Development Address:
455 Terminal Avenue
Ottawa, Ontario

City of Ottawa Building Permit: 2XXXX4

Client:
Canderel Management Inc.

c/o:
IBI Group
1400-333 Preston Street
Ottawa ON K1S 5N4 Canada
Attention: Mr. Phil Castro

Prepared by:
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Ottawa, Ontario
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28 June 2010
NOISE IMPACT ASSESSMENT STUDY

VIA Lands
455 Terminal Avenue
Ottawa, Ontario

City of Ottawa Building Permit: 2XXXX4
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1. EXECUTIVE SUMMARY

In accordance with City of Ottawa Environmental Noise Control Guidelines, this report and associated study present an assessment of the environmental noise impact predicted due to the development of VIA Lands, located at 455 Terminal Avenue in Ottawa, Ontario. This development proposal is made by IBI Group on behalf of Canderel Management Inc.

This commercial development is located within a Class 1 urban area characterised by office, shopping, restaurant and industrial land usage. Outdoor and indoor noise levels are predicted and compared with the requirements of the City of Ottawa Environmental Noise Control Guidelines.

The predictions indicate that the specified glazing will ensure meeting indoor noise level requirements. However, windows need to be closed in order to meet the requirements and therefore air conditioning needs to be provided as is common practice for commercial developments. This also requires that Notices-on-Title be incorporated into all Agreements of Lease or Purchase and Sale, and incorporated into the Development Agreements which are registered on the property title.
2. INTRODUCTION / BACKGROUND INFORMATION

In accordance with the City of Ottawa Environmental Noise Control Guidelines, this report provides a detailed study of the environmental noise impact on the development proposed by IBI Group and located at 455 Terminal Avenue in the City of Ottawa.

The development consists of a 9 storey office building to be built on VIA rail lands, immediately adjacent to the Ottawa VIA rail terminal and several tracks of de-commissioned rail siding. The adjoining land along Terminal Ave. is vacant. This development is on a site currently occupied by a windowless concrete structure which previously housed various electrical equipment serving the train station but which will be demolished to make way for the final development.

For the purposes of this study, the background ambient noise levels are determined by vehicular traffic on the surrounding roads and railway.

Noise levels are predicted for the development's worst case receptors:

- Daytime exposure at the Plane-of-Window (POW) for the North West corner of the structure; and
- Daytime exposure at the Plane-of-Window (POW) for the southern façade of the structure.

The attached Site Plan is provided for reference, with the assessment locations indicated.

2.1 References

This study is based on information presented in the following drawings and documents:

- Groupe Architex site plan F 1018 dated 2010.04.08

Reference is made to the following documents:

1. Ontario Ministry of the Environment (MoE) publication LU-131: Noise Assessment Criteria in Land Use Planning including its accompanying Annex and supporting documents, dated October, 1997;

2. City of Ottawa Environmental Noise Control Guidelines adopted 10 May 2006 (ENCG)

2.2 Purpose

The purpose of this report is to confirm that this project can be developed in a manner that meets all applicable requirements with respect to environmental noise effect upon its future occupants.

2.3 Scope

This Noise Impact Assessment presents a detailed study of the issues, as defined by City of Ottawa Environmental Noise Control Guidelines. A further study of the equipment specified for this development will be required for use during application for a Certificate of Approval (AIR).

The scope of this report is limited to the issues described above, and makes no claim as to the validity of the noise level criteria or their ability to satisfy the expectations of all persons.
3. **OUTDOOR SOUND LEVEL CRITERIA**

This property is categorised as Class 1, which is the acoustical environment typical of an urban area. This land use is classified as “noise sensitive”. In the following table, sound level criteria are extracted from the City of Ottawa Environmental Noise Control Guidelines (ENCG) which also replicate those found in the MoE guideline.

Table 1: Sound Level Criteria for Point of Reception

<table>
<thead>
<tr>
<th>Receiver Area (Class #)</th>
<th>Noise assessment location</th>
<th>Time Period</th>
<th>(L_{eq}) (1 hour) dBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 1 (Ref: MOE NPC-205)</td>
<td>Outdoor Living Area (OLA)</td>
<td>07:00-23:00</td>
<td>55</td>
</tr>
<tr>
<td></td>
<td>Plane of Window (POW)</td>
<td>23:00-07:00</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td>Indoor</td>
<td>07:00-23:00</td>
<td>45</td>
</tr>
<tr>
<td></td>
<td></td>
<td>23:00-07:00</td>
<td>40</td>
</tr>
</tbody>
</table>

The outdoor criteria apply only to outdoor spaces that are greater than 4 metres deep and therefore do not apply to this development.

Noise levels are therefore only assessed from the perspective of the office windows (the façade of the building or plane of a window) as described on the site plan.

3.1 **Sound Level Criteria – Building Component Requirements**

Indoor noise level criteria are provided by the ENCG for living and sleeping areas of residences and are similarly applied to office spaces, with the requirement that building components must be designed and selected to ensure that the indoor criteria are met. Extracts from the ENCG follow.

Table 2: Road and Rail Noise: Building Component Requirements (Daytime) (07:00 –23:00)

<table>
<thead>
<tr>
<th>Assessment location</th>
<th>Noise Source</th>
<th>(L_{eq}) (16 hours) dBA</th>
</tr>
</thead>
<tbody>
<tr>
<td>POW</td>
<td>Road</td>
<td>Less than or equal to 65 dBA: Ontario Building Code</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Greater than 65 dBA: Building components must be designed to ensure indoor criteria are met</td>
</tr>
<tr>
<td>POW</td>
<td>Rail</td>
<td>Less than or equal to 60 dBA: Ontario Building Code</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Greater than 60 dBA: Building components must be designed to ensure indoor criteria are met</td>
</tr>
</tbody>
</table>
4. IMPACT ASSESSMENT – TRAFFIC NOISE

4.1 Traffic Information

Surrounding this location are several sources of significant road traffic noise: Highway 417, Tremblay road, the bus transitway, Vanier Parkway/Riverside Drive, Terminal Ave., Industrial Ave. and Belfast road. While these roadways are, on average, 300m distant from the development site, the heavy volumes of traffic on each and the line-of-sight relationship with the points of reception justify their inclusion in the noise prediction model. Table 1.7, page 15 of the ENCG referenced above lists the AADT for each category of roadway used in this analysis.

The ENCG has been used to divide the reported daily traffic volume data (AADT) into vehicle categories and by time-of-day. All input data is repeated in the results, discussed below, and attached as Appendix A. For ease of reference, the traffic data are summarised in the following table.

Table 3: Table of Traffic Flow Data

<table>
<thead>
<tr>
<th>Source</th>
<th>AADT</th>
<th>Daytime/ Night-time</th>
<th>Cars</th>
<th>Medium Trucks</th>
<th>Heavy Trucks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hwy 417 west</td>
<td>54999</td>
<td>50599/4400</td>
<td>44527/3872</td>
<td>3542/308</td>
<td>2530/220</td>
</tr>
<tr>
<td>Hwy 417 east</td>
<td>54999</td>
<td>50599/4400</td>
<td>44527/3872</td>
<td>3542/308</td>
<td>2530/220</td>
</tr>
<tr>
<td>Tremblay rd.</td>
<td>24000</td>
<td>22080/1920</td>
<td>19430/1690</td>
<td>1546/134</td>
<td>1104/96</td>
</tr>
<tr>
<td>Bus transitway</td>
<td>2000</td>
<td>1840/160</td>
<td>-</td>
<td>1840/160</td>
<td>-</td>
</tr>
<tr>
<td>Vanier Pkwy</td>
<td>50000</td>
<td>46000/4000</td>
<td>40480/3520</td>
<td>3220/280</td>
<td>2300/200</td>
</tr>
<tr>
<td>Riverside Dr.</td>
<td>50000</td>
<td>46000/4000</td>
<td>40480/3520</td>
<td>3220/280</td>
<td>2300/200</td>
</tr>
<tr>
<td>Terminal Ave.</td>
<td>8000</td>
<td>7360/640</td>
<td>6477/563</td>
<td>515/45</td>
<td>368/32</td>
</tr>
<tr>
<td>Belfast rd.</td>
<td>24000</td>
<td>22080/1920</td>
<td>19430/1690</td>
<td>1546/134</td>
<td>1104/96</td>
</tr>
<tr>
<td>Industrial Ave.</td>
<td>24000</td>
<td>22080/1920</td>
<td>19430/1690</td>
<td>1546/134</td>
<td>1104/96</td>
</tr>
</tbody>
</table>

For 2-lane roadways, traffic flow was presumed to be at the roadway centreline, as is normal practice. Multi-lane roadways and Hwy 417 were segmented according to their varying circumstances in order to consider the effect of distance, barriers and elevation changes. Traffic levels on Terminal Ave. have likely increased since the last survey in August 2009 due to the opening of the Trainyards shopping complex, but for purposes of this analysis we have relied on the latest available data. All traffic on the bus transitway consists of city buses, which are considered equivalent to medium trucks.

4.2 Rail Information

The Ottawa train terminal processes 6 passenger trains per day from each of Toronto and Montreal. All trains stop at the terminal and there is neither through nor freight traffic. A train speed of 10 km/h was assumed entering or leaving the station and this was used to model rail
noise. One locomotive and 8 passenger rail cars were assumed for each train. The rail line nearest to the development was assumed as the source location.

### 4.3 Road and Rail Noise Impact Predictions

Predictions of daytime and night-time noise levels were made for this site. The prediction locations are marked on the attached Site Plan.

The predictions were made using the MoE tool STAMSON, version 5.02, and are summarised below and attached as Appendix A.

### 4.4 Summary of Predictions

The following table summarizes the ambient noise predictions for the building north-west corner and south façade.

**Table 4: Predicted Noise Levels:**

<table>
<thead>
<tr>
<th>Location</th>
<th>component</th>
<th>Predicted Noise Level Daytime (plane of window)</th>
<th>Predicted Noise Level Night-time (plane of window)</th>
</tr>
</thead>
<tbody>
<tr>
<td>North-west corner (3rd floor)</td>
<td>Road</td>
<td>67 dBA $L_{eq}$</td>
<td>60 dBA $L_{eq}$</td>
</tr>
<tr>
<td></td>
<td>Rail</td>
<td>52 dBA $L_{eq}$</td>
<td>52 dBA $L_{eq}$</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>67 dBA $L_{eq}$</strong></td>
<td><strong>60 dBA $L_{eq}$</strong></td>
</tr>
<tr>
<td>South façade</td>
<td>Road</td>
<td>66 dBA $L_{eq}$</td>
<td>59 dBA $L_{eq}$</td>
</tr>
<tr>
<td></td>
<td>Rail</td>
<td>33 dBA $L_{eq}$</td>
<td>33 dBA $L_{eq}$</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>66 dBA $L_{eq}$</strong></td>
<td><strong>59 dBA $L_{eq}$</strong></td>
</tr>
</tbody>
</table>

It may be noted that the predicted rail noise emissions are lower by more than 10dB with respect to road traffic noise level predictions and, as such, do not add significantly to the net total predicted emissions.
5. INDOOR SOUND LEVEL CRITERIA

This property is categorised as Class 1, which is the acoustical environment typical of an urban area. Due to its proposed uses, this land use is classified as “noise sensitive”. In the following table, sound level criteria are extracted from the City of Ottawa Environmental Noise Control Guidelines (TABLE 1.6) which also replicate those found in the MoE guideline.

Table 5: Interior Sound Level Criteria

<table>
<thead>
<tr>
<th>Type of Space</th>
<th>Leq (Time Period (dBA))</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roadways, transitways &amp; LRT</td>
<td>Rail (diesel locomotives)</td>
</tr>
<tr>
<td>General offices, reception areas, retail stores, etc. (Time period: 16 hr, 07:00 – 23:00)</td>
<td>50</td>
</tr>
<tr>
<td>Living/dining areas of residences, hospitals, schools, nursing/retirement homes, day-care centres, theatres, places of worship, libraries, individual or semi-private offices, conference rooms, reading rooms, etc. (Time period: 16 hr, 07:00 – 23:00)</td>
<td>45</td>
</tr>
</tbody>
</table>

5.1 Indoor Noise Control Measures

Noise levels at the points of reception are at the threshold limit for standard building construction to meet indoor sound level criteria. Since this development is a commercial office space, the glazing and other building envelope components currently specified will be more than adequate to ensure compliance with indoor sound level criteria. However, as is standard practice for this type of development, in order to meet indoor noise level criteria, central air conditioning is required for all floors. Sound pressure levels within the building due to the central air conditioning must not exceed the 40 dBA rail-based source criteria in order to comply with the requirements of the ENCG and MOE LU-131.

All construction is required to meet the requirements of the Ontario Building Code. Since building components must be designed to ensure indoor criteria are met, no additional special measures (i.e. sound rated windows) are anticipated.
6. **SUMMARY & RECOMMENDATIONS**

The following noise control measures are recommended for all floors in the building:

- Central air conditioning, and;
- Notices-on-Title respecting noise (attached as Appendix B)

**DRAFT**

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Integral DX Engineering Ltd.
28 June 2010

Attachments:
- Site Plan, showing locations for predictions
- Proposed exterior wall design configuration & components
- Appendix B: Suggested Wording for Notices-On-Title
APPENDIX A: STAMSON 5.02 OUTPUTS (DATED 27 MAY, 2010)

STAMSON 5.0 SUMMARY REPORT Date: 27-05-2010 13:06:42
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: canvia1.te Time Period: Day/Night 16/8 hours
Description: Canderel VIA Lands NW corner

Rail data, segment # 1: Ottawa Stn (day/night)

| Train Type | Trains | Speed (km/h) | # loc | # Cars | Eng | Cont
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Tor &amp; Mtl</td>
<td>8.0/4.0</td>
<td>10.0</td>
<td>1.0</td>
<td>8.0</td>
<td>Diesel</td>
<td>No</td>
</tr>
</tbody>
</table>

Data for Segment # 1: Ottawa Stn (day/night)

- Angle1: -90.00 deg, Angle2: 90.00 deg
- Wood depth: 0 (No woods.)
- No of house rows: 0 / 0
- Surface: 1 (Absorptive ground surface)
- Receiver source distance: 68.00 / 68.00 m
- Receiver height: 10.50 / 10.50 m
- Topography: 1 (Flat/gentle slope; no barrier)
- No Whistle
- Reference angle: 0.00

Result summary (day)

<table>
<thead>
<tr>
<th>Loc</th>
<th>Wheel Leq (dBA)</th>
<th>Whistle Left Leq (dBA)</th>
<th>Right Leq (dBA)</th>
<th>Total Leq (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ottawa Stn</td>
<td>51.46</td>
<td>31.79</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

* Bright Zone

Result summary (night)

<table>
<thead>
<tr>
<th>Loc</th>
<th>Wheel Leq (dBA)</th>
<th>Whistle Left Leq (dBA)</th>
<th>Right Leq (dBA)</th>
<th>Total Leq (dBA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ottawa Stn</td>
<td>51.46</td>
<td>31.79</td>
<td>--</td>
<td>--</td>
</tr>
</tbody>
</table>

* Bright Zone

Road data, segment # 1: 417east (day/night)

- Car traffic volume: 44527/3872 veh/TimePeriod
- Medium truck volume: 3542/308 veh/TimePeriod
- Heavy truck volume: 2530/220 veh/TimePeriod
- Posted speed limit: 100 km/h
Noise Impact Assessment Study: VIA Lands, 455 Terminal Avenue Ottawa, Ontario

Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: 417east (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 367.00 / 367.00 m
Receiver height           : 10.50 / 10.50 m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   5.00 m
Reference angle           :   0.00

Road data, segment # 2: 417west (day/night)
-------------------------------------------
Car traffic volume  : 44527/3872 veh/TimePeriod
Medium truck volume  : 3542/308 veh/TimePeriod
Heavy truck volume   : 2530/220 veh/TimePeriod
Posted speed limit   :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: 417west (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 414.00 / 414.00 m
Receiver height           : 10.50 / 10.50 m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   5.00 m
Reference angle           :   0.00

Road data, segment # 3: Tremblay (day/night)
--------------------------------------------
Car traffic volume      : 19430/1690 veh/TimePeriod
Medium truck volume     : 1546/134 veh/TimePeriod
Heavy truck volume      : 1104/96 veh/TimePeriod
Posted speed limit      :   60 km/h
Road gradient           :     0 %
Road pavement           :     1 (Typical asphalt or concrete)

Data for Segment # 3: Tremblay (day/night)
------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 291.00 / 291.00 m
Receiver height           : 10.50 / 10.50 m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   5.00 m
Reference angle           :   0.00
Road data, segment # 4: Transitway (day/night)
-----------------------------------------------
Car traffic volume : 0/0 veh/TimePeriod
Medium truck volume : 1680/320 veh/TimePeriod
Heavy truck volume : 0/0 veh/TimePeriod
Posted speed limit : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 4: Transitway (day/night)
---------------------------------------------
Angle1  Angle2           : -90.00 deg   90.00 deg
Wood depth                : 0 (No woods.)
No of house rows          : 0 / 0
Surface                   : 1 (Absorptive ground surface)
Receiver source distance  : 233.00 / 233.00 m
Receiver height           : 10.50 / 10.50 m
Topography                : 3 (Elevated; no barrier)
Elevation                 : 5.00 m
Reference angle           : 0.00

Road data, segment # 5: Vanier Pkwy (day/night)
-----------------------------------------------
Car traffic volume : 40480/3520 veh/TimePeriod
Medium truck volume : 3220/280 veh/TimePeriod
Heavy truck volume : 2300/200 veh/TimePeriod
Posted speed limit : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 5: Vanier Pkwy (day/night)
---------------------------------------------
Angle1  Angle2           : 0.00 deg   90.00 deg
Wood depth                : 0 (No woods.)
No of house rows          : 0 / 0
Surface                   : 1 (Absorptive ground surface)
Receiver source distance  : 358.00 / 358.00 m
Receiver height           : 10.50 / 10.50 m
Topography                : 4 (Elevated; with barrier)
Barrier angle1 : 0.00 deg  Angle2 : 90.00 deg
Barrier height            : 0.01 m
Elevation                 : 4.00 m
Barrier receiver distance : 17.00 / 17.00 m
Source elevation          : 1.50 m
Receiver elevation        : 4.00 m
Barrier elevation         : 4.00 m
Reference angle           : 0.00

Road data, segment # 6: Riverside dr (day/night)
-----------------------------------------------
Car traffic volume : 40480/3520 veh/TimePeriod
Medium truck volume : 3220/280 veh/TimePeriod
Heavy truck volume : 2300/200 veh/TimePeriod
Posted speed limit : 70 km/h
Road gradient : 0 %
Road pavement    :  1 (Typical asphalt or concrete)

Data for Segment # 6: Riverside dr (day/night)
----------------------------------------------
Angle1 Angle2    : -90.00 deg  0.00 deg
Wood depth       :  0  (No woods.)
No of house rows :  1 / 0
Surface          :  1  (Absorptive ground surface)
Receiver source distance : 373.00 / 373.00 m
Receiver height  :  10.50 / 10.50 m
Topography       :  4  (Elevated; with barrier)
Barrier angle1   : -90.00 deg  Angle2 : 0.00 deg
Barrier height   :  0.01 m
Elevation        :  4.00 m
Barrier receiver distance : 17.00 / 17.00 m
Source elevation :  1.50 m
Receiver elevation:  4.00 m
Barrier elevation:  4.00 m
Reference angle  :  0.00

Road data, segment # 7: Terminal (day/night)
--------------------------------------------
Car traffic volume : 6477/563 veh/TimePeriod
Medium truck volume: 515/45 veh/TimePeriod
Heavy truck volume : 368/32 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient     : 0 %
Road pavement     :  1 (Typical asphalt or concrete)

Data for Segment # 7: Terminal (day/night)
------------------------------------------
Angle1 Angle2    : -90.00 deg  0.00 deg
Wood depth       :  0  (No woods.)
No of house rows :  0 / 0
Surface          :  2  (Reflective ground surface)
Receiver source distance : 64.00 / 64.00 m
Receiver height  :  10.50 / 10.50 m
Topography       :  1  (Flat/gentle slope; no barrier)
Reference angle  :  0.00

Road data, segment # 8: Belfast (day/night)
-------------------------------------------
Car traffic volume : 19430/1690 veh/TimePeriod
Medium truck volume: 1546/134 veh/TimePeriod
Heavy truck volume : 1104/96 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient     : 0 %
Road pavement     :  1 (Typical asphalt or concrete)

Data for Segment # 8: Belfast (day/night)
-----------------------------------------
Angle1 Angle2    : -90.00 deg  0.00 deg
Wood depth       :  0  (No woods.)
No of house rows :  0 / 0
Surface          :  1  (Absorptive ground surface)
Receiver source distance : 467.00 / 467.00 m
Receiver height : 10.50 / 10.50 m  
Topography : 3 (Elevated; no barrier)  
Elevation : 5.00 m  
Reference angle : 0.00

Road data, segment # 9: Industrial (day/night)  
----------------------------------------------
Car traffic volume : 19430/1690 veh/TimePeriod
Medium truck volume : 1546/134 veh/TimePeriod
Heavy truck volume : 1104/96 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 9: Industrial (day/night)  
--------------------------------------------
Angle1 Angle2 : -90.00 deg   90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 60 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 392.00 / 392.00 m
Receiver height : 10.50 / 10.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Result summary (day)  
---------------------
<table>
<thead>
<tr>
<th>source</th>
<th>Road</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>height</td>
<td>Leq</td>
</tr>
<tr>
<td></td>
<td>(m)</td>
<td>(dBA)</td>
</tr>
<tr>
<td>--------</td>
<td>--------</td>
<td>-------</td>
</tr>
<tr>
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Result summary (night)  
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Noise Impact Assessment Study: VIA Lands, 455 Terminal Avenue Ottawa, Ontario

28 June 2010

7. Terminal ! 1.50 ! 48.85 ! 48.85
8. Belfast ! 1.50 ! 42.28 ! 42.28
9. Industrial ! 1.50 ! 45.68 ! 45.68

---------------------------------------------
Total 59.62 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 67.05
(NIGHT): 60.24

STAMSON 5.0        SUMMARY REPORT        Date: 27-05-2010 13:21:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: canvia2.te           Time Period: Day/Night 16/8 hours
Description: Canderel VIA Lands south facade
Rail data, segment # 1: Ottawa Stn (day/night)

----------------------------------------------
Train            ! Trains      ! Speed !(km/h)!/# loc!/Train!/Train! type !Cont
Type             !             !/Train! /Train! type !weld
-----------------+-------------+-------+------+------+------+----
1. Tor & Mtl   !   8.0/4.0   ! 10.0 ! 1.0 ! 8.0 !Diesel! No

Data for Segment # 1: Ottawa Stn (day/night)

----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                : 0       (No woods.)
No of house rows          : 0 / 0
Surface                   : 1       (Absorptive ground surface)
Receiver source distance  : 118.00 / 118.00 m
Receiver height           : 10.50 / 10.50 m
Topography                : 2       (Flat/gentle slope; with barrier)
No Whistle
Barrier angle1            : -90.00 deg     Angle2 : 90.00 deg
Barrier height            : 30.00 m
Barrier receiver distance : 0.01 / 0.01 m
Source elevation          : 0.00 m
Receiver elevation        : 0.00 m
Barrier elevation         : 0.00 m
Reference angle           : 0.00

Result summary (day)

----------------------------------------------
!   Loc ! Wheel ! Whistle ! Whistle ! Total
!   Leq ! Leq ! Left Leq ! Right Leq! Leq

Integral DX Engineering Ltd.
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<th>Leq</th>
<th>Left Leq</th>
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* Bright Zone *

Result summary (night)

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* Bright Zone *

Road data, segment # 1: 417east (day/night)

- Car traffic volume: 44527/3872 veh/TimePeriod
- Medium truck volume: 3542/308 veh/TimePeriod
- Heavy truck volume: 2530/220 veh/TimePeriod
- Posted speed limit: 100 km/h
- Road gradient: 0%
- Road pavement: 1 (Typical asphalt or concrete)

Data for Segment # 1: 417east (day/night)

- Angle1: -90.00 deg 90.00 deg
- Wood depth: 0 (No woods.)
- No of house rows: 0 / 0
- Surface: 1 (Absorptive ground surface)
- Receiver source distance: 417.00 / 417.00 m
- Receiver height: 10.50 / 10.50 m
- Topography: 4 (Elevated; with barrier)
- Barrier angle1: -90.00 deg Angle2: 90.00 deg
- Barrier height: 30.00 m
- Elevation: 5.00 m
- Barrier receiver distance: 0.01 / 0.01 m
- Source elevation: 0.00 m
- Receiver elevation: 5.00 m
- Barrier elevation: 5.00 m
- Reference angle: 0.00

Road data, segment # 2: 417west (day/night)

- Car traffic volume: 44527/3872 veh/TimePeriod
- Medium truck volume: 3542/308 veh/TimePeriod
- Heavy truck volume: 2530/220 veh/TimePeriod
- Posted speed limit: 100 km/h
- Road gradient: 0%
- Road pavement: 1 (Typical asphalt or concrete)
Data for Segment # 2: 417west (day/night)
-----------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                : 0       (No woods.)
No of house rows          : 0 / 0
Surface                   : 1       (Absorptive ground surface)
Receiver source distance  : 464.00 / 464.00 m
Receiver height           : 10.50 / 10.50 m
Topography                : 4       (Elevated; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            : 30.00 m
Elevation                 : 5.00 m
 Barrier receiver distance : 0.01 / 0.01 m
Source elevation          : 0.00 m
Receiver elevation        : 10.50 m
Barrier elevation         : 5.00 m
Reference angle           : 0.00 m

Road data, segment # 3: Tremblay (day/night)
--------------------------------------------
Car traffic volume  : 19430/1690 veh/TimePeriod
Medium truck volume : 1546/134 veh/TimePeriod
Heavy truck volume  : 1104/96 veh/TimePeriod
Posted speed limit   : 60 km/h
Road gradient       : 0 %
Road pavement       : 1 (Typical asphalt or concrete)

Data for Segment # 3: Tremblay (day/night)
------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                : 0       (No woods.)
No of house rows          : 0 / 0
Surface                   : 1       (Absorptive ground surface)
Receiver source distance  : 341.00 / 341.00 m
Receiver height           : 10.50 / 10.50 m
Topography                : 4       (Elevated; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            : 30.00 m
Elevation                 : 5.00 m
Barrier receiver distance : 0.01 / 0.01 m
Source elevation          : 0.00 m
Receiver elevation        : 10.50 m
Barrier elevation         : 5.00 m
Reference angle           : 0.00 m

Road data, segment # 4: Transitway (day/night)
----------------------------------------------
Car traffic volume  : 0/0 veh/TimePeriod
Medium truck volume : 1680/320 veh/TimePeriod
Heavy truck volume  : 0/0 veh/TimePeriod
Posted speed limit   : 70 km/h
Road gradient       : 0 %
Road pavement       : 1 (Typical asphalt or concrete)

Data for Segment # 4: Transitway (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg  
Wood depth                : 0       (No woods.)  
No of house rows          : 0 / 0  
Surface                   : 1       (Absorptive ground surface)  
Receiver source distance  : 333.00 / 333.00 m  
Receiver height           : 10.50 / 10.50 m  
Topography                : 4       (Elevated; with barrier)  
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg  
Barrier height            : 30.00 m  
Elevation                 : 5.00 m  
Barrier receiver distance  : 0.01 / 0.01 m  
Source elevation          : 0.00 m  
Receiver elevation        : 5.00 m  
Barrier elevation         : 5.00 m  
Reference angle           : 0.00  

Road data, segment # 5: Riverside dr (day/night)  

Car traffic volume          : 40480/1690 veh/TimePeriod  
Medium truck volume         : 3220/134 veh/TimePeriod  
Heavy truck volume          : 2300/96 veh/TimePeriod  
Posted speed limit           : 70 km/h  
Road gradient               : 0 %  
Road pavement               : 1 (Typical asphalt or concrete)  

Data for Segment # 5: Riverside dr (day/night)  

Angle1   Angle2           : -90.00 deg   0.00 deg  
Wood depth                : 0       (No woods.)  
No of house rows          : 1 / 1  
House density             : 50 %  
Surface                   : 2       (Reflective ground surface)  
Receiver source distance  : 423.00 / 423.00 m  
Receiver height           : 10.50 / 10.50 m  
Topography                : 4       (Elevated; with barrier)  
Barrier angle1            : -90.00 deg   Angle2 : 0.00 deg  
Barrier height            : 0.01 m  
Elevation                 : 4.00 m  
Barrier receiver distance  : 406.00 / 406.00 m  
Source elevation          : 1.50 m  
Receiver elevation        : 4.00 m  
Barrier elevation         : 4.00 m  
Reference angle           : 0.00  

Road data, segment # 6: Terminal (day/night)  

Car traffic volume          : 6477/563 veh/TimePeriod  
Medium truck volume         : 515/45 veh/TimePeriod  
Heavy truck volume          : 368/32 veh/TimePeriod  
Posted speed limit           : 50 km/h  
Road gradient               : 0 %  
Road pavement               : 1 (Typical asphalt or concrete)  

Data for Segment # 6: Terminal (day/night)  

Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  15.00 / 15.00  m
Receiver height           :  10.50 / 10.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 7: Belfast (day/night)
-------------------------------------------
Car traffic volume  : 19430/1690  veh/TimePeriod
Medium truck volume : 1546/134   veh/TimePeriod
Heavy truck volume  : 1104/96    veh/TimePeriod
Posted speed limit   :   60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 7: Belfast (day/night)
-----------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  437.00 / 437.00 m
Receiver height           :  10.50 / 10.50  m
Topography                :      3       (Elevated; no barrier)
Elevation                 :   5.00 m
Reference angle           :   0.00

Road data, segment # 8: Industrial (day/night)
---------------------------------------------
Car traffic volume  : 19430/1690  veh/TimePeriod
Medium truck volume : 1546/134   veh/TimePeriod
Heavy truck volume  : 1104/96    veh/TimePeriod
Posted speed limit   :   50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 8: Industrial (day/night)
--------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     80 %
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  355.00 / 355.00 m
Receiver height           :  10.50 / 10.50  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Result summary (day)
---------------------
! source !   Road    ! Total
! height   !   Leq    !   Leq
! (m)      ! (dBA)   ! (dBA)
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Result summary (night)

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TOTAL Leq FROM ALL SOURCES (DAY): 66.38
(NIGHT): 58.67
APPENDIX B:  RECOMMENDED WORDING FOR NOTICES-ON-TITLE
(attachment to Integral DX Engineering Ltd. report dated 28 June 2010)

1) "Purchasers and lessees of (insert legal description here) are advised that despite this inclusion of noise control features in this development and within the building units, noise levels due to increasing road traffic on surrounding roadways and Terminal Avenue may continue to be of concern, occasionally interfering with some activities of the dwelling occupants and that additional attenuation measures are not proposed."

2) "This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the Municipality’s and Ministry of the Environment’s noise criteria."

3) "The Transferee covenants with the Transfer or that the above clause, verbatim, shall be included in all subsequent Agreements of Purchase and Sale and Deeds conveying the lands described herein, which covenant shall run with the said lands and is for the benefit of the subsequent owners of the said lands and the owner of the adjacent roads."