - ❑ At night
   - ❑ Has airport noise caused you sleep disturbance? ☐ Yes ☐ No
   - ❑ Other, please specify:_____

   Outside Your Home
   - ❑ Outdoors (e.g. in your backyard)
   - ❑ At neighbourhood facilities (e.g., schools)
   - ❑ Other, please specify:_____
9. Please describe the level of annoyance, if any due to airport noise:

   Inside Your Home

   ☐ Infrequent ☐ Moderate ☐ Severe

   Outside Your Home

   ☐ Infrequent ☐ Moderate ☐ Severe

10. Does airport noise affect your enjoyment of your onsite outdoor areas or activities?

☐ Yes ☐ No

If so, please describe:_____

11. Other comments:

Thank you for your participation!

To return your completed comment sheet please mail in pre-paid envelope;

or Fax to: **604-276-4052**

or drop off at:

Richmond City Hall
6911 No. 3 Road
Richmond, B.C. V6Y 2C1
Attn: Eric Fiss, Policy Planning

Like to be contacted for future meetings concerning airport noise?

Your name:	
Your mailing address:	
Street Number:	Street:
Apt:	
Richmond, BC	Postal code: V
Your E-mail:	

Please return the Survey by:
Please return the Survey to Richmond City hall by **June 30, 2004.**

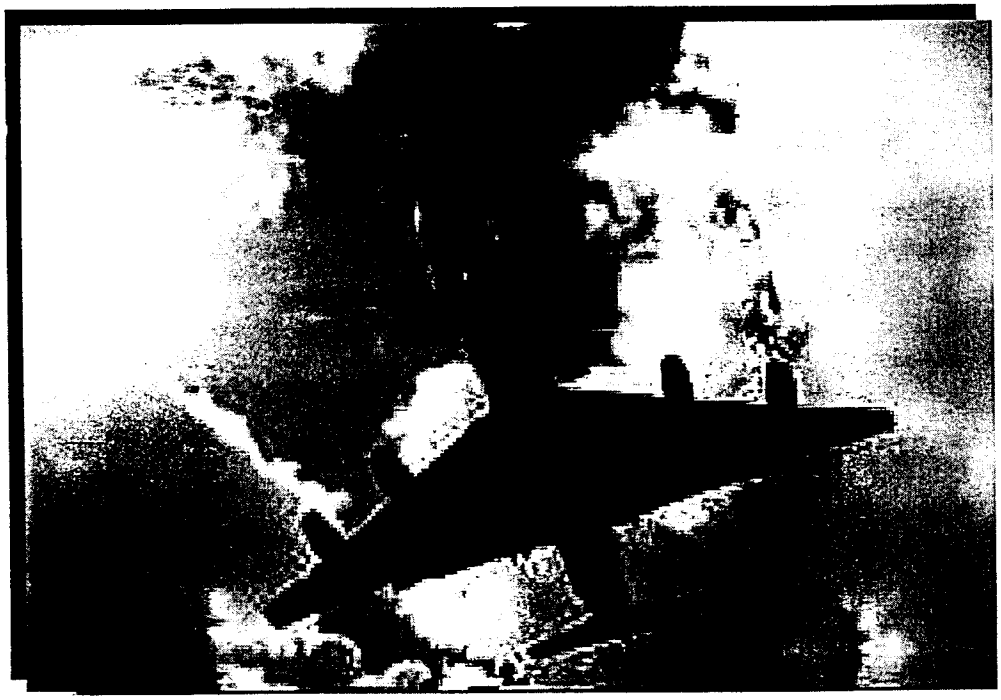
Thank You. If you need any more information please contact:

Contact Eric Fiss, Planner, City of Richmond at:Telephone 604-276-4193, Fax 604-276-4052 or E-mail: - efiss@city.richmond.bc.ca

City of Richmond

Airport Noise Review
Informal Resident Survey
and
Stakeholder Summaries

FINAL REPORT



1123.0014.01 / August 5, 2004

URBAN SYSTEMS
#2353 13353 Commerce Parkway
Richmond, BC, V6V 3A1
Phone: (604) 273-8700
Fax: (604) 273-8752

TABLE OF CONTENTS

APPENDICES

1.0 INTRODUCTION

The City commissioned Urban Systems to prepare this report to help the City develop a policy regarding airport noise and residential development. The first section of this report summarizes the results of an informal survey on airport noise that was conducted by the City of Richmond.

The City also invited stakeholders to submit written responses to the report entitled *Research to Review City Airport Noise and Residential Development Policy Consistency—Part 1: Research to Provide City Airport NEF Mitigation Standards*, which was prepared by Urban Systems and Pryde Schropp McComb for the City. The second section of the report summarizes these stakeholder comments.

The final section of the report provides summary comments on the relevance of the informal survey results and stakeholder submissions to the mitigation standards proposed in the Urban Systems/Pryde Schropp McComb report.

2.0 INFORMAL RESIDENT SURVEY

2.1 Methodology

As part of the community consultation, Council requested that information from those residents living in dwellings units which have been constructed with aircraft noise mitigation measures be asked how they perceived and experienced living in an area with aircraft noise.

An informal questionnaire was sent to 205 households selected at random, within four communities within the higher aircraft noise contours. The neighbourhoods selected were: Odlinwood, Oaks, Thompson, and Cook. The questionnaires were colour-coded to identify each neighbourhood to which they were mailed.

Using the City's GIS database, only dwellings constructed after 1989 (both detached and multi-family) were selected, covering the period of time in which noise insulation measures have been in effect. Further, the selection was limited to owner occupied dwellings. A computer randomizing program was used to anonymously make the selections. The questions asked about their awareness of aircraft noise and its impact on their indoor and outdoor living environments.

2.2 Results

In total, 82 surveys were completed. Table 1 includes a breakdown of the survey sample in terms of the respondents' neighbourhoods. Although surveys were completed by residents of all the targeted neighbourhood groups, the highest number of responses was from the Odlinwood neighbourhood. Four of the surveys were faxed to the City, making it impossible to determine the respondent's neighbourhood (therefore the "Unknown" neighbourhood category).

Table 1
Survey Respondents by Neighbourhood

Neighbourhood	Housing Type	Number of Respondents
Odlinwood	Single Family, Townhouses	40
Oaks	Single Family, Townhouses	15
Thompson	Single Family, Townhouses	13
Cook	Townhouses, Apartment	10
Unknown	-	4
All Neighbourhoods		**82**

Because this survey was not distributed to a random selection of the entire Richmond population (i.e. the survey was sent to only select neighbourhoods), the results presented in this report should not be used to extrapolate conclusions for the entire population. The results should only be used as a representation of all owner-occupied dwellings in Odlinwood, Oaks, Thompson, and Cook neighbourhoods that have been constructed with airport noise mitigation measures. However, the survey's small sample size weakens the statistical significance of the results as a representation of this smaller population.

In subsequent tables, survey results will be presented in disaggregate (broken down by neighbourhood groupings) and will be summarized in aggregate. It should be noted, however, that due to the small sample sizes of each of these neighbourhood groupings, results that have been disaggregated to the neighbourhood level of analysis are even less reliable than the statistics for all of the neighbourhoods combined. The disaggregated statistics are presented for interest only.

Table 2 provides basic demographic information on the survey sample. The average household size was 3.4 people, and the majority of households contained at least one resident who was between 20 – 59 years of age.

Table 2
Demographic Characteristics by Neighbourhood

Neighbourhood	Average Number of Residents per Household	Percentage of Households Having at Least One Resident in Age Group*		
		19 years and under	20-59 years	60 years or over
Odlinwood	3.3	45.0%	90.0%	20.0%
Oaks	3.9	26.7%	100.0%	53.3%
Thompson	3.5	30.8%	84.6%	30.8%
Cook	2.7	20.0%	90.0%	20.0%
Unknown	4.3	50.0%	100.0%	50.0%
All Neighbourhoods	**3.4**	**36.6%**	**91.5%**	**29.3%**

*This column indicates if an age group is represented within a household, but does not indicate how many of each age group live in each household.

Table 3 summarizes the household characteristics of survey respondents. The average length of tenure at the current residence was 6.1 years, while the average age of respondents' current home was slightly longer at 8.3 years.

Table 3
Household Characteristics by Neighbourhood

Neighbourhood	Average Length of Tenure at Residence (years)	Average Age of Home (years)
Odlinwood	5.4	7.1
Oaks	8.3	12.9
Thompson	8.5	11.0
Cook	2.3	2.3
Unknown	6.6	9.3
All Neighbourhoods	**6.1**	**8.3**

Table 4 provides information about the respondents' knowledge of noise insulation measures incorporated in their homes. Very few respondents (12.2%) indicated that they knew if airport noise insulation measures had been incorporated in their homes. Similarly, very few respondents knew if noise insulation measures were incorporated as part of a renovation or at the time of original construction. These figures should be treated with some caution, however, as some respondents who indicated that they didn't know if airport noise insulation measures had been incorporated in their homes also responded that they knew when noise insulation measures were incorporated into their homes (and vice versa), which raises concerns with regards to the validity of the responses to this question.

Table 4
Noise Insulation Measures by Neighbourhood

Neighbourhood	Residents That Know If Airport Noise Insulation Measures Are Incorporated In Their Homes		Incorporation Of Noise Insulation Measures		
	#	%	# Renovated	# Original	# Don't Know / No Response
Odlinwood	8	20.0%	1	5	34
Oaks	1	6.7%	0	0	15
Thompson	1	7.7%	0	3	10
Cook	0	0.0%	0	1	9
Unknown	0	0.0%	0	0	4
All Neighbourhoods	**10**	**12.2%**	**1**	**9**	**72**

Table 5 outlines the number of responcents who indicated they were exposed to airport noise at home. The vast majority of responderts (97.6%) indicated that they were exposed to airport noise at their homes.

Table 5
Exposure to Airport Noise by Neighbourhood

Neighbourhood	Number Exposed to Airport Noise at Home	
	#	%
Odlinwood	39	97.5%
Oaks	15	100.0%
Thompson	12	92.3%
Cook	10	100.0%
Unknown	4	100.0%
All Neighbourhoods	**80**	**97.6%**

Despite the fact that fact that 97.5% of respondents indicated that they were exposed to airport noise, the majority of respondents (56.1%) indicated that the level of annoyance inside the home was only moderate, as shown in Table 6. Approximately 20% of respondents felt that the level of annoyance was infrequent and 22% of respondents felt it was severe.

Table 6
Level of Annoyance Inside Home Due to Airport Noise

Neighbourhood	Infrequent		Moderate		Severe		Other	
	#	%	#	%	#	%	#	%
Odlinwood	3	7.5%	23	57.5%	13	32.5%	1	2.5%
Oaks	2	13.3%	10	66.7%	3	20.0%	0	0.0%
Thompson	7	53.8%	5	38.5%	1	7.7%	0	0.0%
Cook	4	40.0%	5	50.0%	1	10.0%	0	0.0%
Unknown	1	25.0%	3	75.0%	0	0.0%	0	0.0%
All Neighbourhoods	**17**	**20.7%**	**46**	**56.1%**	**18**	**22.0%**	**1**	**1.2%**

[1] One resident selected both "moderate" and "severe".

Table 7 indicates the level of annoyance outside the home caused by airport noise. Most respondents (45.1%) indicated that the level of annoyance was moderate. The second highest proportion of people (34.1%) indicated that the level of annoyance outside the home was severe.

Table 7
Level of Annoyance Outside Home Due to Airport Noise

Neighbourhood	Infrequent		Moderate		Severe		Other / Unknown	
	#	%	#	%	#	%	#	%
Odlinwood	2	5.0%	19	47.5%	18	45.0%	1	2.5%
Oaks	2	13.3%	6	40.0%	7	46.7%	0	0.0%
Thompson	6	46.2%	6	46.2%	1	7.7%	0	0.0%
Cook	2	20.0%	5	50.0%	0	0.0%	3	30.0%
Unknown	1	25.0%	1	25.0%	2	50.0%	0	0.0%
All Neighbourhoods	**13**	**15.9%**	**37**	**45.1%**	**28**	**34.1%**	**4**	**4.9%**

As shown in Table 8, of those that responded that they were exposed to airport noise at home, the most significant type of exposure to airport noise was inside the home during the day (90.2% of respondents). A significant number of respondents also indicated that they were exposed to airport noise inside the home at night (78%) and outdoors, i.e. backyard (82.9%). Comparatively, 40.2% of respondents indicated that they were exposed to airport noise at neighbourhood facilities.

Table 8
Types of Exposure to Airport Noise

Type of Exposure to Airport Noise	Number Exposed to Airport Noise at Home	
	#	%
Inside the home (during the day)	74	90.2%
Inside the home (at night)	64	78.0%
Outdoors (i.e. backyard)	68	82.9%
At neighbourhood facilities	33	40.2%

A number of respondents also provided additional comments regarding the types of airport noise they were exposed to inside and outside their homes. These comments are summarized in Table 9. Inside the home, respondents generally commented on the timing and intensity of noise exposure. Outside the home, respondents generally commented on specific activities and outdoor amenities that were affected by airport noise.

Table 9
Additional Comments Regarding Exposure to Airport Noise

Comments Regarding Airport Noise Exposure	Number of comments
Inside the Home	
1. In the morning / weekends / evenings: between 7 and 8 am/ noise wakes me up early in the morning/ early AM evenings or weekends/ 6 am in the morning/ sea plane action in the early mornings/ sea plane noises heard in the evening.	6
2. Intensity of noise exposure: can't hear or concentrate/ the whole house shaking/ I could hear the airplanes loud and clear/ hard to hear the voice on the phone or television, the door bell/ affected my ear hearing/ need to raise voice/ volume on television needs to be increased/ in long term it caused a habit of loud speaking and hearing impairment.	7
3. Only when windows are open	1
4. Other	2
Outside the Home	
1. At park, playground, or street: at Odlin park/ at the park/ playground, park, and shopping/ streets, playgrounds and parks.	4
2. Certain activities: talking with one or a group of people/ while caring my garden, watering my lawn, washing my car, cleaning the driveway, cleaning my gutters.	2
3. Other	1

Table 10 indicates the amount of sleep disruption caused by airport noise. Overall, 69.5% of respondents said airport noise has caused them sleep disturbance.

Table 10
Sleep Disruption Caused by Airport Noise

Neighbourhood	Number Disrupted by Airport Noise	
	#	%
Odlinwood	32	80.0%
Oaks	10	66.7%
Thompson	7	53.8%
Cook	5	50.0%
Unknown	3	75.0%
All Neighbourhoods	**57**	**69.5%**

Table 11 outlines the number of respondents who felt that airport noise affected their enjoyment of their onsite outdoor areas or activities. Comparatively, 43% of respondents indicated that airport noise affected their enjoyment of onsite outdoor areas or activities.

Table 11
Airport Noise and Enjoyment of Onsite Outdoor Areas

Neighbourhood	Number that Agree Airport Noise Affects Enjoyment of Onsite Outdoor Areas	
	#	%
Odlinwood	22	55.0%
Oaks	6	40.0%
Thompson	4	33.3%
Cook	1	10.0%
Unknown	3	75.0%
All Neighbourhoods	**36**	**43.9%**

Residents who responded that airport noise impacts their enjoyment of onsite outdoor areas or activities were asked to describe how their enjoyment was affected. Table 12 summarizes the descriptions of how residents' enjoyment of onsite outdoor areas or activities is affected by airport noise.

Table 12
Airport Noise and Enjoyment of Onsite Outdoor Areas

Descriptions of How Airport Noise Affects Enjoyment of Onsite Outdoor Areas or Activities	Number of Comments
1. Affects communication: Can't communicate, noise is too loud/ can't hear or talk properly/ noise level can be exceedingly loud/ conversations drowned out/ cannot carry on conversation/ when talk outside of building are often disturbed/ we have to stop talking/ can't hear ourselves talk/ it is impossible to hear/ hard to concentrate.	15
2. Affects certain activities: while planting and watering the grass/ sometimes during BBQ or swimming, only in summer/ playing in the park, BBQ, exercise outdoor, walking dog, enjoying the breath of fresh air/ gardening/ reading, playing/ Biking, watching TV, walking, jogging, picnic, basketball/ very much eliminates many outdoor and social activities/ to enjoy the quietness in the backyard.	8
3. Not a major problem: I knew Richmond was close to the airport when I chose to live here so I expect airport noise/ only bothered by seaplanes/ sometimes it is noisy but I generally do not hear it, generally not bothersome.	3
4. Other.	5

Table 13 summarizes additional comments provided by respondents. Many respondents were concerned with late night noise caused by airplanes and indicated that the level of annoyance was most severe in the summer with windows being opened. Several respondents also suggested that airplane routing should be changed and commented on specific effects of airplane noise on their activities. Some other respondents indicated that airport noise is a quality of life issue and some responded that airport noise is not a major concern.

Table 13
Other Comments

Comment	Number of Comments
1. Late night noise: Airplanes fly over our house at all hours of day and night, even at 2 or 3am/ flights from 1am to 4am are very noisy/ it annoyed me even at 2:00, 3:00, 6:00am/ the noise is after 1am/ we have a problem with planes taking off between 11pm and 7am/ woken up between 12:00 to 3:00am/ Ban all flights above the urban areas after 11:00pm to 7:00am.	7
2. Have to open windows / Most severe in summer: When it gets hotter I have to open windows and plane noises will be quite loud if I am indoor/ It is very annoying to be woken up in middle of night at summertime with windows open/ on warm days where we usually open windows airport noise causes some level of disturbance or annoyance/ level of annoyance increases in summer/ hot days when windows are open I'd be awaken by airplane noise.	5
3. Airplane routing should be changed: The arrival approach should be from Vancouver south/ as a taxpayer I strongly request that the route should be changed from time to time/ arrange the aircrafts moving up to the west at the sea/ strongly recommend the plane fly to the sea side, after then, when the planes are high enough, they can come back to their cruising track (same for landing)/ move the runway for take-off to further north.	5
4. Effects of airplane noise: Large airplanes cause the building structure to shake/ it is very frustrating not being able to hear others talk whenever an airplane flies over our home/ can't hear anything on the phone or television even with windows and doors closed/ can't hear what's being said on the phone or on television.	4
5. Not a major concern: I've lived in this area for 10 years and can see the improvement of airport noise/ I don't mind.	2
6. Quality of Life / Equity Issue: All the residents should receive equal, fair quiet living/ I truly hope the Richmond City Council would consider reducing the noise level caused by the airplanes, this would definitely improve the quality of living in this area.	2
7. Seaplanes are major concern: Main nuisance are older waterplanes with older engines.	1
8. City should get special certificates confirming noise insulation standards are met.	1

3.0 STAKEHOLDER RESPONSE

3.1 Methodology

The report, "Preliminary Findings: City Airport Noise and Residential Development Policy Consistency Research", was made available to the public at City Hall, on-line through the City's web site, and was mailed to 50 organizations and individual stakeholders. Staff ant the City's consultants, made presentations of the research findings to the community and stakeholders at a Public Meeting held on June 2, 2004, to the Richmond Liaison Committee for the Urban Development Institute (UDI) on June 3, 2004, and to the YVR Aeronautical Noise Management Committee on June 9, 2004.

3.2 Summary

The City of Richmond invited 50 stakeholder groups to provide feedback on Part I of the *Research to Review City Airport Noise and Residential Development Policy Consistency* report. In total, feedback was received from 23 of the 50 stakeholder groups. A summary of the stakeholders who were invited to respond and who provided feedback is provided in Appendix A.

Several common themes emerged from the stakeholder comments. These common themes are summarized in Table 14. The most common theme that emerged was a concern about or opposition to the recommendations in the report because it was felt that the recommendations were contrary to Transport Canada's guidelines. Another common theme that emerged was the suggestion that a successful noise mitigation strategy requires a "balanced approach" that emphasizes compatible and responsible municipal land use planning as a fundamental tool to minimize noise impacts. In addition, many stakeholders expressed concern that, if the recommendations are adopted, the City of Richmond and the Vancouver International Airport Authority may face an increase in complaints, which could constrain the airport's future operations and hamper its global competitiveness.

Other common themes included a general need to conduct further research or a need to conduct research under different terms of reference; a general criticism of the use of NEF contours and recommendations that these contours should be supplemented by other noise measurement approaches; and concerns that stakeholders were not given sufficient time to adequately provide input to this issue.

It should also be noted that the majority of stakeholders were thankful for the opportunity to provide feedback on this issue and commended the City of Richmond on its attempt to develop a clear and consistent policy on this issue.

Table 14
General Themes of Stakeholder Comments

Theme of Comment	Number of Comments
1. Concerned about / opposed to recommendations because they are contrary to Transport Canada guidelines	14
2. Compatibility of responsible land use planning as a noise mitigation measure	10
3. City/ Airport will still get complaints	8
4. Need for more research or better research questions / need for more appropriate terms of reference	5
5. Allowing residential development will lead to constraints on the airport	5
6. NEF contours: general criticism/ should be supplemented by other noise measurements	3
7. Insufficient time for stakeholders to review report / provide input	2
8. Concerns regarding maintenance/ enforcement/ technical/ approval process	2

Table 15 summarizes the level of stakeholder agreement with the recommendations. Most stakeholders (70% of respondents) expressed general disagreement with the recommendations in the report. In contrast, only about 17% of stakeholders expressed general agreement with the recommendations.

It should be noted that not all stakeholders explicitly indicated if they agreed or disagreed with the recommendations. Where this was the case, the level of agreement with the recommendations was subjectively determined based on other comments made by the stakeholder (a more detailed summary of stakeholder comments is included in Appendix B). For example, some stakeholders disagreed with the terms of reference or the methodology that was used to arrive at the recommendations in the report, but did not explicitly disagree with the recommendations themselves. In some other cases, the stakeholders did not specifically address the recommendations in the report, but addressed concerns with airport noise in more general terms. In these cases, the level of agreement with the recommendations was determined based on the overall nature of the comments made by the stakeholder. In some cases, however, the general level of agreement of the stakeholder was unclear or the stakeholder indicated that they had no opinion on this issue.

Table 15
Level of Stakeholder Agreement with Report Recommendations

Level of Agreement with Recommendations	#	%
General Agreement	4	17%
General Disagreement	16	70%
No Opinion / Not Clearly Indicated	3	13%
Total	**23**	**100%**

Many stakeholders provided specific and detailed comments to elaborate on the themes identified in Table 14. Excerpts of some of the stakeholder comments are provided below. The excerpts below are not intended to provide a complete or representative account of the comments that were made, but are provided to highlight some of comments made by various stakeholder groups for informational purposes. A complete summary of the comments is provided in Appendix B. It is recommended that the complete summary in Appendix B be referred to in addition to the comments below.

Examples of Comments in Support of the Report's Recommendations:

"(we are) confident that our proposed condominium project...would satisfy the proposed noise control requirements" Mr. Danny Leung, Fairchild Developments Ltd.

"Various developer members have informed us that their current sales and customer information for past residential projects built and sold within these contour areas indicates that buyers are aware of the airport noise before they purchase their home, and that they are not bothered by it" Mr. Bob Ransford, Chair, UDI – Richmond Liaison Committee, Urban Development Institute – Pacific Region

Examples of Comments Against the Report's Recommendations:

"In order to derive the maximum utility from YVR, ensuring compatible land use in the vicinity of the airport is essential. Several airports worldwide have had restrictions placed on their operations or have been forced to relocate in large part as a result of encroaching incompatible development. In today's global marketplace, with the opportunities it provides, we cannot afford to jeopardize the utility of YVR, as has been done at airports elsewhere in the world" Mr. Kevin Falcon, BC Minister of Transportation

"Vancouver International Airport and Transport Canada have expended considerable resources defending a civil legal action brought forward by a number of Richmond residents concerning noise from aircraft operations. While the Airport Authority were ultimately successful in their defence, continued development in areas considered to be incompatible would increase the risk of new legal action in the future" Mr. Louis Ranger, Deputy Minister of Transport, Transport Canada.

"The consultant's primary task is identified as developing a 'how to plan for residential developments while having a regard for airport noise concerns'. This is in our opinion premature. The initial task or question should be whether residential development be permitted at all in the areas under consideration" Dr. James Lu, Medical Health Officer, Richmond Health Services

"Transport Canada's guidelines represent a long-established scientific guideline for land-use planning that has served for many years as the starting point for the deliberations of Noise Management Committees across the country. We know that when guidelines are violated, the airport authority can expect to cope with a radically higher volume of complaints from the surrounding community, which will ultimately affect the airport's ability to function effectively in a national airport system" Fred Jones, VP Flight Operations, Canadian Airports Council

"The fact that there are currently residential developments in these areas does not mean that there should be further development in these areas" Mr. Randy Ash, Senior Environmental Health Officer, Vancouver Coastal Health Authority

"The economic impact of the prospective development was not evaluated by your consultants and we believe that there will be a significant negative effect on the local and provincial economy if businesses cannot rely on continued liberal access to air service, and to markets inside the province and globally" Mr. Fred Jones, VP Flight Operations, Canadian Airports Council.

Examples of Neutral Comments:

"One approach that deserves consideration would be to adopt a no-net-loss policy on new housing stock...those foregone housing units in NEF contours of 30+ may need to be relocated in other part of Richmond through increased in allowable density or building height. In the spirit of cooperation we would hope and request that the Vancouver International Airport Authority could become an advocate for the relaxation of current blanket height restrictions in Richmond that result from Transport Canada's regulations around aeronautical safety" Mr. Bob Ransford, Chair, UDI – Richmond Liaison Committee, Urban Development Institute – Pacific Region

"Land use compatibility zoning is a challenge, however it remains the primary tool available to address aircraft noise concerns" Mr. Claudio Bulfone, Inspector Civil Aviation, Transport Canada

"To move forward on this important issue the City of Richmond should develop a policy identifying areas where residential development is relatively unaffected by aircraft noise; where residential development should be restricted and subject to mandatory conditions; and areas where residential development should be prohibited" Larry Berg, President and CEO, Vancouver International Airport Authority.

4.0 CONCLUSIONS

In terms of the stakeholder responses, most felt that the terms of reference were not addressing the appropriate question. Table 7 of the City's April 2004 *Staff Report*, therefore, is irrelevant to these stakeholders.

In terms of the informal resident survey responses, due to the small sample size, the survey can be considered only anecdotal, so no major conclusions can be drawn from it. However, it appears that people are at least moderately bothered by the noise, which would suggest allowing residential development would expose a greater number of people to this scale of nuisance. Without knowing what NEF 0 of 5 actually means in terms of decibels, and without knowing what the surveyed residents hear in decibels, we cannot draw any meaningful conclusions.

APPENDIX A
LIST OF STAKEHOLDER GROUPS
INVITED TO PROVIDE FEEDBACK

	Stakeholder	Date Report Sent	Attendance at June 2nd Public Meeting	Feedback Received
1	Mr. Larry Berg President and CEO Vancouver International Airport Authority	May 20		Letter, June 30, 2004
2	Mr. Mark Holzman Acting Director Policy & Research Division Central Mortgage & Housing Corporation	May 20		
3	Ms. Maureen B. Enser Executive Director Urban Development Institute – Pacific Region	May 20	Meeting with UDI - Richmond Liaison Committee	Letter, June 29, 2004 (Bob Ransford, Chair)
4	Mr. Louis Ranger Deputy Minister of Transport Transport Canada	May 20		Letter, June 14, 2004
5	Mr. Kevin Falcon Minister of Transportation	May 20		Letter, June 30, 2004
6	Dr. James Lu Medical Health Officer Richmond Health Services	May 25		Letter, June 10, 2004
7	Ms. Anne Murray VP, Community & Environmental Affairs Vancouver International Airport Authority	May 20	Anne Murray Fred Tewfick Mark Cheng	Letter, June 30, 2004 Report, "Airport Vicinity Residential Land Use Planning Practices," Wyle Laboratories Report, "Aircraft Noise & Vicinity Residential Land Use Planning: Global Trends and Practices," Intervistas
8	The Honourable David Anderson Minister of the Environment Central Mortgage & Housing Corporation	May 20		
9	Mr. Peter E. Simpson Executive Vice President Greater Vancouver Home Builder's Association	May 20		
10	Ms. Cynthia Hawksworth Director, Planning & Programs Ministry of Community, Aboriginal & Women's Svcs.	May 20		Letter, June 24, 2004
11	Mr. Andrew Huige President The BC Aviation Council	May 20		
12	Mr. Rick Gage President Canadian Business Aircraft Association	May 20		Letter, June 30, 2004
13	Advisory Committee on the Environment	May 25	Presentation to Committee, June 16, 2004	
14	Mr. Dan Doyle Deputy Minister of Transportation The Province of British Columbia	May 25		
15	Mr. Fred Jones Vice President Flight Operations Canadian Airports Council	May 28		Letter, June 30, 2004
16	Mr. Craig Richmond President The British Columbia Aviation Council	May 26		
17	Mr. Don McLeay Director Employee Safety & Environmental Affairs Air Canada	May 25		

	Stakeholder	Date Report Sent	Attendance at June 2 Public Meeting	Feedback Received
18	Mr. Kevin McAuley Advisor of Environmental Development and Dangerous Goods Westjet Airlines Ltd.	May 25		
19	Mr. Alan Gershenhorn President United Parcel Service (Canada) Ltd.	May 25		
20	Ms. Deborah J. Nebert Senior Manager Federal Express (Canada)	May 25		
21	Mr. Ralph Gilpin-Payne Director Flight Operations Support Cargojet Airways Ltd.	May 25		
22	Ms. Peggy Willingham Environmental Affairs Alaska Airlines	May 26		
32	Mr. Bruce Spencer Cargo Manager Western Canada Cathay Pacific Airways	May 26		
42	Mr. Greg Carter Director of Flight Operations Kelowna Flightcraft	May 26		
25	Mr. Graham Riddell Manager Air Operations Purolator couriers Ltd.	May 26		
26	Mr. Bob Palmer Acting Vice-President Flight Operations Harmony (HMY) Airways Ltd.	May 26		
27	Ms. Mary Loeffelholz Regional Director - Airport Access & State Affairs Northwest Airlines	May 26		
28	Mr. James Watson City of Richmond Citizen Representative - YVR Aeronautical Noise Management Committee	May 26		Facsimile. June 29, 2004
29	Mr. Tom Chan City of Richmond Citizen Representative - YVR Aeronautical Noise Management Committee	May 26	Yes	Letter, June 26, 2004
30	Mr John Wong The Oaks Residents Association Unit 1000 – 8888 Odlin Crescent	May 26		
31	Ms. Meg Brown Citizen Representative, Vancouver YVR Aeronautical Noise Management Committee	May 28	Presentation to Committee June 9, 2004	Letter, June 17, 2004, by Anne Murray, Chair, YVR ANMC
32	Mr. Jack Cameron Citizen Representative, Corporation of Delta YVR Aeronautical Noise Management Committee	May 28		
33	Mr. Randy Ash Senior Environmental Health Officer Vancouver Coastal Health Authority	May 28		Facsimile, June 30, 2004
34	Mr. Scott McPherson Canadian Business Aircraft Association	May 28		
35	Mr. Don McLeay Director, Environmental Affairs AIR CANADA	May 28		Letter, June 30, 2004
36	Mr. J. Clifford McKay President and CEO AIR TRANSPORT ASSOC. OF CANADA	May 28		Letter, June 30, 2004
37	Mr. Alan Grimston	May 28		

	Stakeholder	Date Report Sent	Attendance at June 22nd Public Meeting	Feedback Received
	Citizen Representative, Vancouver YVR Aeronautical Noise Management Committee			
38	Mr. Daryl Hargitt Musqueam Indian Band	May 28		
39	Mr. Claudio Bulfone Inspector Civil Aviation TRANSPORT CANADA	May 28	Yes	Letter, June 11, 2004
40	Capt. Kevin Kandal Air Canada Jazz	May 28		
41	Ms. Teresa Ehman Manager, Environmental Affairs AIR CANADA	May 28		
42	Mr. Fred Luettger Manager IFR Operations - Vancouver ACC NAV CANADA	May 28		
43	Mr. Norman Tam Tangram Developments			Facsimile, May 13, 2004
44	Ms Georgene & Mr. Leonard Dunlop 9340 Odlin Road		Yes	Letter, June 25, 2004
45	Mr. Vic Farmer 5728 Vermilyea Court			Letter, May 27, 2004
46	Mr. Gunther Matschnigg Senior Vice President, Safety, Operations & Infrastructure International Air Transport Association Montreal			Letter, June 30, 2004
47	Jacqueline Kost ACC Chair Vancouver International Airport Airline Consultative Committee	To various airlines, above		Letter, June 22, 2004
48	Mr. George Struk 9600 Cabie Rd			Letter, June 30, 2004
49	Mr. Danny Leung Fairchild Developments Ltd.			Letter, June 8, 2004
50	Mr. Douglas Kennedy BKL Consulatants Ltd.			Letter, June 8, 2004

APPENDIX B

SUMMARY OF STAKEHOLDER COMMENTS

ieneral Comments 2	General Comments 3	General Comments 4	General Comments 5
esidential development is not :ommended anywhere within the +30NEF ontour, but some areas are clearly worse ıan others.			
oncerns regarding the relationship of NEF :andards to other more familiar noise :andards such as CMHC noise guidelines nd the BC Building Code acoustic :andards.	Is the City considering some type of disclaimer to prevent future developer liability over noise if a building is constructed in accordance with drawings that have been signed-off by a noise consultant and accepted by Richmond?	Customer information reveals that, for other past projects built and sold within these contour areas, buyers are aware of the airport noise before they purchase their home, and they are not bothered by it.	Possibility of adopting a no-net-loss policy on new housing stock whereby it would be necessary to accommodate new residents elsewhere in the City through increases in allowable density or building height. We would hope that, in the sprit of cooperation, YVR could become an advocate for the relaxation of current blanket height restrictions in Richmond that result from Transport Canada's regulations around aeronautical safety.
VR and Transport Canada have expended onsiderable resources defending a civil gal action brought forward by a number of ichmond residents concerning noise from rcraft operations. While YVR and TC were timately successful in their defence, ontinued development in areas considered be incompatible would increase the risk new legal action in the future.			
he consultants seem to recommend a igher density of residential development ıe closer one gets to the airport (housing nited to residential towers or multiple vellings in the highest noise exposure eas). This seems inconsistent with the eaning of compatible.	To move along a path of permitting residential developments in high noise areas would be an irreversible decision that would in all likelihood result in pressure for unacceptable operating constraints on YVR.	A few other provinces, namely Alberta and Ontario, have taken a more direct approach to the subject of land use planning in the vicinity of airports, directly through legislation or through the issuance of land use zoning guidelines for local government.	

ieneral Comments 2	General Comments 3	General Comments 4	General Comments 5
he consultant's primary task is identified s developing a "how to plan for residential evelopments while having a regard for irport noise concerns". This in our opinion ; premature. The initial task or question hould be whether residential development e permitted at all in the areas under onsideration.	A noise report that ignores traffic noise for an area such as the City Center may be of limited value.	NEFs are not always the best or only parameter that should be considered. Actual real life data are always better than theoretical noise gradient plots based on numerous and compounding assumptions. We would therefore recommend that the actual numbers and frequencies of flights over an area and the associated noise levels be considered, but be used whenever possible as the preferred (benchmark) noise information.	Schools and Daycares are not suitable for areas located under the flight paths.
/e are disappointed with and oppose...the remise that high density residential evelopments can occur anywhere. We ecommend that the City develop a policy hich outlines areas where residential evelopment is relatively unaffected; where esidential development should be restricted nd subject to specific, strong and andatory conditions; and areas where esidential development should be rohibited due to aircraft noise.	Gains achieved through work by the Committee (to improve the noise environment around the airport) will be lost if more residential development is permitted in high noise and air traffic areas.	It is the responsibility of local planning authorities to contribute to efforts to make airport noise management strategies successful.	The preliminary report does not sufficiently assess the magnitude of risk to the, the Airport, and the air operators resulting form the choice to proceed with increased residential developments in high airport noise areas.
oise abatement procedures and echnological improvements to aircraft and ngine design are negated without ompatible land use planning.	The findings that suggest that residential developments can be accommodated in high airport noise with a high standard of liveability are contrary to known research and international practices about community response to noise and responsible land use planning practices around airports.	Any limitation or restrictions to airport access will have a direct negative impact on the aviation industry and subsequent growth of the City and surrounding areas. This will translate into lost business opportunities as a result of limitations of available air services and resultant degraded links to national and international markets.	

eneral Comments 2	General Comments 3	General Comments 4	General Comments 5
/ith their support of housing in +35 NEF ontours, the City is setting up an ıcreasingly large number of residents for a ompromised lifestyle. This does not need) happen.			
believe that the terms of reference rovided to the Consultants by the City resuppose that residential development ill occur when the City should have asked hether residential developments should ccur in +30 NEF areas based on a set of valuative criteria.	Does not agree with the logic that "a high-rise apartment/condo dweller will be less likely to expect to enjoy outdoor use of that property than an owner of a single-family dwelling" as apartment dwellers also enjoy outdoor activities and should not confine these residents to synthetic, sealed environments.	The recommendation to replace noise sensitive outdoor land uses with equivalent indoor amenities with the required acoustic insulation is not necessarily entirely possible and is unreasonable and will become unliveable. Not consistent with Richmond's "Garden City" concept which it emulates.	
/hile it may be technically possible to ıitigate the airport noise in some if not all igh NEF areas, noise mitigation is effective nly with doors and windows closed.	It is preferable to have child care and schools located in or nearby residential areas, but if residential developments are allowed to go ahead in areas where it is not recommended, these residents will likely expect these facilities to be nearby. This could lead to increased pressure in the future to put these services nearby even though minimum learning may be impaired with high noise levels.	It could be argued that if the City of Richmond is willing to go against the Transport Canada guidelines, then the airport authority should reconsider the idea of providing noise relief as well.	Traffic and RAV could be additional noise sources that should also be considered.
roper responsible land use planning round airports is an extremely critical lement in mitigating the impact of aircraft oise.	In our experience, population encroachment on an airport results in restrictions being placed on the airport's operations.	From experience, notices at sales offices or clauses on property deeds to alert potential buyers that the property is in a noise-sensitive area do not work.	The City of Richmond has the responsibility to protect any potential homeowner by restricting residential development in the areas above 30 NEF through effective land use planning; to do otherwise would be irresponsible.
he incentive to purchase new, quieter ircraft can be reduced by land use lanning that will tend to raise a higher umber of complaints from the surrounding ommunity.	Absent from the study is any discussion of the economic impact of implementing the recommendations.	It strikes this association as odd that the City of Richmond would task the consultants to examine how the City could incorporate residential developments in high airport noise areas, rather than ask them if it would be advisable to allow this form of development to take place.	Once a residential community is established in a noise sensitive area, the carriers and the airport authority receive the brunt of complaints, and are left holding-the-bag for ill-conceived land-use planning decisions.

General Comments 2	General Comments 3	General Comments 4	General Comments 5
Recommending indoor amenities is part of the problem, not part of the solution. My family's health has not suffered from living under the flight path and we all enjoy outdoor activities.	We strongly support allowing Cambie West to remain residential and to allow further residential development of the area.		
Urge the city of Richmond to prevent any residential development in noise sensitive areas that could be based on short-term considerations - especially given the land-use management is and should remain a long-term planning tool.			
The City of Richmond should, on a priority basis, develop and implement clear, comprehensive controls to prohibit any new residential development in areas affected by high aircraft noise (NEF 30+) consistent with Transport Canada and ICAO recommendations and standards.	In the absence of these necessary controls, the City must agree to indemnify the airport and airlines, by means of a covenant on the deed on property, from any legal action taken as a result of this encroachment and will not be subject to any further operating restrictions due to the same.	The City should establish real estate disclosure requirements.	
People are exposed to various noise influences in urban living. Residents should be given the choice of assessing the various influences/amenities of a given neighbourhood and then making their own choice.	It seems unrealistic to shut the door to a quality high density residential neighbourhood in Cambie West due to NEF patterns...Cambie West's convenient location couple with high quality buildings in a high density lifestyle would be very attractive.		
We have concern with the use of NEF rather			

Review of

WYLE LABORATORIES REPORT WR 04-15

"AIRPORT VICINITY RESIDENTIAL LAND USE PRACTICES"

June, 2004

Reviewed for;

City of Richmond
Policy Planning Department

Reviewed by:

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July 26, 2004

1.0 INTRODUCTION

Wyle Laboratories (Wyle Acoustics Group) of Arlington Virginia has prepared a report (WR 04-15) for the Vancouver International Airport Authority which reviews airport noise impact control guidelines currently in place in Canada and other jurisdictions and draws upon recent research in the field of community noise impact assessment and control to develop some new guidelines. These new guidelines are intended to limit community exposures to the noise from individual aircraft movements (associated with takeoffs or landings) rather than to daily average aircraft noise levels such as are reflected by preexisting airport noise metrics such as Noise Exposure Forecast (NEF) and Day-Night Average Noise Level (DNL). These new aircraft noise guidelines are intended to limit the interference of individual aircraft noise events with essential human activities (principally speech communication and sleep) and are purported to provide superior or complimentary means of defining boundaries around airports inside which aircraft noise exposures should be considered unsuitable for residential land development. As a member of the team of consultants retained by the City of Richmond to examine the potential for various land uses in the vicinity of Vancouver International Airport (YVR), *Wakefield Acoustics Ltd.* has been asked to review the Wyle report and provide comments for submission to Richmond Council.

2.0 EXISTING AIRPORT NOISE, LAND USE AND MITIGATION GUIDELINES

Transport Canada

Transport Canada employs the Noise Exposure Forecast (NEF) to project zones of aircraft noise impact around airports. While NEF does not directly indicate the average noise levels experienced around an airport, it is based on the types and numbers of aircraft movements that occur within a 24-hour planning day and the sound (noise) energy created at a given ground location by each such type of aircraft and movement. The NEF is then a cumulative noise metric (reflecting total daily exposure) which increases steadily as either the numbers of daily aircraft movements, or the noise levels created by the various movements, increases. The NEF also reflects the increased sensitivity of communities to noise occurring at night by penalizing aircraft movements occurring between 22:00 and 07:00 hours – in calculating the overall community noise exposure under the NEF procedure, one nighttime event is equivalent to 16 daytime events of the same type. In the most recent (May 1996) form of its publication TP12447E (Part IV), Transport Canada takes the position that residential land uses are incompatible with airport noise exposures at or above NEF 30.

Canadian Mortgage and Housing Corporation (CMHC)

In its 1981 publication "New Housing and Airport Noise", the CMHC took the position that areas with NEF's of more than 35 are not suitable for housing, while areas below NEF 35 could be suitable for housing if adequate sound insulation was provided. Obvious considerations in is any such noise insulation approach are the general need to keep windows

closed and the desire to provide some sort of a sheltered outdoor amenity space associated with each dwelling unit or with a multi-family dwelling unit as a whole.

United States

In the United States, the Integrated Noise Model (INM) is used to predict the Day-Night Average Noise Level (DNL) around airports. The DNL is a daily average noise exposure metric expressed in units of A-weighted decibels, (here dB), and as such is more representative of the actual, energy-based average noise level over a 24-hour day. However, DNL still does not truly represent the average sound level that would be measured outdoors with a sound level meter since it too contains a somewhat arbitrary nighttime penalty of 10 dB which effectively means each nighttime events if worth ten daytime events. In the U.S., the USFAA trigger level above which federal funding may be applied to mitigate aircraft noise impact in the community is DNL 65. As shown on Page A-8 of the Wyle report, DNL is approximately equivalent to NEF + 31. Therefore the U.S. mitigation trigger level of DNL 65 is roughly equivalent to NEF 34. Transport Canada, however, has no such noise mitigation program.

3.0 Single-Event Noise Metrics and Their Usefulness in Defining Airport Noise Impact Footprints

L_{max} and SEL

The daily noise exposure metrics NEF and DNL described above each account for all aircraft sound energy to which residents near YVR are, or would be, exposed near YVR and both reflect the greater potential impact of nighttime aircraft movements. However, they do not indicate the instantaneous noise levels which residents experience during individual aircraft movements. Since the two most directly-quantifiable forms of community noise impact, namely speech interference and sleep disturbance, are related to the maximum noise levels reached during aircraft noise events and the duration and frequency of such events during daytime and nighttime hours, it is clear that single-event noise metrics such as L_{max}[1] and SEL[2] can be useful in establishing the physical extent of aircraft noise impacts around airports.

In its Environmental Impact Statement for the VIA Parallel Runway Project (August 1990, Page 5-24), Transport Canada indicated that, while there were then "no recommended SEL standards or criteria", SEL contours (which can be predicted with the INM) may be used to *"help understand the extent to which single event noise levels, outside DNL or NEF contours, contribute to adverse community response"*. At that time, Transport Canada identified outdoor SEL 85 (or about L_{max} 75 dB) as a threshold above which indoor "communication interference begins to occur and complaints start to become more acute", particularly in the warmer months when windows and doors are often open.

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[1] L_{max} is the highest instantaneous noise level (expressed in dB) reached during a given noise event.

[2] Sound Exposure Level (SEL) is a measure of the total sound energy contained in a given noise event. For typical aircraft noise events near airports, SEL is approximately equal to L_{max} plus 10 dB.

Speech Interference by Aircraft Noise

The Wyle report (Summary Page ii and Page A-22) proposes that residential and live-work development should be prohibited wherever a single aircraft noise event per daytime hour (or 15 such events per day) reaches an outdoor L_{max} of 75 dB (or approximately SEL 85). This criterion is based (see Page A-21) on achieving 97% indoor sentence intelligibility (i.e., a 3% chance of not being able to understand a sentence) during the noisiest aircraft event of the hour. It is acknowledged (bottom of Page A-22) that their would be a distribution of lesser aircraft noise events, with L_{max}'s and SEL's stretching out below these maximum values, during which progressively less, and eventually no, indoor speech interference would occur. However, the nature of this distribution is not described except to say that these lesser noise events should be accounted for in an average daytime noise exposure metric such as the equivalent sound level, or L_{eq} (i.e., the energy-based average sound level which is used in calculating DNL).

The choice of an outdoor L_{max} of 75 dBA as a threshold for significant indoor speech interference (assuming windows open) is reasonable, however the conclusion that areas where this threshold is reached only once per daytime hour are unsuitable for residential use is somewhat arbitrary. In selecting an allowable number of "exceedances" of this threshold level, the Wyle report (see Pages A-21 and 22) states that *"Since there are no existing standards for number of exceedances, let it be assumed that the level be exceeded only once during a teaching session"* or *"only be exceeded once per hour"*. At face value, this statement then suggests that land use decisions around YVR should be based on Wyle's assumption that one noise disturbance per hour, having a 3% chance of causing a sentence to be misunderstood, is sufficient to render an area unsuitable for housing. Such an argument would only appear to hold up when taken in combination with knowledge that both the numbers and levels of daily aircraft noise events are high enough to cause significant disruption of classroom functioning or conversation within the home.

Upon examining Figures 4-1 and 5-1 in the Wyle report, it is seen that the L_{max} 75 contour created by projected movements on the main (south) runway in the year 2011 is very similar to NEF 30 contour. The only location where the former extends significantly beyond the latter is within agricultural lands to the east of Highway 99 and south of the Westminster Highway. However, where the L_{max} 75 dB contour due to north runway movements merges with that due to main runway movements and extends eastward, it incorporates a large area of residentially-zoned land along Bridgeport Road both to the west and east of Shell Road. This area lies between the 2011 NEF 25 and 30 contours and, as such, would be considered, according to Transport Canada's guidelines, to be compatible with housing provided developers and prospective tenants/purchasers are made aware of the aircraft noise situation and that "acoustic insulation features" are included, if required.

Sleep Disturbance by Aircraft Noise

The Wyle report (Summary Page ii and Page A-28) suggests that residential and live-work development should be prohibited wherever one aircraft noise event per night (22:00 to 07:00 hours) has an outdoor SEL exceeding 90 dB (or approximately L_{max} 80). This criterion is based primarily on a 1992 study by Ollerhead and on other more recent supporting research that indicates that a single aircraft noise event with an outdoor SEL of 90 has a 3% (1 in 30) chance of causing a given individual to have a "minor arousal" from sleep in the home and a 1.5% (1 in 75) chance of a "brief awakening". In order to establish the number of such events which could be considered to constitute excessive nighttime exposure, the Wyle report drew upon a 2002 study by Miedema et al which used the energy average nighttime noise level, or L_{night}, as the "*metric to describe the long-term incidence of instantaneous effects*" of aircraft noise. The Wyle report then adopts an L_{night} objective of 45 dBA outdoors, presumably based on the World Health Organization's 1999 guideline of L_{night} 30 dB indoors as the threshold to achieve "no awakenings" from continuous noise. Using Miedema's energy average approach and assuming a maximum allowable individual noise event level of SEL 90 outdoors and a maximum nighttime average noise level of L_{night} 45 dB outdoors, the Wyle report concludes that any more than a single such nighttime noise event would result in excessive noise exposure within residential areas. Again it needs to be kept in mind that, within a given night, there would presumably be a distribution of lesser aircraft noise events with SEL's stretching out below this maximum value of 90 and having progressively less probability of causing sleep disturbance

Upon examining Figures 4-2 and 5-1 in the Wyle report, it is seen that the SEL 90 contour created by projected movements on the main (south) runway in the year 2011 is quite similar to NEF 30 contour but with the former extending slightly farther south to the east of No. 3 Road and to the north roughly between Garden City Way and Knight Street. In both cases some existing residential areas that are not within the NEF 30 contour are captured by the SEL 90 contour. Figure 4-2 contains no SEL 90 contour for the north (parallel) runway. This is presumably because this runway is largely used for arrivals only and is typically closed between 22:00 and 06:00 hours[3]. This situation could change however, if and when overall airport volumes dictate the north runway must be used regularly for departures as well, particularly if they occurred at night. Noise monitoring conducted[4] by Wakefield Acoustics Ltd. between July 20 and 21, 1999 during a maintenance-related closure of the main runway showed that eastbound departures from the north runway over the Bridgeport area regularly created SEL's in the 90 to 100 range and occasionally in the 100 to 105 range. Under Wyle's approach, such an eventuality would be expected to result in essentially all of the current residential and commercially zoned land in the Bridgeport area being precluded from further residential or live-work development.

[3] For purposes of community noise impact assessment, "nighttime" normally extends to 07:00 hours.

[4] In connection with a Group Action Suit brought against the Vancouver International Airport Authority by Bridgeport residents.

4.0 SOUND INSULATION MEASURES AS A MEANS OF CREATING COMPATIBILITY BETWEEN AIRPORTS AND RESIDENTIAL AREAS

The airport noise-related development guidelines provided by Transport Canada and suggested by the Wyle report are all based on the assumption that windows may be left partially open to provide for natural ventilation, at least during the warmer months. This results in indoor aircraft noise exposures being considered to be about 15 dB lower than corresponding outdoor exposures[5]. Closing the windows typically results in a 5 to 10 dB improvement in sound insulation depending on the type and condition of windows. There is potential to further improve this "outside to inside" sound insulation factor by replacing old, single glazed windows with tight fitting double-glazed windows, by using thicker, heavier plate glass or laminated glass and/or by creating a wider-space between glazing layers, as with a storm window. Once window and door constructions are optimized, exterior wall and roof structures can also be improved if necessary. These practices are often incorporated into hotels constructed near airports or busy highways. However, all of these approaches assume that alternate means of ventilation (forced air) will be provided for residences, at least in the more noise sensitive spaces (bedrooms, living rooms, family rooms dens). While the necessary degrees of sound insulation enhancement are certainly achievable for most single or multi-family residences near YVR, they will come with capital and operating cost penalties.

The primary issue with the sound insulation approach as it pertains to permanent residences is the provision of some sort of sheltered outdoor amenity space. In the cases of traffic noise from a highway or major arterial road, a relatively quiet outdoor space can generally be provided on the side of the residence facing away from the road. This is made more practical since traffic noise is generally created near the ground where it can be blocked by the residential building itself or by other structures (e.g. noise walls) or buildings. In contrast, most aircraft-related noise originates at locations above the ground. This makes the provision of a sheltered outdoor space more difficult, particularly for residences located more or less beneath the flight paths. However, for residence located fairly close to the airport and on the "sideline", aircraft noise tends to arrive from a much lower angle so that shielded outdoor spaces could likely be created on the sides of residences facing away from the airport. This approach would be most challenging for one or two storey single family residences or townhouse developments. It would be more effective when applied to taller condominium or rental apartment buildings. To optimize this approach, such multi-family buildings would ideally be "single-loaded" - i.e., having corridors and other non-sensitive spaces on the airport-facing sides and sensitive residential spaces on the opposite, shielded sides. The potential reflection of aircraft noise from the facades of other large buildings nearby would also have to be taken into consideration when planning such developments.

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[5] Simultaneous indoor and outdoor noise monitoring conducted by Wakefield Acoustics Ltd. in July 1999 indicated that the average "sound insulation factors" provided by three Bridgeport area homes were between 15 and 20 dB.

5.0 COMMENTS AND CONCLUSIONS

Some general comments and conclusions about the issues raised in the Wyle report follow:

- Land use planning contours based on single event noise metrics such as L_{max} and SEL would tend to shrink over time as individual commercial aircraft continue, gradually but steadily, to become quieter, whereas it is generally believed that total airport noise output will not decrease over time as increasing traffic volumes will largely offset the effects of quieter aircraft,

- The exclusion of lands from potential future residential development (other than work-live situations) based on the occurrence, within each daytime hour, of a single aircraft noise event having an L_{max} of 75 dB appears overly protective unless taken in the context of the overall daily aircraft noise exposure at a given location – prediction of which has been the function of NEF and DNL. Figure 5-1 of the Wyle report shows that application of the L_{max} 75 criteria to the 2011 horizon year at YVR would result in the exclusion of almost as much land due to noise from the relatively lightly used, arrivals-only north runway as from the heavily used south runway. This does not seem appropriate under the current operational scenario at YVR which has been assumed to persist at least until 2011. If and when the north runway should ever assume a more equal share of total YVR traffic volumes, such a balanced approach to land use planning would be justified. Perhaps it is appropriate to take that possibility into consideration at this time.

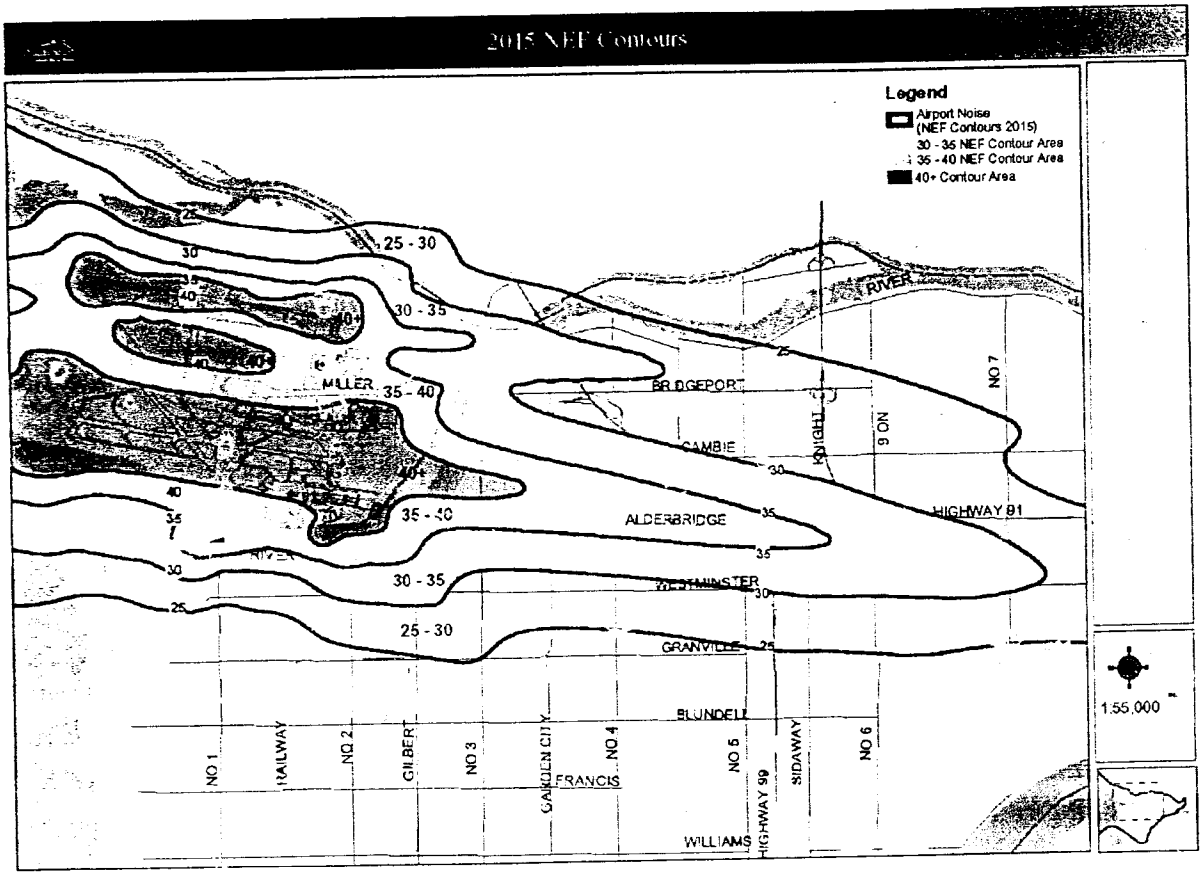
- Concern is expressed in the Wyle report not only about limiting the numbers of residents impacted by aircraft noise but also about limiting the numbers of noise-related complaints that are directed towards the Airport Authority and that may potentially lead to the restriction of its ability to operate and/or handle increasing traffic volumes. While these are both legitimate concerns, it should be noted that not all residential communities exposed to same overall levels of aircraft noise will register the same numbers of complaints. General community annoyance with intrusive noise and the resulting level of complaints also depend on the make-up of the community and conditions under which the noise exposure occurs. The relatively high complaints levels and the ongoing conflict between owners of single-family homes in the Bridgeport area and the Airport Authority occurred principally because of the sudden increase in aircraft noise exposures in this neighbourhood that accompanied the opening of the parallel runway. Communities with similar but stable, or very gradually increasing, noise exposures would be expected to register much fewer complaints. Residents willingly moving into an existing aircraft noise-impacted area might be expected to generate complaints numbers somewhere between these two extremes. Under this latter scenario

the degrees of noise impact, and therefore the numbers of anticipated noise complaints, could be limited through the design of the new residential developments.

ATTACHMENT 7

MAP

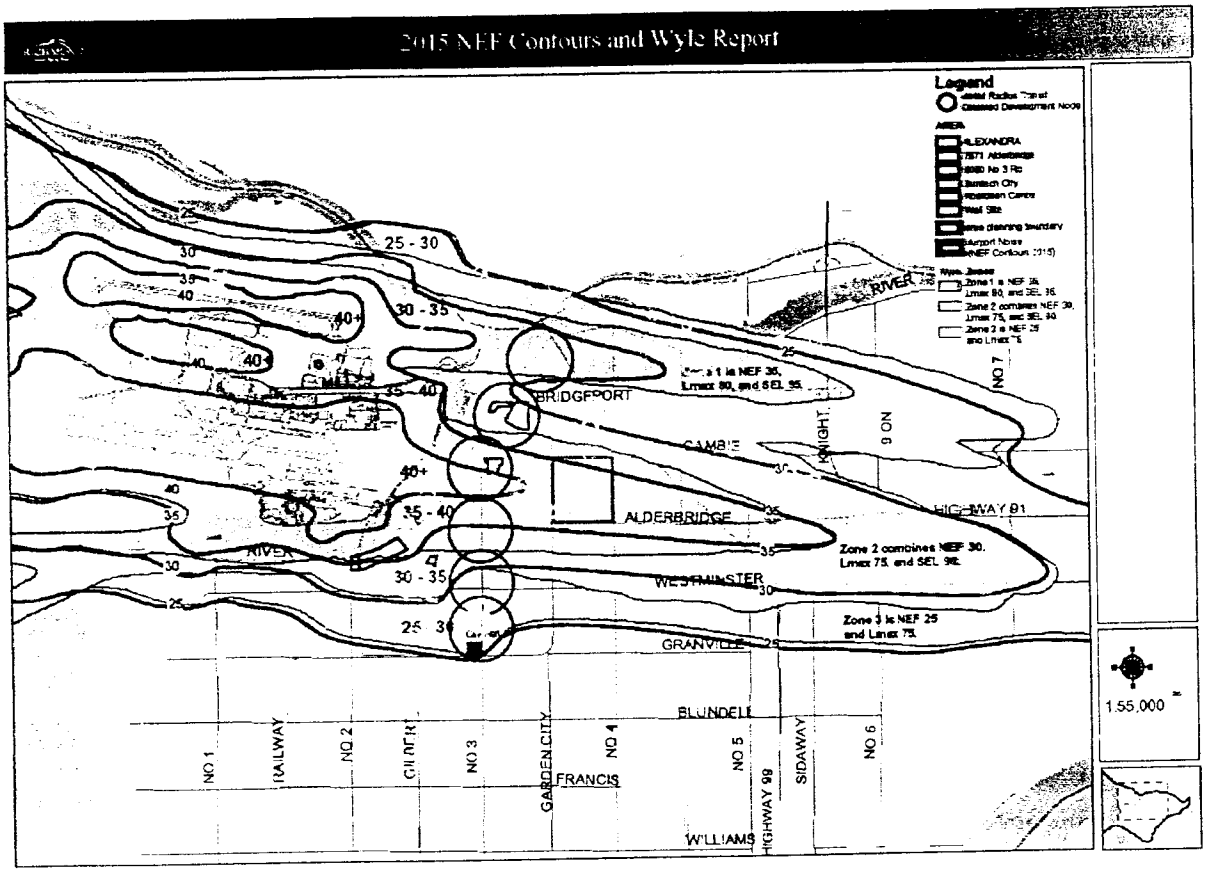
2015 NEF CONTOURS



ATTACHMENT 8

MAP

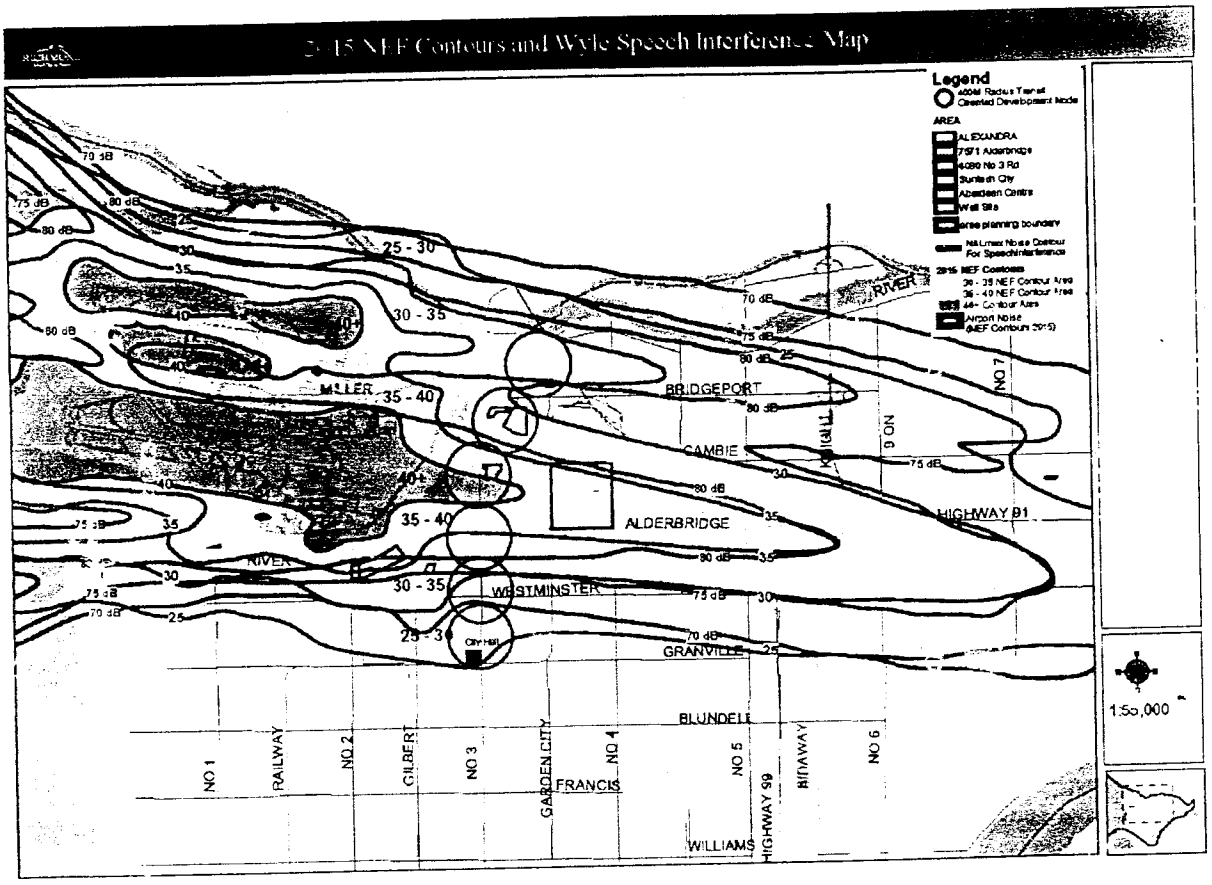
2015 NEF CONTOURS WITH WYLE REPORT ZONES



ATTACHMENT 9

MAP

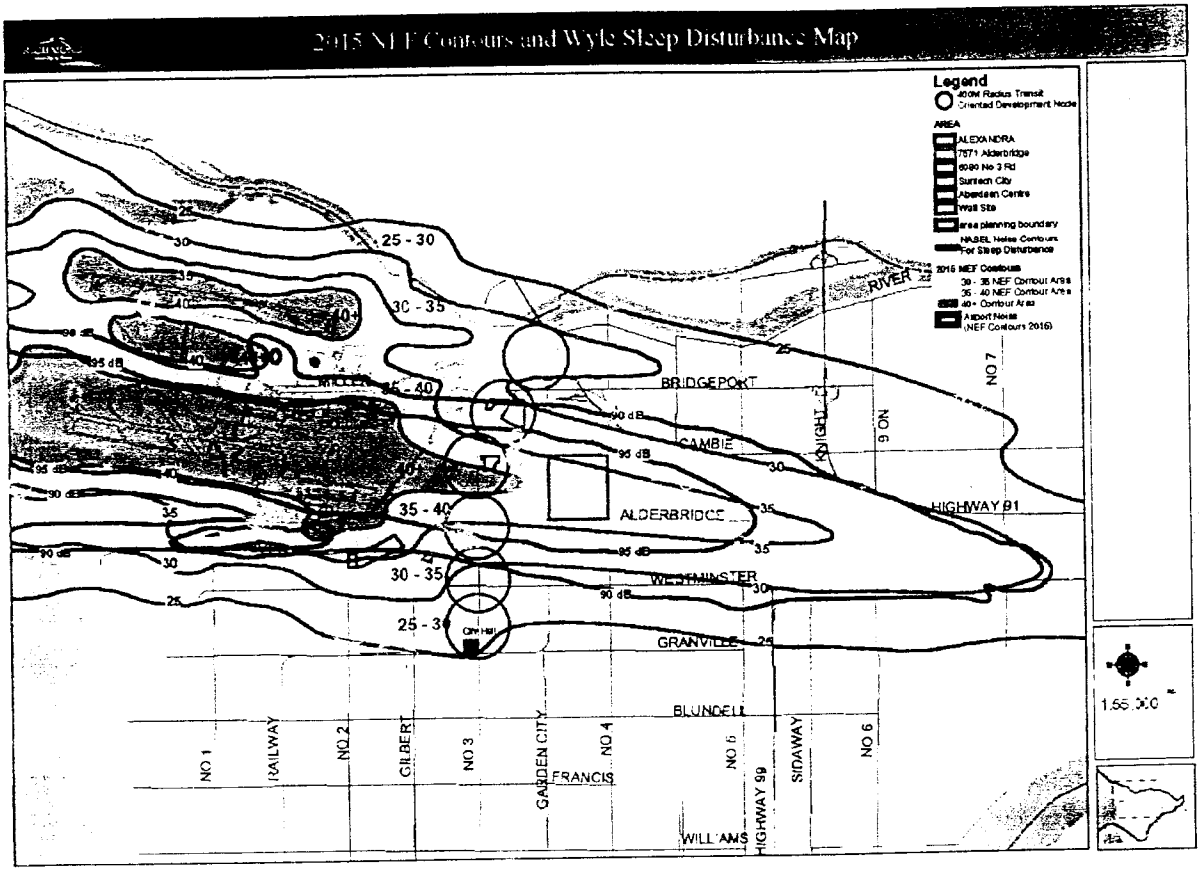
2015 NEF CONTOURS WITH WYLE REPORT SPEECH INTERFERENCE CONTOURS



ATTACHMENT 10

MAP

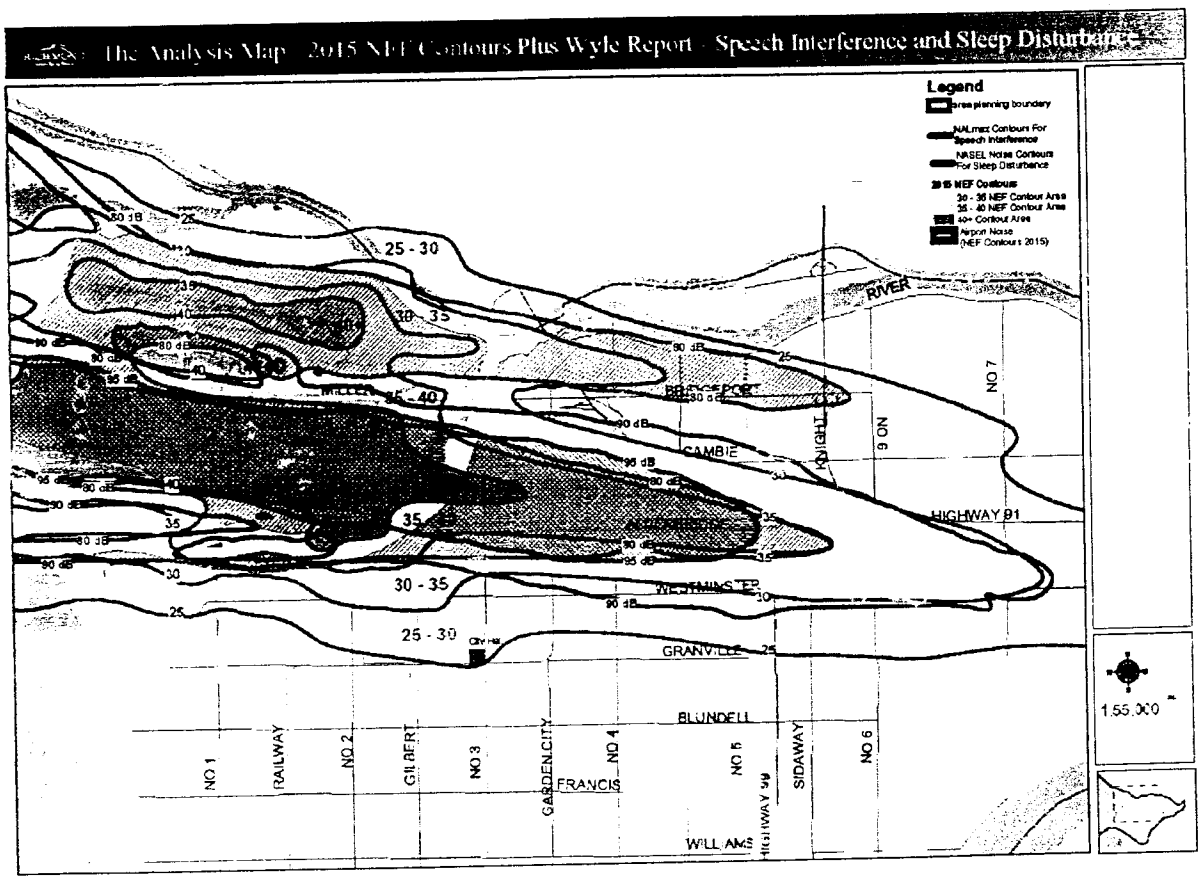
2015 NEF CONTOURS WITH WYLE SLEEP DISTURBANCE CONTOURS



ATTACHMENT 11

ANALYSIS MAP

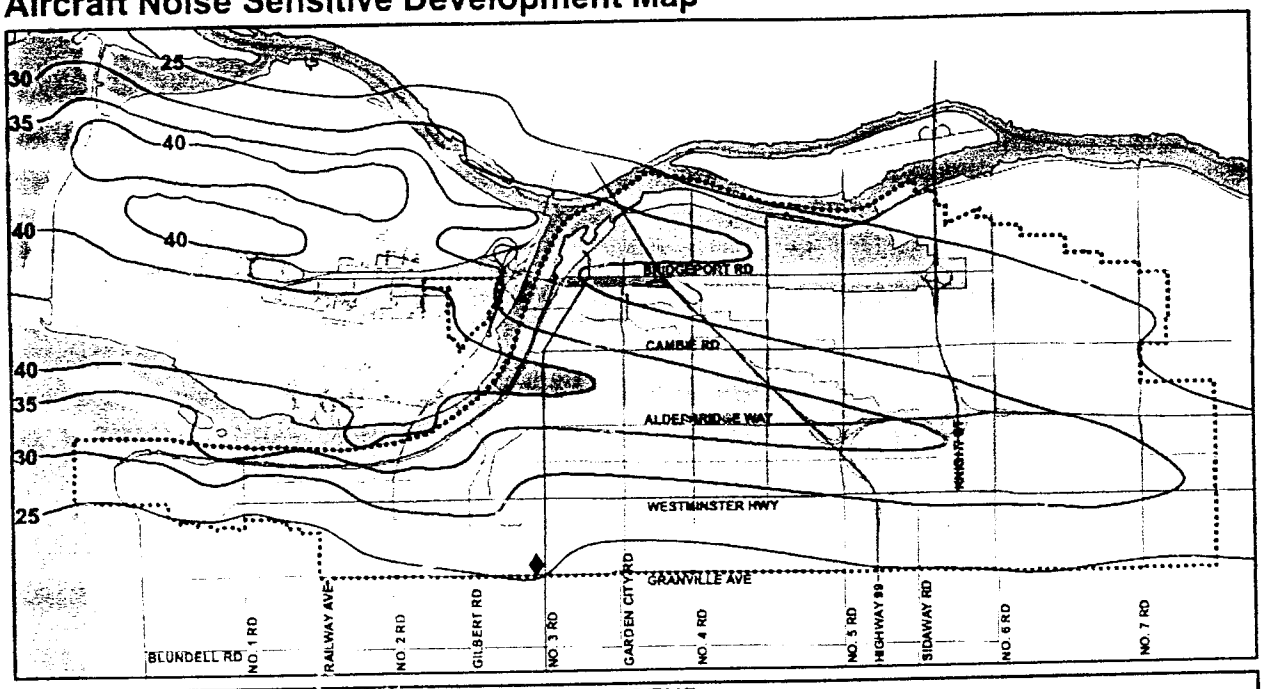
2015 NEF CONTOURS WITH WYLE REPORT SPEECH INTERFERENCE AND SLEEP DISTURBANCE CONTOURS



ATTACHMENT 12

AIRCRAFT NOISE SENSITIVE DEVELOPMENT POLICY MAP

Aircraft Noise Sensitive Development Map



LEGEND

Aircraft Noise Sensitive Development Areas (see Aircraft Noise Sensitive Development Table)

No New Aircraft Noise Sensitive Land Uses

AREA 1

New aircraft noise sensitive land uses prohibited.

Areas where Aircraft Noise Sensitive Land Uses May be Considered Subject to Aircraft Noise Mitigation Requirements.

AREA 2

All new aircraft noise sensitive land uses (except single family) may be considered (see table for exceptions)

AREA 3

All new aircraft noise sensitive land uses may be considered.

AREA 4

All new aircraft noise sensitive land uses may be considered.

OTHER

All new aircraft noise sensitive land uses may be considered

City Hall

2015 Noise Exposer Forecast (NEF) Contours

Extent of aircraft noise insulation

August 16, 2004

ATTACHMENT 13

Rationale

OCP Aircraft Noise Sensitive Development Policy

1. Introduction

As the OCP Bylaw is a technical document, the Rationale summarizes the OCP bylaw and policies regarding aircraft noise sensitive development, to facilitate understanding.

2. Context

(1) Richmond's Vision - To be: Appealing, Livable and Well Managed.

(2) Context

Richmond is in the process of creating a City which provides a range of economic, social and environmental opportunities, where people can live, work and play.

(3) Development Factors

Currently, Richmond is affected by the following development factors:

- increasing population and diversity,
- increasing employment,
- the Richmond-Airport-Vancouver (RAV) light rapid transit,
- a developing City Centre,
- a developing waterfront,
- developing neighbourhoods (e.g., residential, industrial, commercial, office, recreation.

(4) Balancing and Co-ordinating Interests and Priorities

In developing the City, Council strives to balance and co-ordinate the following interests and priorities among a wide range of stakeholders (e.g., municipal, provincial and senior governments; the private sector, diverse community members):

- economic development,
- social development,
- environmental management.

3. Aircraft Noise Sensitive Areas

The Aircraft Noise Sensitive Development Policy is based on the 2011 and 2015 NEF models, and additional research information and mapping.

4. Purpose Of The OCP Bylaw and Aircraft Noise Sensitive Development Policies

The purpose of the proposed OCP bylaw and policies regarding aircraft noise sensitive development is to enable the Council of the City of Richmond to:

- be more consistent regarding where it will and will not consider allowing aircraft noise sensitive development (e.g., residential, child care, assembly, live/work, work/live) within the City,
- improve aircraft noise sensitive development planning and development application requirements,
- improve aircraft noise mitigation measures,
- improve public awareness regarding aircraft noise.

5. Policy Focus

The OCP Bylaw to establish an Aircraft Noise Sensitive Development Policy identifies:

1. areas where aircraft noise sensitive land uses will be prohibited,
2. areas where aircraft noise sensitive land uses will be considered, which may or may not actually be allowed based upon requirements,
3. for areas where aircraft noise sensitive land uses will be considered, requirements to better:
   - match aircraft noise sensitive land uses to aircraft noise areas,
   - mitigate indoor aircraft noise,
   - minimize aircraft noise outdoors,
   - notify land owners and the public (e.g., developers, existing and potential residents) regarding the effects of aircraft noise and of the aircraft noise characteristics of areas in which they may choose to live, so that complaints and lawsuits will be avoided.

6. Goal

The goal of this policy is to co-ordinate and balance the interests and the City, VIAA and other stakeholders to achieve economic and social development, and environmental protection.

7. Objectives

The City's objectives are to enable:

- the City and its partners to develop;
- the airport to continue to operate at its intended full long-term 24 hour per day and night time capacity,
- developers to create high quality developments and establish a variety of residential types;
- residents who choose to live in airport noise sensitive areas to:
  - be aware of the airport noise characteristics which may affect them and the risks that they are choosing to accept;
  - not experience unacceptable airport noise, given their conscious choice to live in such areas;
  - have little reason to complain or bring legal charges against the City or the airport, regarding airport noise.

8. Aircraft Noise Sensitive Development Management

(1) Conformity

Aircraft noise sensitive land uses should conform to the Aircraft Noise Sensitive Development Policies, Table and Map, and related City policies and requirements.

(2) New Development

(a) New aircraft noise sensitive land uses may occur as follows:
   - Area 1 – Objective: To avoid all aircraft noise sensitive land uses
   - Area 2 – Objective: To consider new aircraft noise sensitive land uses, except single-family
   - Area 3 – Objective: To consider new aircraft noise sensitive land uses
   - Area 4 – Objective: To consider new aircraft noise sensitive land uses
   - Remainder of City - No designation, as there are no aircraft noise concerns.

(3) Caution

The "Aircraft Noise Sensitive Development Map" means that in the areas where aircraft noise sensitive land uses are "considered" those land uses (e.g., residential, assembly) may or may not actually be developed, due to a wide range of City requirements, and senior government, stakeholder and private sector decision.

(4) The Aircraft Noise Sensitive Development Table (Schedule 1)
Aircraft noise sensitive land uses should be managed as indicated in the table entitled: Aircraft Noise Sensitive Development Table.

(5) Aircraft Noise Sensitive Development Map (Schedule 2)
The map entitled "Aircraft Noise Sensitive Development Map" indicates where:
- the OCP aircraft noise sensitive land uses policy applies spatially,
- certain aircraft noise sensitive land uses are prohibited,
- certain aircraft noise sensitive land uses (e.g., residential) may be considered,
- City aircraft noise mitigation and insulation requirements apply

(6) Aircraft Noise Sensitive Development Considerations
In areas where aircraft noise sensitive land uses may be considered, the following factors are to be taken into account, to determine if, where, how, to what degree and to which requirements aircraft noise sensitive land uses may occur in a specific location.

A GROWTH NEEDS
1. Richmond's limited land resource base.
2. as Richmond develops, the need for a wide range of land uses (e.g., assembly, residential, commercial, industrial, agricultural, office, institutional),
3. RAV supportive development.

B CITY CORPORATE NEEDS
1. City Corporate land use and development needs (e.g., for community facilities and safety buildings, parks, infrastructure, environmental protection).
2. City policies.

C CORPORATE POLICIES
1. The City's Corporate Vision (e.g., appealing, livable, well managed)
2. City Strategies which include the:
   - Agricultural viability Strategy
   - Economic Strategy,
   - Industrial Strategy,
   - Land Acquisition Strategy,
   - Parks and Trails Strategy,

D COMMUNITY PLANNING CONSIDERATIONS
1. The Official Community Plan including:
   - City Centre policies,
   - Neighbourhood Residential policies,
   - High-Density Mixed Use policies,
   - Neighbourhood Service Centre policies,
   - Area plan policies

2. Livability Considerations
   (a) Where aircraft noise sensitive land uses are permitted in an area or on a site, they are to achieve a high level of livability and maximize aircraft noise mitigation requirements.

   (b) The livability and aircraft noise mitigation considerations include:
      - Varying the development mix (e.g., mixing aircraft noise sensitive development (e.g., residential) with other non-aircraft noise sensitive land uses (e.g., parks,

- commercial, office); mixing various aircraft noise sensitive developments including residential land uses (e.g., single-family, mid rise, high rise, live/work, work/live);
- Varying the density of aircraft noise sensitive land uses;
- Varying the degree of aircraft noise sensitive land use site coverage;
- Orienting and facing land uses and buildings to minimize aircraft noise.
- Ensuring land use compatibility;
- Encouraging high quality, innovative urban design and landscaping;

(c) The City's Public Hearing and Development Permit Approval, Design Panel Review processes (e.g., for OCP, area plan and zoning amendments, and for Development Permits)

E SERVICES AND INFRASTRUCTURE
1. The availability of City services and infrastructure
2. The availability of Community amenities, parks, and facilities

F STAKEHOLDER CONSIDERATIONS
1. Transport Canada guidelines
2. VIAA considerations

G OTHER
Other, as determined by Council.

(7) Interpretation
Where necessary, Council, or its designate, shall make the final decision regarding interpretations of the aircraft noise sensitive development policies, guidelines, tables, and maps.

Prepared by the City of Richmond

Schedule 1

Aircraft Noise Sensitive Development Table				
Areas NOTE 1	**Reference NEF Contours**	**Aircraft Noise Sensitive Land Uses include:** - Residential, - Live/Work, - Work/Live, - Day-cares,	- Schools, - Health Care Facilities, - Assembly uses	**Requirements**
1. Restricted Area	Approximately Greater than NEF 40	• ***Objective: To avoid all new aircraft noise sensitive land uses.*** • New Aircraft Noise Sensitive Land Uses are prohibited.		• Restrictive Covenants NOTE 2
2. High Aircraft Noise Area	Approximately NEF 35 to NEF 40	• ***Objective: To consider all new aircraft noise sensitive land uses, except single-family.*** • All new Aircraft Noise Sensitive Land Uses may be considered, except single-family, more specifically: • New single-family detached development requiring amendments to the OCP, Area Plan, or existing zoning other than Single-Family Housing District (R1) are prohibited, however, • Rezonings from one Single-Family Housing District (R1) Subdivision Area to another Subdivision Area (A to K) may be considered, subject to all applicable Policies (e.g. Sub-Area Plans, 702 Policies, and Bylaw 5300 -Division 600 - Subdivision of Land).		• Restrictive Covenants NOTE 2 • An Acoustic Report NOTE 3 • Noise mitigation incorporated in construction • Mechanical ventilation incorporated in construction • Central air conditioning system incorporated in construction • Required Design Guidelines for siting and/or replacement of outdoor amenity areas with indoor amenity areas (e.g. enclosed balconies and increased size and type of indoor amenity areas)
3. Moderate Aircraft Noise Area	Approximately NEF 30 to NEF 35	• ***Objective: To consider all new aircraft noise sensitive land uses.*** • All Aircraft Noise Sensitive Land Uses may be considered		• Restrictive Covenants NOTE 2 • An Acoustic Report NOTE 3 • Noise mitigation incorporated in construction • Mechanical ventilation incorporated in construction • Central air conditioning capability (e.g. ductwork)
4. Aircraft Noise Notification Area	Approximately NEF 25 to NEF 30	• ***Objective: To consider all aircraft noise sensitive land uses*** • All Aircraft Noise Sensitive Land Uses may be considered.		• Restrictive Covenants NOTE 2 • An Acoustic Report NOTE 3 • Noise mitigation incorporated in construction (as required)
Not Designated	Approximately Less than NEF25	• ***Objective: No aircraft noise sensitive concerns or considerations.*** • All Aircraft Noise Sensitive Land Uses may be considered.		Not required

NOTES:

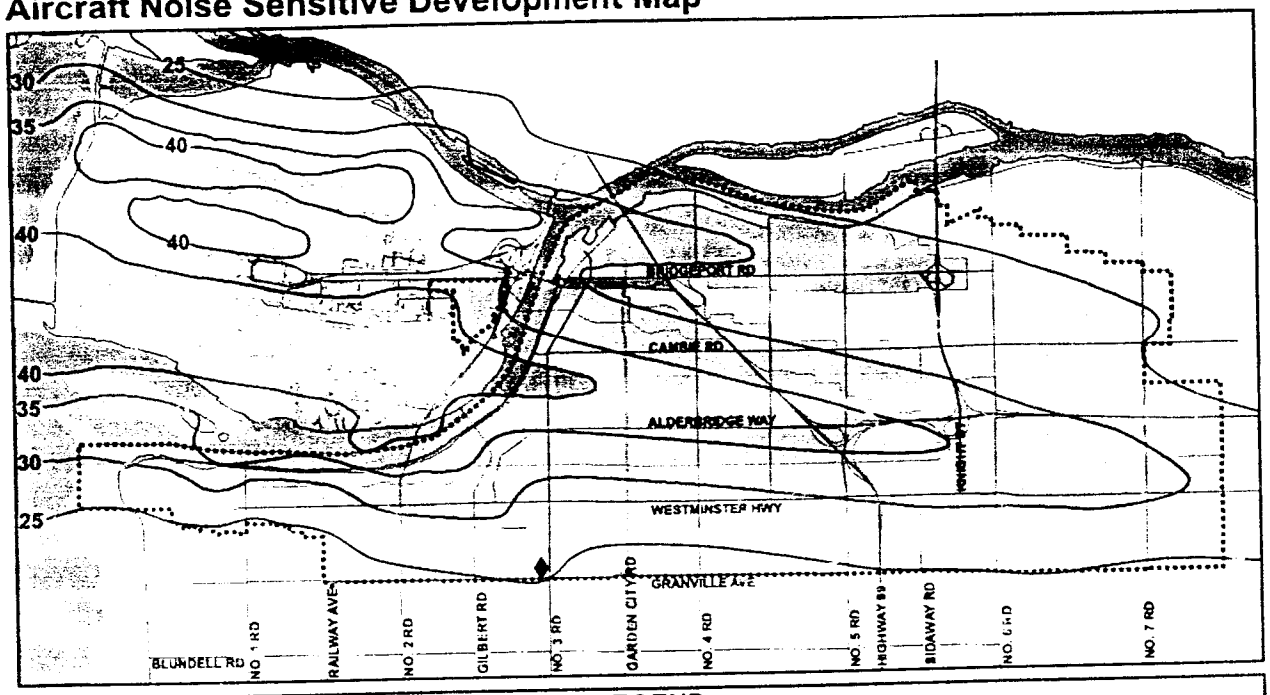
1. The Areas in the above Table are identified on the "Aircraft Noise Sensitive Development Map".
2. Restrictive Covenants on Land Titles include information to address aircraft noise mitigation and public awareness.
3. Indoor Sound Level Mitigation - Building Components (e.g. walls, windows) must be designed to achieve the following indoor sound level mitigation criteria (with doors and windows closed):

	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	

Schedule 2

Aircraft Noise Sensitive Development Map

Aircraft Noise Sensitive Development Map



LEGEND

Aircraft Noise Sensitive Development Areas (see Aircraft Noise Sensitive Development Table)

No New Aircraft Noise Sensitive Land Uses

AREA 1

New aircraft noise sensitive land uses prohibited.

Areas where Aircraft Noise Sensitive Land Uses May be Considered Subject to Aircraft Noise Mitigation Requirements.

AREA 2

All new aircraft noise sensitive land uses (except single family) may be considered (see table for exceptions)

AREA 3

All new aircraft noise sensitive land uses may be considered.

AREA 4

All new aircraft noise sensitive land uses may be considered.

OTHER

All new aircraft noise sensitive land uses may be considered.

City Hall

2015 Noise Exposer Forecast (NEF) Contours

Extent of aircraft noise insulation

ATTACHMENT 14

IMPLEMENTATION STRATEGY
AIRCRAFT NOISE SENSITIVE DEVELOPMENT POLICY

1. **Purpose**
   The purpose of the Implementation Strategy is to establish initiatives by which the City of Richmond, with its partners can implement the Aircraft Noise Sensitive Development Policy.

2. **Initiatives**
   The following implementation initiatives are to be implemented, subject to Council approval, budgets and external events (e.g., RAV planning, senior government initiatives).

INITIATIVES FOR IMPLEMENTING THE OCP AIRCRAFT NOISE SENSITIVE DEVELOPMENT POLICY		
Timing	**Objective**	**Estimated Timing**
1. **Development Application Reviews**	**North of Sea Island Way** - No rezonings which involve aircraft noise sensitive land uses will be approved until after the No 3 Road Transit-Oriented Corridor Development Strategy, including a revised City Centre Area Plan (from West Bridgeport to City Hall) is completed (e.g., in late 2005)	- In late 2005, subject to approved policies and requirements
	South of Sea Island Way Process development applications based on OCP aircraft noise sensitive polices and other City policies - Encourage developers to implement innovative aircraft noise sensitive mitigation standards.	- May proceed now, subject to OCP aircraft noise sensitive polices and other City policies and requirements
2. **West Cambie Area Plan update**	- Improved West Cambie vision and policies	- Currently underway, and - To be completed in December 2004
3. **A No 3 Road Transit-Oriented Corridor Development Strategy, including a revised City Centre Area Plan (from West Bridgeport to City Hall)**	- Improved City Centre vision and policies	- To start in November 2004, and - To be completed by late 2005.
4. **RAV Planning**	- Improved City Centre transportation	- Ongoing
5. **OCP Indoor – Outdoor Amenity Urban Design Guidelines**	- To modify the OCP indoor - outdoor amenity guidelines to address aircraft noise	- Oct 2004-Mar 2005

Prepared by the City of Richmond

City of Richmond

Bylaw 7794

Richmond Official Community Plan Bylaw 7100
Amendment Bylaw 7794
Aircraft Noise Sensitive Development Policy

The Council of the City of Richmond enacts as follows:

1. Schedule 1 to the Richmond Official Community Plan Bylaw 7100 is amended by:

1.1 Adding to the "TABLE OF CONTENTS", in Section 5.0, after Section 5.3, a new section entitled "5.4 Noise Management";

1.2 Deleting in the "LIST OF MAPS AND ATTACHMENTS", the map listing entitled "Aircraft Noise Insulation Map" and replacing it with a new map listing entitled "Aircraft Noise Sensitive Development Map";

1.3 Adding to the Section entitled "PLAN INTERPRETATION", after the section "Environmentally Sensitive Areas", the following:

"Aircraft Noise Sensitive Land Use	The Aircraft Noise Sensitive Land Use policies, guidelines, and locations (shown in Section 5.4) in Schedule 1 of this Bylaw supercede those contained in Schedule 2 of this Bylaw."

1.4 Deleting in Section "5.1, NATURAL RESOURCES, ISSUE:", the following:

"**Noise**

There are three general types of urban development noise affecting Richmond:

- Noise from construction activity;
- Ambient noise, such as traffic noise;
- Aircraft noise.

The City's Noise Bylaw regulates the hours of construction activity. Aircraft noise falls under the Vancouver International Airport's jurisdiction, but both the Airport and the City work towards aircraft noise management through various measures. It is increasingly important that noise issues are addressed as the volume of activity and the number of people affected increases."

1.5 Deleting from Section "5.1, NATURAL RESOURCES", "OBJECTIVE 5" in its entirety, including "POLICIES: a), b), and c)", and the map entitled "Aircraft Noise Insulation";

1.6 Deleting from Section "5.1, NATURAL RESOURCES", "OBJECTIVE 6" in its entirety, including "POLICIES: a) through f)";

1.7 Renumbering in Section "5.1, NATURAL RESOURCES", "OBJECTIVE 7" as "OBJECTIVE 5";

1.8 Inserting a new section "5.4 NOISE MANAGEMENT", after section "5.3 PARKS, OPEN SPACES, TRAILS & GREENWAYS", as follows:

"5.4 NOISE MANAGEMENT

ISSUE

There are three general types of urban noise, which affect Richmond:
- Noise from construction activity;
- Ambient noise, such as traffic noise;
- Aircraft noise.

Construction Noise
The City's Noise Bylaw regulates the hours of construction activity.

Ambient Noise
It is increasingly important that noise issues are addressed as the volume of activity and the number of people affected increases.

Aircraft Noise
Aircraft noise falls under the Vancouver International Airport's (VIAA) jurisdiction, but both the Airport and the City work towards aircraft noise management through various measures.

The City's goal is to:
- co-ordinate and balance the economic, social and environmental interests of the City, VIAA and other stakeholders to achieve economic and social development, and environmental protection;
- enable the airport to continue to operate at its intended full long-term 24 hour per day and night time capacity;
- create high quality livable environments;
- improve aircraft noise sensitive land use and mitigation requirements; and
- enable residents who choose to live in airport noise sensitive areas to:
  - be aware of the airport noise characteristics which may affect them and the risks that they are choosing to accept;
  - not experience unacceptable airport noise, given their conscious choice to live in such areas; and
  - have little reason to complain or bring legal charges against the City or the airport, regarding airport noise.

An effective aircraft noise sensitive land use and area management system will establish:
- areas where aircraft noise sensitive land uses will be prohibited,;
- areas where aircraft noise sensitive land uses will be considered, which may or may not actually be allowed based upon requirements; and
- for areas where aircraft noise sensitive land uses will be considered, requirements to better:
  - match aircraft noise sensitive land uses to aircraft noise areas;

- mitigate indoor aircraft noise;
- minimize aircraft noise outdoors; and
- notify landowners and the public (e.g., developers, existing and potential residents) regarding the effects of aircraft noise and of the aircraft noise characteristics of areas in which they may choose to live, so that complaints and lawsuits will be avoided.

OBJECTIVE 1:

Manage urban development noise so as to maintain and enhance livability.

POLICIES:

Establish guidelines to reduce the noise exposure for multifamily residential development along high traffic streets;

Continue to encourage traffic noise reduction through such measures as signage requesting truck drivers to avoid using engine brakes within West Richmond;

Reduce exposure to noise from construction by reviewing the Noise Bylaw to improve regulation and enforcement;

Preserve and create positive acoustic environments in public spaces, such as sound sculptures or acoustic playgrounds in City parks;

Establish quiet recreational areas to meet emerging needs for refuge from urban noise; and

Foster public courtesy on noise issues and promote respect for City Noise Bylaws through educational campaigns in partnership with regional health authorities.

OBJECTIVE 2:

To encourage the effective management of aircraft noise at the source.

POLICIES:

Continue to cooperate with the Vancouver international airport authority to manage and reduce aircraft noise to minimize its disturbance to the community;

Encourage the VIAA to reduce aircraft noise at the source, where feasible;

Encourage regular reviews and implementation of the Airport's Noise Management Plan to achieve maximum noise reduction; and

Ensure community input through participation in the Vancouver International Airport Aeronautical Noise Management Committee.

OBJECTIVE 3:

To manage aircraft noise sensitive development and areas.

POLICIES:

General

The OCP aircraft noise sensitive development policies, tables and maps supercede any similar references in the Area Plans.

Terms:
"Aircraft noise sensitive land uses" include: residential, live/work, work/live, day cares, schools, health care facilities and assembly uses (e.g., see Transport Canada reports)

Aircraft Noise Sensitive Development Management

a) *Conformity*
Aircraft noise sensitive land uses shall conform to the Aircraft Noise Sensitive Development Policies, Table and Map, and related City policies and requirements.

b) *The Aircraft Noise Sensitive Development Table*
Aircraft noise sensitive land uses should be managed as indicated in the table entitled: Aircraft Noise Sensitive Development Table.

c) *Aircraft Noise Sensitive Development Map*
The map entitled "Aircraft Noise Sensitive Development Map" indicates where:
- the OCP aircraft noise sensitive land uses policy applies spatially;
- certain aircraft noise sensitive land uses are prohibited;
- certain aircraft noise sensitive land uses (e.g., residential) may be considered; and
- City aircraft noise mitigation and insulation requirements apply.

> ***Caution***
> The "Aircraft Noise Sensitive Development Map" means that in the areas where aircraft noise sensitive land uses are "considered", those land uses (e.g., residential, assembly) may or may not actually be developed, due to a wide range of City requirements, and senior government, stakeholder and private sector decisions.

d) *Aircraft Noise Sensitive Development Considerations*
In areas where aircraft noise sensitive land uses may be considered, the following factors are to be taken into account, to determine if, where, how, to what degree, and to which requirements aircraft noise sensitive land uses may occur in a specific location:

A GROWTH NEEDS:
1. Richmond's limited land resource base.
2. As Richmond develops, the need for a wide range of land uses (e.g., assembly, residential, commercial, industrial, agricultural, office, institutional),
3. RAV supportive development.

B CITY CORPORATE NEEDS
1. City Corporate land use and development needs (e.g., for community facilities and safety buildings, parks, infrastructure, environmental protection).

2. City policies.

C CORPORATE POLICIES
1. The City's Corporate Vision - appealing, livable, well managed.
2. City Strategies which include the:
   - Agricultural viability Strategy
   - Economic Strategy,
   - Industrial Strategy,
   - Land Acquisition Strategy.
   - Parks and Trails Strategy,

D COMMUNITY PLANNING CONSIDERATIONS
1. The Official Community Plan including:
   - City Centre policies,
   - Neighbourhood Residential policies,
   - High-Density Mixed Use policies,
   - Neighbourhood Service Centre policies,
   - Area Plan policies.

2. Livability Considerations:
   - Where aircraft noise sensitive land uses are permitted in an area or on a site, they are to achieve a high level of livability and maximize aircraft noise mitigation requirements.
   - The livability and aircraft noise mitigation considerations include:
     - Varying the development mix (e.g., mixing aircraft noise sensitive development (e.g., residential) with other non-aircraft noise sensitive land uses (e.g., parks, commercial, office); mixing various aircraft noise sensitive developments including residential land uses (e.g., single-family, mid rise, high rise, live/work, work/live);
     - Varying the density of aircraft noise sensitive land uses;
     - Varying the degree of aircraft noise sensitive land use site coverage;
     - Orienting and facing land uses and buildings to minimize aircraft noise.
     - Ensuring land use compatibility;
     - Encouraging high quality, innovative urban design and landscaping;

3. The City's Public Hearing, Development Permit, and Design Panel review processes (e.g., for OCP, area plan and zoning amendments, and for Development Permits)

E SERVICES AND INFRASTRUCTURE
1. The availability of City services and infrastructure
2. The availability of Community amenities, parks, and facilities

F STAKEHOLDER CONSIDERATIONS
1. Transport Canada guidelines
2. VIAA considerations

G OTHER
Other, as determined by Council.

e) *Interpretation*
Where necessary, Council, or its designate, shall make the final decision regarding interpretations of the aircraft noise sensitive development policies, guidelines, table, and maps.

1.9 Inserting the "Aircraft Noise Sensitive Development Table" as shown on "Schedule A attached to and forming part of Bylaw 7794";

1.10 Inserting the "Aircraft Noise Sensitive Development Map" as shown on "Schedule B attached to and forming part of Bylaw 7794";

1.11 Inserting a new section "5.5 BUILDING HEIGHT IN RELATION TO THE AIRPORT", after section 5.4, NOISE MANAGEMENT, as follows:

"**5.5 BUILDING HEIGHT IN RELATION TO THE AIRPORT**

ISSUE:

Near the airport, building heights need to be regulated to achieve public and aircraft safety.

OBJECTIVE:

To ensure that building heights near the airport are safely designed.

POLICY:

a) Ensure that the building heights comply with federal building height requirements."

1.12 Deleting section 9.2.5.B NOISE MITIGATION, paragraph b), and replacing it with:

"b) Developments in areas identified in the Aircraft Noise Sensitive Development Map (see Section 5.4 Noise Management) may require a report from an acoustical consultant and special noise mitigation measures;"

1.13 Amend Section 9.3.8.D Private Open Space, by adding as subsections o) and p), after subsection n), the following:

"Balcony & Outdoor Space in Aircraft Noise Sensitive Development

o) Private balcony space in aircraft noise sensitive development should mitigate the impact of aircraft noise by appropriate siting and/or by using appropriate noise mitigation techniques and architectural treatment (e.g., enclosed balconies) that do not result in the balcony being indoor living space.

p) Private open space (e.g., patios, decks) in aircraft noise sensitive development should mitigate the impact of aircraft noise by appropriate siting and/or by using appropriate noise mitigation techniques and architectural treatment (e.g., canopies, fences, landscaping) that do not result in the area being indoor living space."

1.14 Amend Section 9.3.9.B Outdoor Amenity Space, by adding as subsection n), after subsection m), the following:

"**Aircraft Noise Sensitive Development Outdoor Amenity Space**

n) Outdoor amenity space in aircraft noise sensitive development should mitigate the impact of aircraft noise by appropriate siting and/or replacing outdoor amenity space with an equivalent area of additional indoor amenity space designed to facilitate children's play, senior's enjoyment, or other appropriate passive recreational use."

1.15 Repealing Section 9.3.14.B Aircraft Noise, and replacing it with:

"Aircraft Noise

a) All Development Permit applications in areas identified in the Aircraft Noise Sensitive Development Map (see Section 5.4 Noise Management) shall require evidence in the form of a report and recommendations prepared by a person trained in acoustics and current techniques of noise measurement, demonstrating that the noise level in those portions of the dwelling units listed below shall not exceed the noise level set out in the corresponding right-hand column. The noise level utilized is an A-weighted 24-hour equivalent (leq) sound level and will be defined simply as noise level in decibels.

Portions of Dwelling Units	Noise Levels (Decibels)
Bedrooms	35
Living, dining, recreation rooms	40
Kitchen, bathrooms, hallways, utility rooms	45

b) Skylights are discouraged in homes located within the area identified in the Aircraft Noise Sensitive Development Map;

c) In addition to the above, a trained professional is to assist in the design of the private patios and balconies to minimize the noise levels with recommendations for building material selection and space planning.

1.16 Adding to Definitions, Appendix 1, General Definitions, the following:

"**Aircraft Noise Sensitive Development**	Development with land uses which include: residential, live/work, work/live, day cares, schools, health care facilities and assembly uses."

2. Schedule 2.2A (DOVER CROSSING SUB-AREA PLAN) to the Richmond Official Community Plan Bylaw 7100 is amended by:

2.1 Deleting from section 3.0 Neighbourhoods & Housing, the third Issue: Airport, Objective 3, Policies a) and b), and footnote No. 2, in their entirety; and

2.2 Deleting section 8.2.3.i) in its entirety.

3. Schedule 2.2B (TERRA NOVA SUB-AREA PLAN) to the Richmond Official Community Plan Bylaw 7100 is amended by:

3.1 Deleting from section 3.0 Neighbourhoods & Housing the second Issue, Objective 2, a) and b), and footnote No. 1, in their entirety;

4. Schedule 2.10 (CITY CENTRE AREA PLAN) to the Richmond Official Community Plan Bylaw 7100 is amended by:

4.1 Deleting Section 3.0 Neighbourhoods & Housing, Issue and Objective 2, in its entirety, and footnote No. 1;

4.2 Deleting in section 8.2.2 Massing and Height, Noise, paragraph c) the second and third bullets;

4.3 Repealing "Figure 4 – Areas Where Noise Insulation May Be Required";

4.4 Repealing "Figure 5 – 2015 NEF Planning Contours[1]" and Footnote; and

4.5 Re-labelling Figure 6 as Figure 4; and

4.6 Re-labelling Figure 7 as Figure 5.

5. Schedule 2.11A (WEST CAMBIE AREA PLAN) to the Richmond Official Community Plan Bylaw 7100 is amended by:

5.1 Deleting from section 3.0 Neighbourhoods & Housing the first Issue, Objective 1, a) and b), and footnote No. 1, in their entirety;

5.2 Re-labelling Objective 2 as Objective1; and

5.3 Re-labelling Objective 3 as Objective 2.

6. Schedule 2.11B (EAST CAMBIE AREA PLAN) to the Richmond Official Community Plan Bylaw 7100 is amended by:

6.1 Deleting from section 3.0 Neighbourhoods & Housing, Objective 1, paragraphs b), c) and d), and footnote No. 1, in their entirety;

6.2 Re-labelling 3.0 Neighbourhoods & Housing, Objective 1, paragraphs e), f) and g), as paragraphs b), c), and d).

7. Schedule 2.12 (BRIDGEPORT AREA PLAN) to the Richmond Official Community Plan Bylaw 7100 is amended by:

7.1 Deleting from section 3.0 Neighbourhoods & Housing, 3.1 Tait, the third Issue, Objective 3, Policies a) and b), and footnote No. 3, in their entirety;

8. Schedule 2.13B (MCLENNAN SUB-AREA PLAN) to the Richmond Official Community Plan Bylaw 7100 is amended by:

8.1 Deleting from section 3.0 Neighbourhoods & Housing, the first Issue, Objective 1, paragraphs a) and b), and footnote No. 1, in their entirety, and adding:

"See OCP."

9. This Bylaw is cited as "Official Community Plan Bylaw 7100, Amendment Bylaw No. 7794".

FIRST READING _____

SECOND READING _____

THIRD READING _____

ADOPTED _____

CITY OF RICHMOND
APPROVED for content by originating dept.
APPROVED for legality by Solicitor

_____ MAYOR

_____ CITY CLERK

"Schedule A attached to and forming part of Bylaw 7794"

AIRCRAFT NOISE SENSITIVE DEVELOPMENT TABLE

Areas NOTE 1	Reference NEF Contours	Aircraft Noise Sensitive Land Uses include: - Residential, - Live/Work, - Work/Live, - Day-cares, - Schools, - Health Care Facilities, - Assembly uses	Requirements
1. Restricted Area	Approximately Greater than NEF 40	• ***Objective: To avoid all aircraft noise sensitive land uses.*** • New Aircraft Noise Sensitive Land Uses are prohibited.	• Restrictive Covenants NOTE 2
2. High Aircraft Noise Area	Approximately NEF 35 to NEF 40	• ***Objective: To consider all new aircraft noise sensitive land uses, except single-family.*** • All new Aircraft Noise Sensitive Land Uses may be considered, except single-family, more specifically: • New single-family detached development requiring amendments to the OCP, Area Plan, or existing zoning other than Single-Family Housing District (R1) are prohibited, however, • Rezonings from one Single-Family Housing District (R1) Subdivision Area to another Subdivision Area (A to K) may be considered, subject to all applicable Policies (e.g. Sub-Area Plans, 702 Policies, and Bylaw 5300 -Division 300 - Subdivision of Land).	• Restrictive Covenants NOTE 2 • An Acoustic Report NOTE 3 • Noise mitigation incorporated in construction • Mechanical ventilation incorporated in construction • Central air conditioning system incorporated in construction • Required Design Guidelines for siting and/or replacement of outdoor amenity areas with indoor amenity areas (e.g. enclosed balconies and increased size and type of indoor amenity areas)
3. Moderate Aircraft Noise Area	Approximately NEF 30 to NEF 35	• ***Objective: To consider all new aircraft noise sensitive land uses.*** • All Aircraft Noise Sensitive Land Uses may be considered	• Restrictive Covenants NOTE 2 • An Acoustic Report NOTE 3 • Noise mitigation incorporated in construction • Mechanical ventilation incorporated in construction • Central air conditioning capability (e.g. ductwork)
4. Aircraft Noise Notification Area	Approximately NEF 25 to NEF 30	• ***Objective: To consider all new aircraft noise sensitive land uses*** • All Aircraft Noise Sensitive Land Uses may be considered.	• Restrictive Covenants NOTE 2 • An Acoustic Report NOTE 3 • Noise mitigation incorporated in construction (as required)
Not Designated	Approximately Less than NEF25	• ***Objective: No aircraft noise sensitive concerns or considerations.*** • All Aircraft Noise Sensitive Land Uses may be considered.	Not required

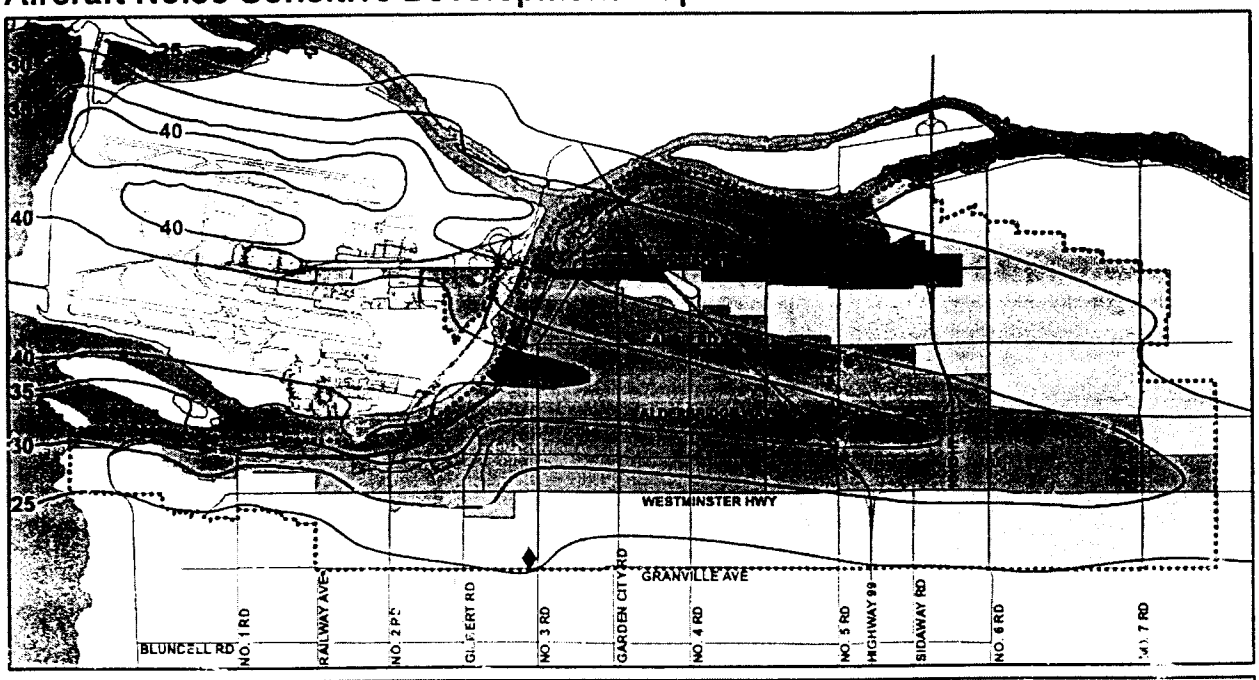
NOTES:

1. The Areas in the above Table are identified on the "Aircraft Noise Sensitive Development Map".
2. Restrictive Covenants on Land Titles include information to address aircraft noise mitigation and public awareness.
3. Indoor Sound Level Mitigation - Building Components (e.g. walls, windows) must be designed to achieve the following indoor sound level mitigation criteria (with doors and windows closed):

	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	

"Schedule B attached to and forming part of Bylaw 7794"

Aircraft Noise Sensitive Development Map



LEGEND

Aircraft Noise Sensitive Development Areas (see Aircraft Noise Sensitive Development Table)

No New Aircraft Noise Sensitive Land Uses

AREA 1

New aircraft noise sensitive land uses prohibited.

Areas where Aircraft Noise Sensitive Land Uses May be Considered Subject to Aircraft Noise Mitigation Requirements.

AREA 2

All new aircraft noise sensitive land uses (except single family) may be considered (see table for exceptions)

AREA 3

All new aircraft noise sensitive land uses may be considered.

AREA 4

All new aircraft noise sensitive land uses may be considered.

OTHER

All new aircraft noise sensitive land uses may be considered.

City Hall

2015 Noise Exposer Forecast (NEF) Contours

Extent of aircraft noise insulation