Appendix C -
Unabridged Agency & Stakeholder Comments

TORONTO City Planning Division

Comments

District Offices:

☐ North York District
Community Planning Office
North York Civic Centre
5100 Yonge Street
Toronto, Ontario M2N 5V7
Fax: 416-395-7155

☒ Toronto and East York District
Community Planning Office
Toronto City Hall
100 Queen Street West
Toronto, Ontario M5H 2N2
Fax: 416-392-1330

☐ Scarborough District
Community Planning Office
Scarborough Civic Centre
150 Borough Drive
Toronto, Ontario M1P 4N7
Fax: 416-396-4265

☐ Etobicoke York District
Community Planning Office
2 Civic Centre Court
Toronto, Ontario M9C 5A3
Fax: 416-394-6063

Community Consultation Meeting

Application No.: 160612 STE 28 TM **Meeting Date:** June 28, 2016

Property Address/Subject: Ground Run-up Enclosure at Billy Bishop Toronto City Airport

City staff: Bryan Bowen (bbowen@toronto.ca) **Tel. No.:** 416-338-4842

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- Keep noise from runup as quiet as possible and as aesthetically pleasing as possible.
- Noise mitigating landscape along the runway (eco friendly)

OPTIONAL – Please **PRINT** name and address.

LAURIE SKINNER
905-480 Queens Quay W
M5V 2Y5

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Shame on the City of Toronto and Ports Toronto for perpetuating the use of run-ups at the Billy Bishop Airport: (1) We should do No run ups here at this airport.
(2) It perpetuates the use of the Park lands for the Airport.
(3) Stop the project – not enough study on noise & pollution – Scandal

OPTIONAL – Please **PRINT** name and address.

LEIDA ENGLAR
32 Omaha Ave
Toronto
M5J 1Z9

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THE QUESTION: "WHY MUST PORTER CONTINUE TO MAINTAIN IT'S AIRCRAFT ON THE ISLAND?" WHY HASN'T PORTS TORONTO REQUIRED PORTER TO REMOVE IT'S ENGINE MAINTENANCE + RUNUPS TO SAULT STAINT MARIE OR ELSWHERE? KEN LUNDY REFUSED TO ANSWER THIS QUESTION. VERY DISSATISFYING WITH SPEND $9 MILLION ON UNNECESSARY INFRASTRUCTURE.

OPTIONAL – Please **PRINT** name and address.

GEORGE RODANOV

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WHAT CONTAMINATES ARE RELEASED IN THE RUN-UP PROCESS?
WHAT WILL BE THE DEPOSITION OF THESE CONTAMINANTS WITH IN AND NEAR-BY THE RUN UP PROCESS?
SNOW WILL ACCUMULATE AND BE PLOWED & REMOVED FROM THAT FACILITY. WILL THAT SNOW BE TREATED TO REMOVE THOSE CONTAMINANTS FROM THE ENVIRONMENT AND FROM EXPOSING AIRPORT EMPLOYEES TO THESE HARMFUL SUBSTANCES?

OPTIONAL – Please **PRINT** name and address.

SARAH MILLER
46 SECOND STREET
TORONTO ON M5J 2A8

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There seems to be no real data on noise now especially at height where we all live. There are no base lines. 15db drop in sound level is not much when it is 110 db now.
What if the GRE is ineffective.
Why don't we just do the run ups in Sault Ste Marie
Why are we building infrastructure that promotes climate change that will be unneeded at the end of Tripartite Agreement

OPTIONAL – Please **PRINT** name and address.

Dennis Bryant
703-680 Queens Quay W M5V2Y9

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Why can't run-ups be done somewhere else?
What about noise from so many take-offs + landings?
Why doesn't the City protect park users from this noise?
People who don't have nice backyards and (and pollution)
access to Muskoka cottages need to use beautiful parks
like Hanlans. Try having a picnic with friends + family
and see what it's like having to stop conversation
continually. Hanlans is a city asset - the City should protect it.
Is this structure really going to make a difference for all the
people living on higher floors of nearby buildings?
Why isn't it taller?

OPTIONAL – Please **PRINT** name and address.

While the noise reduction diagram looks impressive, what about all the rest of the noise and nauseating fumes?

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This is a terrible idea.
Porter should be required to move their run-up to another airport and the 9 million $ would be better used to address the general noise pollution problem.

OPTIONAL – Please **PRINT** name and address.

M. Petryshyn
600 Queens Quay W. #724
Tor. ON M5V3M3

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I understand the need to reduce engine noise from ground runups at the airport, and ~~given~~ provided there is no other alternative to performing servicing elsewhere - I support the construction of the GRE to abate the noise produced by the ground run ups. Any effort to reduce noise at the airport is much appreciated by residents living along the Toronto harbourfront.

OPTIONAL – Please **PRINT** name and address.

JOSE TAVARES
508E - 500 QUEENS QUAY W
Toronto M5V 3K8

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For: Joe Cressy, Toronto City Council
Re: Proposed Airport Noise Enclosure Problems, July 8, 2016

I have reviewed the proposed island airport run-up noise enclosure, and conclude that it's an expensive public relations gesture that will not reduce noise in the neighbourhood.

The problem is in the design. The Port Authority has hired a firm that designed a noise enclosure to meet the Port Authority specs. This suits the airport's needs to look good in the eyes of the media, but does not meet the community's needs for less airport noise.

Basically, the proposed noise enclosure does not enclose the noise. The design, as proposed, is a hollow wall, not a solid wall. Inside the hollow wall are panels which will direct the noise and the air flow upward, into the wind, which will carry the noise into the neighbourhood, exactly the same as it does now. And more run-ups mean more noise.

Acoustically, the only thing the noise enclosure offers is a few sound muffling materials, which will reduce the noise, as it passes through the enclosure, by maybe 10-15 decibels. This is not much of a noise reduction when we consider that the noise of engine run-ups, at the source, is 120 - 140 decibels, which is as loud as thunder.

Background Info

In studying airport noise problems, we have learned that engine run-up noise is at its worst when the wind blows in our direction, and when cloud cover and/or humidity amplifies noise levels. When there's no wind, we don't hear much noise from the airport, but when there's a wind in our direction, it's louder than hell in our neighbourhood, from 6 am until nearly midnight.

Noise travels with the wind, and the proposed noise enclosure simply re-directs the noise upward, into the wind. This design will make the noise problem worse on windy days. It might reduce noise a bit on non-windy days, when we don't hear noise anyway.

To illustrate the problem, it's possible to compare the proposed design with an ideal noise enclosure design. Ideally, a run-up enclosure would be shaped like a horse-shoe, ie. solid, rounded walls, with a curved lip at the top to reflect the noise back into the noise enclosure, and toward the ground at the center of the noise enclosure.

I suggested this ideal noise enclosure design to airport officials and was told that it wouldn't work for the airport, because plane engines would stall if run-up noise was reflected back at the plane. Because the plane needs free flowing air to do an engine run-up, the proposed noise enclosure lets the air pass through the so-called enclosure, and is redirected upward into the wind. That's solves their problem, but it ensures that the neighbourhood will still hear the full blast of every engine run-up when the wind is blowing in our direction.

I hope you can advise the Pork Authority to revise their specs, and ask for a noise enclosure design, which actually helps the neighbourhood, instead of spending millions of dollars on a public relations exercise which won't help anyone.

Max Moore, Harbourfront Community Association

Bryan Bowen

From: maxmoore@sympatico.ca
Sent: July-08-16 1:44 PM
To: Ulla Colgrass; Ed Hore
Cc: Councillor Cressy; David Stonehouse
Subject: Re: Proposed Airport Noise Enclosure Problems

Ulla

Your points are right on, except for the point about exhaust and noise being directed towards Hanlan's Point Beach. That's not exactly true.

According to the proposal, the open end of the enclosure points toward Hanlan's, but that's not the direction the planes will do engine run-ups.

The plane enters the enclosure via the open end, and then the plane turns around, to face the open end when it does the engine run-up.

In other words, the exhaust-blowing end of the plane points east, toward the closed end of the noise enclosure, when it does engine run-ups.

Noise and exhaust blowing from the run-ups will be aimed directly at York Quay, and the noise enclosure will do nothing to contain the noise.

Because the enclosure is hollow and deflects the noise upward into the wind, you will probably hear more run-up noise, rather than less noise.

It would actually be better for York Quay, if the run-up blowout was directed at Hanlan's Beach, but that's not the case.

Max

From: Ulla Colgrass
Sent: Friday, July 08, 2016 12:43 PM
To: maxmoore@sympatico.ca
Subject: Re: Proposed Airport Noise Enclosure Problems

Other airport enclosure points:

- The representative of the company proposing the $9 million run-up enclosure said that noise mitigation **is only effective at or near ground level.** That helps a few, but most of us live in condo towers, where noise rises unimpeded.
- The proposed location for this enclosure **points the exhaust and noise towards Hanlan's Point Beach** very close by. Also, Ontario Place and sailing clubs are in that direction. To what effect?

Run-up and airport noise shoots across the Bay to the Eastern Gap, depending on weather conditions. It's not a Bathurst Quay problem only.

Ulla

Ulla Colgrass
Planning Committee
York Quay Neighbourhood Association
www.yqna.ca
416 867-6200

On Jul 8, 2016, at 11:56 AM, <maxmoore@sympatico.ca> <maxmoore@sympatico.ca> wrote:

For: Joe Cressy, Pam McConnell, Toronto City Council
Re: Proposed Airport Noise Enclosure Problems

I have reviewed the proposed island airport run-up noise enclosure, and conclude that it's an expensive public relations gesture that will not reduce noise in the neighbourhood.

The problem is in the design. The Port Authority has hired a firm that designed a noise enclosure to meet the Port Authority specs.

This suits the airport's needs to look good in the eyes of the media, but does not meet the community's needs for less airport noise.

Basically, the proposed noise enclosure does not enclose the noise. The design, as proposed, is a hollow wall, and not a solid wall.

Inside the hollow wall are panels which will direct the noise and the air flow upward, into the wind, which will carry the noise into the neighbourhood, exactly the same as it does now.

More information is attached. Thank you for your interest in this matter.

Max Moore, Harbourfront Community Association

<Proposed Noise Enclosure Problems.pdf>

Bryan Bowen

From:	Ulla Colgrass <ulla@colgrass.com>
Sent:	July-14-16 10:19 AM
To:	WAYNE CHRISTIAN
Cc:	Bryan Bowen; Adam Vaughan; Councillor McConnell; David Stonehouse; Councillor Cressy; Hal Beck; Bob Rasmussen; Allan & Angie Rivers; Estelle Weynman; Laura Cooper; Colgrass Ulla; Leah Lambert; Edward Hore; Carolyn Johnson; Klaus & Friedel Hatje
Subject:	Re: BBTCA GRE - No 'Big' deal
Attachments:	size of run-up enclosure July 13 2016.docx; ATT00001.htm

Thanks, Wayne. It is a huge run-up enclosure on the island.

More concerning: will it work? We were told by the manufacturer that it only works at or near ground level. That's the surface of the water. So what'll be the effect of sound being directed across the Bay, thousands of residents, sail boats, the Music Garden, Harbourfront Centre, HtO Park, Harbour Square Park, Sugar Beach and the Islands?

Is there a model of such a run-up enclosure placed by the water somewhere? We need more facts on that.

Ulla

On Jul 13, 2016, at 11:42 PM, WAYNE CHRISTIAN <wayne.christian@rogers.com> wrote:

How large is the proposed BBTCA 'GRE'...check it out for yourself. (see enclosed word document)

Being a weather specialist with the Federal Government for over 3 decades....I just can't help myself.....the proposed BBTCA 'GRE' structure will be the most expensive visibility marker on the Toronto Islands.

I will follow this up with a detailed word document on several BBTCA proposed 'GRE' issues.

Regards,
Wayne C

Hal Beck

34 Little Norway Crescent
Suite 602
Toronto, Ontario
M5V 3A3
Canada
H: (416) 260-6028

July 28, 2016

Bryan Bowen
Waterfront Secretariat, City Planning, City Hall
100 Queen Street West, 12th Floor, East Tower
Toronto, ON
M5H 2N2
bbowen@toronto.ca

Re: Proposed Ground Runup Enclosure at Toronto Island Airport
Application No. 160612 STE 28 TM

Dear Mr. Bowen

This submission is in regards to the need for the proposed Ground Runup Enclosure [GRE] on the Toronto Island Airport, and is a follow up to comments expressed at the recent public meeting on June 28, 2016 at Waterfront Neighbourhood Centre. We thank the City for this opportunity to comment on this project.

The submission is structured to align with the list of issues shown in the opening presentation that will be addressed through the GRE review process.

This submission contains many statements of fact, assertions, and numbered items for follow up. If there are any facts which do not appear to align with the prevailing understanding of technical staff, please flag these for expeditious clarification and resolution.

List of Appendices for Discussion

Appendix A:	NEF Contour Figures
Appendix B:	Concerns re 2015 TPA Draft Noise Study Scope
Appendix C:	2010 Jacobs Noise Study excerpts
Appendix D:	2010 TPA Public Outreach Failures
Appendix E:	TPA Press Release dated April 4, 2011
Appendix F:	2010 RWDI Noise Impact Assessment excerpts
Appendix G:	TP1247 excerpts
Appendix H:	NPC-300 excerpts
Appendix I:	2011 TPA Noise Barrier EA PIC Handout excerpt re Significance of Noise Change Effects

Overview of Concerns

Runup noise is a portion of the total overall airport noise emissions. The proposed GRE, as presented at the public meeting, is intended to mitigate a portion of the most intrusive runup noise for only a portion of waterfront tower residents. Meanwhile, the over-riding concerns regarding Island Airport activity and noise remain completely unaddressed.

The over-riding concerns are the noise effects of all airport activities combined, and the arbitrary increases being made to the total airport capacity which will facilitate the future generation of even more noise. The proposed Ground Runup Enclosure is another increase in the capacity of the Island Airport to service a higher number of aircraft than is currently being served by the site.

An emerging concern is that the technical noise documentation that was relied upon by the Tripartite Agreement Signatories in making past decisions concerning Island Airport capacity is being found to be either incomplete, incorrect, or based on unsubstantiated assumption. After reading the 'draft interim' reports supporting the past decisions, technical observers are left with no doubt as to why no engineers had felt comfortable enough to affix their professional seal to any of the noise engineering reports prepared for the Island Airport.

In making these observations, we must acknowledge that some of the past technical reports were prepared under chaotic circumstances and without sufficient consultant time to complete. However, these circumstances were not caused by waterfront stakeholders who are forced to endure the results.

We are requesting that resolution of over-riding noise concerns be incorporated into the terms of the Memo of Understanding regarding the proposed GRE.

1. Compliance with Tripartite Agreement

1. The Tripartite Agreement was initially signed in 1983. It was amended in 1985 and again in 2003. The original signatories to the Agreement were: the former City of Toronto, the Toronto Harbour Commissioners, and Federal Minister of Transport. The successor of the former Harbour Commissioners under the Agreement is Ports Toronto, still legally named Toronto Port Authority [TPA].

1.1 Number of Slots and Need for GRE

2. The need for engine run-ups and a Ground Runup Enclosure is driven by the volume of aircraft activity at the airport. The volume of aircraft activity is in turn driven by the number of slots used at the airport.

3. An airport 'slot' is a window of opportunity for a plane to takeoff or land. The currently approved number of slots available at Toronto Island Airport is 202 slots per day.

4. At Canadian airports, the number of approved slots is confirmed through a noise energy capacity compliance process. This typically references NEF noise modelling results of a projected flight mix scenario, prepared using Transport Canada NEF (Noise Exposure Forecast) software.

5. The noise energy of an individual aircraft is an integrated measure that represents the sum of all the noise as received during a complete fly-by. The NEF noise energy represents the combined effect of all aircraft over a 24 hour period, with a heavier weighting for night time fly-bys.

1.2 Overview of NEF Modelling Process

6. The result of NEF modelling work is an NEF noise energy map, from which noise energy contours are derived in increments of 5 or 10 units of 'EPN dB'. The NEF map is a 'net noise energy' map which shows aircraft noise annoyance data that excludes the ambient or background noise, and does not consider any reflective or shielding surfaces. All NEF values are calculated using aircraft noise annoyance data in a standard formula. This formula is: NEF=EPNL+10xLog(Nd+16.7Nn)-88. The formula was derived in Canada through the late 1960s to protect all stakeholders to the same national standard.

7. The 'Official Noise Map' for an airport is typically the result of an NEF modelling of an ultimate flight mix scenario at the airport. The purpose of establishing an Official Noise Map, using NEF software, is to firmly establish the geographic location of the Control Contour to a national standard. The geographic location of the Control Contour guides land use zoning around an airport site in a manner which minimizes inefficient use of land, and which contains projected levels of public annoyance to the national standard. A main goal of the Official Noise Map is to minimize the potential for land use conflict between future residential land uses and the projected ultimate level of airport activity. An Official Noise Map and Control Contour is established using the NEF modelling software (rather than by free hand drawn circles on a field map) to more effectively minimize future public annoyance and to better protect and validate the rights of all

parties. The noise energy 'Control Contour' established for the Island Airport site is the 25 NEF contour line.

8. When decisions are required with respect to an interim number of slots at an airport, the following general process is followed. The proposed flight mix is modelled and the results are then compared to the fixed Official Noise Map that was initially established for the given airport. This will confirm the noise energy capacity still remaining available at the airport site, and thus, the related maximum number of slots for the given flight mix. The projected noise energy to be generated from a modelled flight mix scenario needs to be contained within the Official Noise Map and at the specific Official Control Contour previously established. This is because the surrounding development lands have been zoned and developed relative to the fixed geographic location of the Official Control Contour. Failure to contain the airport noise would prompt consideration of mitigational measures such as the proposed GRE.

1.3 Community Investigations into Airport Noise

9. The Toronto waterfront communities have expressed long standing concerns with the NEF modelling process being applied at the Island Airport, including the public process through which the number of approved slots has been escalating in recent years. The initiation of recent studies into the Porter Jets Proposal, halted abruptly by airport decision makers in Fall 2015 without publishing technical findings, has triggered ongoing community investigations into airport noise compliance.

10. Several draft and uncertified reports have been issued on behalf of Island Airport decision makers over the years, for purposes of demonstrating due diligence or compliance. Community volunteers are now conducting independent and joint investigations into the underlying assumptions and recommendations contained in these technical documents.

11. The volunteers have been motivated to commence these investigations through on-going experiences of the following airport noise effects: sleep interruption, speech interference, rattling window occurrences, interference with home media use several times per hour, and/or constant loud airport roar in the community. These experiences were in context of observing other undesirable airport effects following increases in slot use, such as mysterious soot deposits and a variety of vehicle and pedestrian conflicts.

12. The community volunteers are wanting to understand whether they are being fair and reasonable in expressing their noise concerns, or if their concerns could be disregarded by decision makers as being expressions of 'over-sensitivity', 'NIMBY-ism', or other political initiatives (which put forth that the island land assets could be used for more valuable purposes in satisfying City needs than an airport).

13. Island Airport decision makers have consistently stated the airport operation is in compliance with the Tripartite Agreement. This would include meeting all standards, criteria, guidelines, and regulations in accordance with Tripartite Agreement Section 16. However, these statements are in contrast with the past complaints and involuntary actions of community members in response to airport noise.

14. Community investigations to date into past airport noise reports and analyses have revealed glaring errors and omissions that have resulted in systematic under-estimation of noise effects at the Island Airport. As discussed herein, Tripartite Signatory documentation to date is incomplete and deficient. The investigations are exposing a shocking disregard for compliance with the Official Noise Map and Control Contour of the Island Airport, as well as Tripartite Agreement Section 16. Abdications of responsibility for ensuring the protection of health and property of waterfront stakeholders have also been observed.

15. The investigations to date strongly suggest that a lower slot capacity is actually available to the decision makers at the Island Airport, and that over-riding concerns are being over-looked in favour of partial mitigations such as the proposed GRE.

16. Community volunteer investigations of Island Airport noise will need to continue for some time; however, some of the major findings to date, as they relate to slot numbers and the proposed GRE, are briefly highlighted herein. We request that resolution of these concerns be incorporated into the terms of the proposed Memo of Understanding regarding the GRE.

1.4 Compliance of Proposed GRE

17. Runup noise is a portion of the total overall airport noise emissions. The proposed GRE, as presented at the public meeting, is intended to mitigate a portion of the most intrusive runup noises for only a portion of waterfront tower residents. Meanwhile, the over-riding noise concerns of Island Airport remain unaddressed.

18. The communities remain outraged by the unresolved discrepancy contained within the GRE meeting presentations regarding 'Tripartite Agreement compliance'. All presenters were in agreement that very significant noise problems are resulting from airport activities, and that these need to be resolved. Yet, the presenters stated that the existing airport operation remains in compliance with the Tripartite Agreement. This discrepancy in comments to the public needs to be resolved. Upon signing the Tripartite Agreement, the Tripartite Signatories would not have envisioned 'very significant' noise conflict between the future airport and the waterfront communities, which the signatories themselves planned. Had they done otherwise, it would have meant the Signatories had acted in a manner which was not fair and reasonable.

19. The opening presentation noted that the GRE structure is proposed to be built on City land and this was apparently confirmed by current City legal staff to be an 'as-of-right use and in full compliance of the Tripartite Agreement'. It was further noted that even if the City wanted to, it could not halt the TPA in constructing this airport expansion on City lands, even if the City wanted to enforce other terms of the Tripartite Agreement related to the airport operation. **At the time of signing the Tripartite Agreement, did former City Legal staff fail to protect the interests of future waterfront property owners and the City itself?**

20. The GRE correspondence record to date does not acknowledge that the proposed new GRE infrastructure is one in a series of incremental airport capacity improvement projects, which are needed to collectively facilitate projected growth in aircraft traffic. Normally, an increase in airport capacity is reviewed inside the context of a comprehensive EA process. Inexplicably, a cumulative effects assessment of the entire airport site and operation has never been completed

for the Toronto Island Airport. The Pre-existing, Existing, and Projected effects of the airport have never been documented in a manner consistent with other airports. Toronto waterfront stakeholders view this as unfair and irresponsible. **Can the signatories prepare a comprehensive assessment of cumulative effects of the existing Island Airport on the surrounding urban marine environment (especially with respect to noise and vibration)?**

21. A draft scope of work for a proposed EA for runway expansion was distributed for public comment in Spring 2015. The study was abruptly halted by the Signatories in Fall 2015. The key components of the proposed study with respect to noise and vibration still need to be resolved. Attached are my technical comments dated May 20, 2015 on the then proposed scope of noise study work which was never completed. My comments were prepared in response to the appended TPA consultant tables which summarized the then proposed technical noise work. The comments expand on some of the technical noise considerations which normally would be analyzed for waterfront airport decision making. An updated scope needs to be reviewed with the communities.

1.5 Compliance of Airport Operation with Official Noise Map

22. The Official Noise Map appended to the Tripartite Agreement was modelled in 1978 for the 1990 horizon year. The noise engineering consulting industry in Ontario was in its infancy in 1978. We understand that all noise measurements and modelling was done by Transport Canada using the best mainframe computer technology then available to staff in 1978 prior to the personal computer era. We understand that the modelling was done using card punches and batch processing. The modelling results were then manually plotted and inked onto mylar mapping.

23. Waterfront residential communities and institutions were planned and approved in compliance with the 1978 Official Noise Map and Control Contour established for the Island Airport (attached). The requirement to contain airport noise energy per the Official Noise Map, as required for residential land zoning, was not altered by any clauses in the Tripartite Agreement negotiated subsequent to the establishment of the Official Noise Map and Control Contour. **Can the Signatories confirm that an incompliance with the Official Noise Map would mean that residential zoned lands on Toronto's waterfront are not being treated the same as all other Canadian communities surrounding an airport, and further, that waterfront residents could then fairly state they are being treated as second class Canadians by Island Airport decision makers?**

24. Waterfront lands were zoned and building permits were issued for the tower corridor with the understanding that the lands would be developed and constructed in accordance with Ontario provincial standards. The re-claimed waterfront lands to be developed were known by the Signatories to be located in the Province of Ontario. Provincial standards assume that airport noise will in fact be contained within the geographic location of the Control Contour as shown on the Official Noise Map. Numerous residential buildings have now been constructed without noise protection in walls, windows, window walls, or roofs. Several buildings do not have ventilation systems capable of being converted into central air conditioning (so that windows can be closed for noise protection). Bedrooms were designed and approved such that headboards must be placed adjacent unprotected external walls which directly face the Island Airport. Several public and private outdoor living areas were approved and constructed with no noise protection. All the

approved construction, sited outside the geographic location of the Official 25 NEF Control Contour as required, was completed under the assumption that all airport noise emissions will in fact be contained at the geographic location of the Control Contour to national standards in perpetuity. **Can the Signatories confirm their understanding of this reality?**

25. Community investigations into airport noise are on-going. Measurements and recordings obtained at elevations facing immediately opposite the Island Airport and elsewhere in the waterfront show 'very significant' to 'beyond very significant' average noise effects. One such recording was played by a resident in the GRE public meeting. Field measurements of normal operation, including in selected times when the approved 202 slot use intensity is actually realized, have shown dramatic exceedances of every known noise standard (federal, provincial, local, or WHO). **Can the Signatories acknowledge that the actual in-field net noise measurements and noise energy impacts to the communities of an approved 202 slots per day operation (excluding those runup noises to be handled by the proposed GRE), can exceed the net amounts that would otherwise be expected if all airport noise energy was indeed contained within the 25 NEF Control Contour geographic location?**

26. Based on community noise measurements to date which were obtained in plane of open window and outdoor living area locations, the Island Airport is not meeting the MOECC noise standards to which the residential communities were designed and constructed (LU-131 and NPC-300), nor the federal Official Noise Map of the Island Airport attached to Tripartite Agreement. Noise requirements for outdoor living areas and sensitive quarters are being exceeded, and the effects classifications range from 'significant' to 'very significant'. It appears that an absence of effective due diligence by all Tripartite signatories is currently being relied upon to trigger the need for the proposed GRE facility. **Can the signatories confirm their understanding that the net airport noise as received by the communities, as well as the total noise received, must meet the provincial noise standards to which the communities were approved, and failure to do so will result in understandable, anticipatable land use conflict?**

27. Waterfront residential communities and institutions were planned and approved in compliance with the 1978 Official Noise Map and Control Contour established for the Island Airport. In the subsequent 1983 Tripartite Agreement, the signatories agreed to allow additional noise of 3 EPNdB to exceed the Official 25 NEF Control Contour, at the geographic location of the 25 NEF Control Contour. The noise exceedance was allowed to occur over the large water surface between Points X and Y as described. (See attached 2008 contour plan showing specific shoreline locations of Points X and Y). The exceeding airport noise was envisioned by the signatories to be directed to the southwest over the Lake Ontario water surface toward Ontario Place. Accordingly, the Tripartite signatories understood the 25 NEF Control Contour was established on water surfaces and agreed to limit the exceedance to a specific magnitude of noise energy at the geographic location of the Control Contour on the water surface. **Can the Signatories re-confirm their understanding the airport noise is to be contained per the Official Noise Map after having considered all effects of the marine environment on noise?**

28. The public was informed in the opening remarks at the GRE public meeting that NEF Contour modelling and the Official Noise Map attached to the Tripartite Agreement do not consider engine run ups or any ground-based airport noise. It was further elaborated that the matter would be

mitigated by the proposed GRE works. Further to above, note that the issue of what noise factors are, or are not, considered under NEF modelling is irrelevant with respect to confirming whether or not the actual airport operation is in compliance with the Official Noise Map published for the Island Airport (attached to the Tripartite Agreement). All actual in-field net noise energy emissions are either contained within the Official Noise Map as per the geographic location of the Official Control Contour, or they are not. **Can the Tripartite Signatories confirm their understanding of this fundamental requirement of the municipal land zoning process?**

Airport Noise Buffering

29. A typical sub-urban land based airport would be surrounded by a land buffer, followed by a commercial belt and then residential lands. In contrast, the Toronto waterfront residential properties adjacent the Island Airport are separated from the airport by a relatively short distance of water surface. It is common knowledge that water surfaces do not attenuate noise but instead propagate noise. The Toronto waterfront communities were zoned without an effective land buffer that separates them from the airport site ground noise, as typical communities would otherwise enjoy elsewhere in Canada. There is no land buffer separation that protects the waterfront communities. Island Airport site generated noise, including runups, cannot dissipate prior to reaching the communities as is normally assumed for typical airport sites.

30. The purpose of Canada's NEF modelling process is to model fly-by events only, for purposes of land use zoning. It purposely does NOT consider noise generated from a typical airport site (including runups), as the site noise is assumed to have dissipated across the typical land buffer or else be shielded by commercial buildings prior to reaching the residential land uses at typical land based airports. Airport noise effects are typically assumed to result from fly-bys only, which are captured by NEF modelling. Noise effects from airport grounds are otherwise typically assumed in the first instance to be nonexistent for those residential lands which are zoned beyond the 25 NEF contour line of their Official Noise Map. Airport site 'stationary source noise' is in the first instance assumed to have no contribution to residential noise effects. Accordingly, assuming a typical land buffer exists, the slot capacity at a typical airport is being assessed from the NEF mapping alone, but is subject to a comprehensive impact assessment of the total local noise environment on humans.

31. At the Island Airport, noise generated from the airport site is a major impact given the unusually close proximity of waterfront residential towers overlooking the adjacent water and runways. Typical modelling assumptions cannot be made with respect to compliance of Island Airport activities, as has been done to date in assessing Island Airport slot capacity. Just as the noise mapping generated at typical airport sites in first instance is intended to include all aircraft noise impacts for residential zoning purposes, the Toronto waterfront communities request that the Island Airport be treated at least equal to all other airports ie. that all airport noise sources (both air and site noise) be studied separately and included in a comprehensive noise assessment of zoned lands and slot capacity. **Can the signatories re-confirm their understanding that waterfront residents were treated to the same standard as other Canadians with respect to the purpose of the Official airport noise mapping, and that in absence of a land buffer and the existence of a marine environment, that a reasonable estimate of all airport noise effects was**

considered in a comprehensive assessment of all noise sources combined, prior to the initial zoning of waterfront lands?

1.6 Yearly Compliance with Official Control Contour

The number of slots used at the airport is driving the need for the proposed GRE. The following issues conspire collectively to increase the number of slots available on paper, and minimize resident noise concerns on paper.

Yearly Compliance Reports

32. Noise contour compliance reports are being prepared annually through Transport Canada on behalf of Tripartite Signatories, which include Transport Canada. The purpose of these annual noise contour reports is to confirm whether the existing airport operation is in compliance with the Official Noise Map and the additional provisions contained in the Tripartite Agreement. These year-end reports are typically issued by Transport Canada one year after the fact.

33. Community reviews of these reports have identified errors and omissions as they relate to confirming compliance of the Island Airport operation, which is surrounded by large water surfaces. Through its participation on the TPA Community Liaison Committee (TPA CLC), YQNA has recently requested that a small working group meet to discuss how these annual contour reports relate and do not relate to the Island Airport. It was agreed that specific invitees would include: City of Toronto, Ports Toronto, Transport Canada, and MOECC. Some of the discussion topics regarding these annual reports are also touched upon herein. **Can the Signatories set a meeting time to: (a) confirm if any legitimate concerns exist with the current preparation of the annual noise contour reports for the Island Airport, and (b) identify next steps such that future reports better meet the requirements of Island Airport decision makers?**

Peak Planning Day Modelling

34. As currently prepared, the annual noise contour reports calculate a flight mix for a 95 percentile Peak Planning Day (PPD) using the past year's actual flight statistics, for use in modelling of an NEF noise map for the past year's PPD flight mix. This resulting noise map is then compared against the Official Noise Map. If the resulting 'yearly PPD contour lines' are located within the Control Contour (closer to the runways), then the airport operation is deemed by Transport Canada to be in compliance.

35. **Given this is not a typical modelling exercise done to project a future airport condition, the community questions why the <u>actual</u> Peak Day (instead of the PPD) is not reviewed in the annual reports?** Modelling a 95th percentile day would appear to exclude 18 days of the highest noise energy from consideration of community effects. The 95th percentile PPD is typically used when modeling future flight mix scenarios, to represent something close to the worst case without the statistical uncertainties of using the actual past worst case data for the projection. However, there is no statistical error with the actual end-of-year flight data is used for an end-of-year report. In fact, there are known significant statistical errors with the PPD calculation itself, which affect the calculation of the yearly noise map. Resident noise concerns are thus minimized on paper.

36. In the annual compliance reports, the NEF contours being modelled for compliance review purposes are referred to as the 'Actual Contours'. This term is not clearly defined in the reports and is causing confusion among technical staff, decision makers, and the public. Not only do these contours not illustrate the actual peak day aircraft movements, they are more importantly not illustrative of the actual noise effects in the waterfront, as discussed herein. (This has also been confirmed through TPA CLC meeting discussions.) **Can the annual reports for the Island Airport clarify the terminology and/or rename the annually prepared contours to remove the misleading word 'Actual'?** The term 'Actual Contour' used in these reports could be replaced by the term 'Year-End PPD Contour'.

NEF Modelling of Yearly Contours

37. The NEF modelling process was established to protect for future fly-by conditions at typical sub-urban land based airports. The NEF software includes ground attenuation algorithms to model noise received from an aircraft fly-by, and lowers the fly-by noise projections by approximately 7dB as the angle of the approaching and receding aircraft gets lower. Accordingly, the modelled 'yearly PPD contours' are currently shown tighter (closer) to the runways than if there was no ground attenuation incorporated into the modelling results. It is common knowledge that water does not attenuate noise like ground does. In fact, marine environments propagate noise. The modelled NEF 'yearly PPD contours' currently being plotted on the large water surfaces would otherwise be closer to the mainland if this issue was taken into account. Resident noise concerns are thus minimized on paper.

38. The standard NEF formula, applied universally in Canada, is fundamentally based on EPNL aircraft noise annoyance data. The EPNL (Effective Perceived Noise Level) is noise energy measure that has been calculated using noise measurements of an aircraft fly-by at a test facility. The EPNL is calculated to simulate the total noise energy of a fly-by as experienced by a human. This data is based on controlled measurements done on land. A walk through the detailed math calculations that results in the EPNL has confirmed that EPNL data is not designed to be plotted on large water surfaces or in a marine environment (without attempting calibration to ensure a reasonable estimate). The modelled NEF 'yearly PPD contours' currently plotted on the large water surfaces surrounding the Island Airport would otherwise be on the mainland if calibration was done. The modelled results do not ensure that the projected level of public annoyance meets national standard. Resident noise concerns are thus minimized on paper.

39. Based on regular community monitoring, photographing, and videoing of takeoffs and landings, there is notable discrepancy between the actual horizontal and vertical dispersions of the actual flight paths when compared to the approved flight tracks that are modelled. Both a straighter (horizontal) and flatter (vertical) approach and takeoff across the Toronto waterfront are more comfortable for airline customers, however, this results in increased actual noise effects for the waterfront communities than what is shown in noise mapping reports. The modelled NEF 'yearly PPD contours' currently being plotted on the large water surfaces would otherwise be closer to the mainland if this issue was taken into account. Resident noise concerns are thus minimized on paper.

Aircraft Noise Certifications

40. The NEF formula is based on certified EPNL aircraft data (Effective Perceived Noise Level). EPNL is a calculated measure of integrated noise annoyance and expressed in units of EPNdB. The EPNL aircraft noise data that is used in NEF noise modelling assumes that aircraft noise meets certified noise measurement thresholds, as obtained in a testing facility at standard noise measurement reference locations established by ICAO (International Civil Aviation Organization).

41. There are 3 reference noise measurement points defined under ICAO, Annex 16, Volume 1, Chapter 5 for propeller-driven airplanes over 5,700kg (which are primarily used at the Island Airport). The 3 reference points for noise certification are as follows: for lateral noise during takeoff, noise is certified at 450m from runway centreline; for flyover noise, noise is certified at 6,500m along runway centerline from start of roll; and, for approach noise during aircraft descent, noise is certified at 2,000m before runway threshold. All certified noise measurements are at ground level and exclude any impact from ground surface or atmosphere.

42. Regarding the aircraft noise certifications locations for lateral noise, the certification offset from runway centerline is immediately adjacent the south face of buildings sited along the water's edge. It also appears highly unusual that the offset for aircraft certification is actually located beyond the 25 NEF Control Contour for the airport, inside which these certified aircraft noise energies are actually supposed to be contained. The ICAO limit is 96 EPNdb. The Tripartite Agreement limit is 83.5 EPNdb (Section 14, p.13). If these limits would be experienced on water surface and at ground level immediately adjacent residential towers for every projected flight, vigorous complaints can be expected. The resulting cumulative noise effect would exceed MOECC criteria to which the communities were envisioned and constructed.

43. Regarding the aircraft noise certification locations for flyover noise, these are situated over the Humber Bay water surface and over the port lands. The ICAO limit is 89 EPNdb. The Tripartite Agreement limit is 84.0 EPNdb. If the limits would be received at water level by adjacent residents below every projected flyover, vigorous complaints would normally be expected. The resulting cumulative noise effect would exceed MOECC criteria to which the communities were (are being) envisioned and constructed. These certification locations do not align with the majority of official flight tracks at Island Airport and additional aircraft turning noise needs to be considered when modelling.

44. Regarding the aircraft noise certification locations for descending approach noise, these are situated on the water surface south of Ontario Place and on water surface south of Jarvis Street. The ICAO limit is 98 EPNdb . The Tripartite Agreement limit is 92.0 EPNdb. If the limits would be received, 120m below every descending aircraft on the water surface elevation, it would not be a shock that complaints would be triggered at the immediately adjacent waterfront residential towers looking horizontally or down at the plane over the water. The resulting cumulative noise effect would exceed MOECC criteria to which the communities were envisioned and constructed.

45. **Can the Tripartite signatories re-confirm their commitment, as illustrated by the Official Noise Map attached to the Tripartite Agreement, that the noise emitted from the Island Airport is not intended to result in sleep interruption or speech interference, inside the noise sensitive indoor**

spaces and in outdoor living areas, which were assessed by the signatories for such prior to their approving construction?

46. The above noise certification reference locations and the noise limits to be certified for these locations suggest the unique properties of the Island Airport site with its unbuffered environs might make it is too small an airport site for NEF modelling of yearly contours. Alternatively stated, the NEF model software appears suited for application at typical larger suburban airport sites, where 1:50,000 mapping is actually needed to depict all the contour areas per TP 1247. For example, most 25 NEF contour locations at other airports are observed to be geographically located much further away from the runways than at Island Airport. With respect to ICAO noise reference point locations, the certification points appear to be inside the contour areas defined by the 25 NEF contour line at other airports (in contrast to Island Airport).

1.7 Jacobs Noise Study

47. In support of constructing the proposed GRE project, GRE public meeting presenters relied on a list of recommendations that were appended to a report referred to as 'the Jacobs Noise Study'. This report was dated Feb 2010, prepared by Jacobs Consultancy on behalf of Toronto Port Authority, and is entitled "Draft Noise Management Study - Interim Report" .

48. As discussed herein, had the 2010 *Jacobs Noise Study* actually been completed as initially scoped, the need for this proposed GRE airport expansion project, and a host of other community concerns, could probably have been avoided. The community requests that this type of circular logic of relying on the incomplete 2010 *Jacobs Noise Study* report, in justifying further airport capacity expansion, be stopped immediately.

49. The scope of the *Jacobs Noise Study* initially included the development of an urban terrain noise model to assess and predict the actual in-field noise that will be generated by the airport. A sub-consultant gave a brief presentation to stakeholder representatives on setting up the proposed urban noise model. However, subsequent to this, the *Jacobs Noise Study* was then abruptly halted in early 2010 by the TPA. **Can the *Jacobs Noise Study* be completed to meet typical engineering submission requirements for site plan review?**

50. Jacobs Consultancy was subsequently directed by decision makers to issue the incomplete document as a 'Draft Interim Report', which contained 16 recommendations. The recommendations (attached) were not drawn from, or substantiated by, any of the report contents to which it was attached. Some passages contain unknown industry acronyms and jargon. Note that the Jacobs recommendations were prepared in response to the incremental airport expansion that had already occurred in the years immediately preceding the 2010 *Jacobs Noise Study*, not the intervening growth since that date. **Can the missing technical report materials supporting all Jacobs' recommendations be provided for public review?** We would like to review this information in understanding the need for the proposed GRE.

51. One of these unsubstantiated Jacobs recommendations was to establish three (3) engine run up areas to address different types of runups, and to mitigate the effects of airport growth as of 2010. Runup noise measurements were not included in the Jacobs appendix of noise measurements. Runup noise and limits were not specified in the Tripartite Agreement. None of the reports

including *Jacobs Noise Study* noted that noise from an engine runup can actually far exceed all other incompliant airport noise emissions by over 10dBA. Decision makers were not made aware of this fact. **Can the missing report materials supporting the Jacobs recommendation for these runup areas, which were otherwise not previously required prior to 2010, be provided for public review?**

52. There was actually no runup enclosure recommended by Jacobs, contrary to what was said at the public meeting. The proposed Island Airport GRE is being constructed without technical recommendation. Accordingly, the community understands that the proposed enclosure (GRE) is to accommodate further expansion of airport capacity.

53. Also noteworthy concerning the public process surrounding the release of the 2010 *Jacobs Noise Study*: the TPA had immediately stopped responding to all community airport noise complaints it received for approximately one year. Without responding to public concerns on the *Jacobs Noise Study*, the TPA also immediately commenced an EA Study for an airport tunnel expansion project. (The tunnel has since been constructed and was opened in 2015). The attached excerpt from a past YQNA submission entitled 'Year 2010 Public Outreach Failures' provides more context surrounding the public process and release of the 2010 *Jacobs Noise Study*.

54. The 2010 *Jacobs Noise Study* (being relied upon to support the proposed GRE) contains only very preliminary, randomly obtained, total noise readings surrounding the airport site in the Appendix to that report. No test conditions were identified prior to commencing data collection. The preliminary noise measurements currently being relied upon by Signatories were obtained over just 8 days in May 2009 and were then arbitrarily assessed by the Signatories to be a reasonable statistical sample size for growth projection. The readings already indicated that the approved airport operation excluding the runups would probably not comply with noise standards, criteria, guidelines or regulations per Section 16. **Can the Signatories commence a fulsome study on the actual existing and projected net noise and total noise received by stakeholders from the Island Airport?** This is needed to confirm airport slot capacity and the need for the proposed GRE.

1.8 RWDI Noise Impact Assessment

55. In support of the then proposed (now approved) 202 slots per day, a report prepared by RWDI was released on behalf of the TPA entitled 'Draft Report: BBTCA Noise Impact Assessment' dated November 2010. The draft report was not professionally sealed, signed, or certified by a qualified licensed engineer.

56. The draft report was subsequently relied upon by Dillon Consulting in completing a Tunnel EA report for the TPA. The TPA (the designated Responsible Authority) also relied upon this report, noting in its Press Release dated April 4, 2011 (attached), that "RWDI concluded there would not be significant effects" on noise as the 202 slots per day are fully utilized. There is stark contrast between this April 2011 press release statement and those made by speakers at the recent June 2016 GRE public meeting. This is despite the approved 202 slots still not yet being fully utilized.

57. The stated scope of the 2010 RWDI noise report was to review future noise impacts of the then proposed 202 slot per day operation. However, in fact, the report only reviewed the incremental effects of the proposed incremental slot increase. The incremental effects reviewed appear to be

limited to those incurred since a previous report said to have been done on the topic in 2001. The noise effect of the entire cumulative airport operation was not studied. The 2001 data of unknown origin and purpose appears to have been recycled in the 2010 RWDI analysis to assess the 'incremental noise effects' on the communities. **Can the signatories release the technical support for the 2001 study findings that was relied upon in the incremental 2010 RWDI noise analysis pertaining to airport activity?**

58. In concluding that there will be insignificant noise impact to the communities of the 202 slot per day operation at the Island Airport, the 2010 RWDI noise report had to assume that the residences and outdoor living areas which are located outside the Official Control Contour will continue to experience NEF noise energy values at or below 25 NEF (RWDI p. 9 attached). There was no assessment of the actual in-field noise conditions, nor any explanation in the report for this circular logic. **Can the signatories provide the technical support on which RWDI relied in making its assumption that community lands lying beyond the 25 NEF Control Contour were in fact experiencing less than 25 NEF noise as of the Nov 2010 RWDI report date?** Based on the report, RWDI was completely relying on the Signatories in making this assumption when drafting their conclusions. **Was this assumption unsubstantiated?**

59. Note that RWDI did not have an up-to-date annual contour study available when collecting their data or when preparing their draft Nov 2010 report. Only in June 2010, was the Year 2008 annual contour study issued. Slot use had escalated dramatically in the intervening 2 years, lowering the remaining noise capacity at Island Airport at time of RWDI report preparation. This was not discussed by RWDI. (It is speculated that the previous yearly contour report may have been issued in 2001 using the prior year's flight statistics.)

60. In quantifying their findings, the RWDI assumed NEF noise energy values (EPN db) were converted by RWDI into net Leq24 (dBA) using NRC regression formulae, instead of actual field measurement of net noise. Ambient noise was not studied or discussed in the RWDI report for some reason, even though this knowledge is fundamental to the assessment work. Some of the noise levels shown as Ambient Noise elsewhere in the study actually aligned with then existing total airport ground roar levels measured inside the communities which included the Ambient. The report suggested that the Leq24 noise level was in fact from the Gardiner Expressway. The report directed the reader to a 2001 Sypher Mueller report, which in turn noted that that Sypher Mueller was relying on still earlier work done by RWDI. Had the signatories allowed RWDI to study the actual in-field ambient noise gradients which exist along shorelines, the uncertified report conclusions would have been different.

61. The TPA was not responding to any community complaints during the months in which the 2010 RWDI study was being prepared. RWDI may not have been aware of the extent of on-going public complaints and concerns. The community believes, in hindsight, that the volume of complaints received by the TPA, submitted without any community knowledge of the RWDI noise study then underway, would indicate that the residents were experiencing noise energy in 2010 that was higher than anticipated by a standard 25 NEF Control Contour. TP 1247, Section 4.8, Table 2 (attached) summarizes anticipatable community responses to noise, with footnotes that community responses will vary pending ambient or background noise conditions.

62. Community observations to date are that ambient noise is being over-estimated on paper through avoidance of in-field measuring, and that this is resulting in lower projected community noise impacts on paper in support of various airport expansion projects. **Can the signatories complete a comprehensive study of the actual in-field Ambient Noise gradients and fluctuations which exist along the shorelines?** The work would include previously establishing the various test conditions and statistical sample size.

63. Study of Ambient Noise is actually a due diligence requirement for Island Airport decision makers, to ensure that waterfront stakeholders are treated fairly, reasonably, and equitably in meeting zoning requirements. For example, accurate knowledge of Ambient Noise along the lake water limits is required in order for Island Airport decision makers to confirm that the indoor criteria of NEF =0 in the sleeping quarters is actually being maintained per approved as-constructed building conditions.

64. **Can the signatories agree upon permanent noise measurement locations, to be used for all future noise related studies in perpetuity, for tracking purposes?** The locations need expert input with respect to targeted runway offsets and elevations applicable to Island Airport noise emission control monitoring. Consideration of neighbourhood redevelopment plans is required. Perpetual legal access rights to the technically preferred locations need to be identified and resolved, assuming this has not been done already by the signatories through the development approval process.

65. The resulting airport noise magnitudes that are shown in the 2010 RWDI report significantly exceed the provincial noise limits criteria LU-131 or NPC-300 (excerpts attached). Though the provincial standards were introduced at the beginning of the report, the exceedances of the standards are not identified or discussed in the body of the report. **Can the signatories provide the technical support to show how the various noise values as shown in the 2010 RWDI report (on which the conclusions regarding the 202 slot effects depend), can be approved by decision makers to be in compliance with provincial noise standards and Tripartite Agreement Section 16?**

66. **Can the signatories remove embedded discrepancies in all chapters of the draft 2010 RWDI Noise Impact Assessment, and finalize this report to meet typical engineering submission requirements for site plan review?** We would like to review this revised material to confirm the actual number of slots available at the Island Airport, and the need for the proposed GRE.

2. Views of Proposed GRE

67. Concerns were expressed about the proposed addition of such a large non-porous surface on the island. The plan size of the proposed GRE has been described as the size of city block. **Can additional visual plan information be provided to understand the comparable plan size of the proposed facility?**

68. The May 24, 2016 TPA letter Appendix E p.7 described various proposed run up locations, however, the descriptions are not clear for the public. The locations need to be clear in order to validate future public complaints and to followup on them. **Can a plan be prepared to show the specific locations of proposed run up locations, for each of the various runup types?**

69. The GRE design consultant noted that if someone is able to look into the facility and see the plane, the observer will be hearing the runup noise without any mitigation. Therefore, there will be no noise reduction for tower properties at higher elevations, for all runups proposed to be done inside or outside the GRE. The consultant suggested earlier in the meeting that cross-sections through the harbour had been prepared to show the approximate elevations at buildings, above which there would be no noise mitigation benefit from the GRE. The material was not made publically available. **Can the public be provided with cross-sections through the harbour showing the minimum elevations at the towers where residents will still be able to see a portion of the inside walls of the proposed GRE?** This is needed to assess how many property owners are intended to NOT benefit from the proposed GRE and its efficacy.

70. **If higher runup enclosure walls are needed to protect 100% of waterfront tower residents, what is the cost premium saved by the TPA if using the lower GRE wall heights as proposed?**

71. **Can the signatories provide rationale as to why a covered enclosure is not being proposed, so that 100% of waterfront residents can be protected?** Such a cover can be designed to accommodate the stated runup wind requirements of Q400 plane engines.

3. Efficacy of GRE Noise Abatement

72. This GRE review is to confirm the efficacy of the GRE noise abatement. **'Efficacy'** is defined as having the capacity for serving to produce desired effects, or having the ability to produce a desired or intended result.

Desired and Intended Results

73. Normally, a noise barrier design for site plan review would show the intended noise levels at the specified locations to be protected. Both the existing and proposed noise values at the towers and outdoor areas are not provided by available public materials, as discussed herein. **Can the desired effects and the intended results (ie. the efficacy) of the proposed GRE be provided for site plan review?**

74. The May 24, 2016 TPA letter Appendix E –Aircraft Maintenance Run Procedures lists 5 types of runups, however, the maximum peak decibel levels for each type of runup are not available from the posted materials. In addition, the duration assumed for each type of runup roar is not available. This information is required in order to complete the noise design per typical Site Plan requirements. Without having accurate or reasonable information, design objectives of site plan cannot be reviewed. **Can the current and proposed run up magnitudes and durations, for each type of runup be provided by the Signatories?** The noise to be received at targeted window elevations and outdoor areas would be needed for site plan review.

75. The proposed GRE is to be located at south limit of Runway 15-33 which will be abandoned. Many loud runups are not currently observed to occur at the south end of this runway. In order to use the GRE, airplanes are assumed to be towed to the GRE and backed into the GRE. It was not confirmed in the public meeting that absolutely no planes will be driving themselves to the GRE. The tails of these planes would then be pointing north or northeast, thereby increasing the volume

of community noise effects. **Can it be confirmed that no planes will be driving themselves southbound to the GRE, with respect to increased airport noise effects to the community that will result?**

76. As part of the in-field rehabilitation program commenced this year by the TPA, it is proposed to use the very south end of the abandoned Runway 15-33 as a parking lot for airplanes. **Can it be confirmed that no planes will be driving themselves southbound to be parked at the south end of Runway 15-33, with respect to increased airport noise effects to the community that will result?**

77. Planes are proposed to be parked in future at south end of abandoned Runway 15-33. **Can the signatories provide the noise impact information for the southern limits of the airport site and adjacent surrounding lands?** These lands will be experiencing a new closer 'stationary noise source' from parked engine warm-ups and tails of turning aircraft.

BDI Acoustic Contour Plans for Runups

78. The May 24, 2016 TPA letter Appendix D contains acoustic contour plans modelled by TPA's contractor, BDI, to show net noise runup contours 'with' and 'without ' a GRE. Several meeting attendees noted that the plan 'without GRE' (ie. existing conditions) shows existing peak runup noise level magnitudes which are too low by approximately 10 to 15dBA. A recent sound recording of the airport runup noise, lasting several minutes, was played by a resident at the meeting to demonstrate the relative magnitude and shock of an existing runup noise change impact. For example, the BDI plan assumes that the peak level of a runup (without GRE) is only about 60dBA at 55 Harbour Square tower and approx 70 dBA at Little Norway Crescent. In fact, runups have exceeded 80dBA. **Can the signatories provide technical support showing the existing runup magnitudes received from Island Airport?** Runup noise data was not included in the *Jacobs Noise Study*.

79. The DBI acoustic contour plans presented to the public look precise and have an appearance of being fairly accurate, yet are off by orders of magnitude. The concern was acknowledged by DBI who claimed the drawing is for 'comparison purposes only' between the 'with' and 'without' GRE scenarios. This leaves the impression of an attempt to deceive both decision makers and the public in order to ensure the procurement of the GRE product. DBI is the manufacturer of the GRE product. **Can the acoustic contour plans be revised to show realistic colour coded magnitudes for decision makers and site plan reviewers?**

80. The noise magnitudes shown by BDI on acoustic plans are modelled for ground elevation only. It was confirmed there was no information for the majority of residents who live in towers. Astonishingly, BDI assumed that no marine conditions exist along Toronto's waterfront which would greatly expand the runup contours. The acoustic contours posted on the City website do not contain any footnotes that the acoustic plans of modelled data do not consider the following: (a) the tower elevations and (b) the marine conditions, despite the runup contours being plotted on the water surface. These facts were not presented to the public and were only admitted to when asked by the public. Can the posted materials on City website be revised to include footnotes that clearly state that the magnitudes shown on the DBI acoustic plans cannot be relied upon, even for 'comparison purposes' between the 'with' and 'without' GRE scenarios, by the

decision makers or the site plan reviewer. The contour values shown on mainland should be much higher than shown by BDI. Resident concerns are thus minimized on paper.

81. The BDI acoustic plans are not clearly labelled as 'pre' and 'post' GRE construction. This information is buried in fine print in drawing title blocks. The average decision maker, let alone member of public, has little chance of understanding the differences between the contour plans. **Can the acoustic plans be revised to include clear headings as to the purpose of each figure? Can the figures be revised so they can also be clearly printed in black and white for future reference purposes?**

Noise Change Effects

82. The BDI acoustic contours plan 'with a GRE' shows projected magnitudes which will exceed noise change criteria. Based on the meeting materials and plans, noise change impacts of 20dBA relative to ambient conditions are being proposed by DBI following GRE construction. This is despite the 'without GRE' runup contour values shown being shown as too low already. Attached are typical EA noise change criteria sourced from TPA public meeting materials for the 2011 Noise Barrier report. (This noise barrier was subsequently built by TPA along the Western Gap. A Notice of Completion was issued for that project without response to the fundamental technical noise issues raised by the public.) The noise change effect proposed by DBI is double the 'very significant' noise change criteria typically considered by the signatories. This GRE project, as proposed, would require more detailed review under EA criteria than shown to date, to satisfy the Project Need. **Can the GRE design be refined to eliminate very significant noise change effects on the community as currently proposed?**

83. Based on EA noise change criteria acknowledged by the Signatories, the noise change effects resulting from all combined noise sources at Island Airport result in 'well beyond very significant' noise effects on the waterfront communities. **Can the Tripartite signatories provide rationale as to why they agreed that Toronto waterfront stakeholders should NOT be treated equal to other Ontarians surrounding airports, who are not harassed by airport noise change effects to the same extent?**

84. Based on the responses to several public questions regarding the views from towers and the proposed noise reduction plans presented, it appears that the projected net noise impacts of the entire airport operation (including runups) at each floor elevation of each building along the waterfront have still not yet been modelled and documented (without GRE) by the signatories. This lack of standard engineering requirement to complete vertical terrain noise modelling at Toronto Island Airport (which is surrounded by water surfaces) must be addressed ASAP. **Can the signatories compete a noise study report which separately shows the net modelled Leq(1) and the Lmax readings currently projected at each floor elevation of every waterfront building resulting from all airport activities?** This information should be in sufficient detail for future model calibration purposes.

GRE Design

85. DBI noted the GRE can only be used pending wind direction and speed. The graphic provided to support the percentage of time the GRE could actually be used to contain runup noise (at

proposed Island Airport Runway 15-33) was incomprehensible for both technical staff and the public. The information appears to be from another project inside Chicago O'Hare, one of the Top 5 largest airports in the world, which presumably has a larger sized GRE that would have greater probability of being useable. Can more clear information be provided which breaks down the relevant meteorological and wind statistics of the Island Airport, and the sub-set of conditions and percentage of airport operating hours during which the GRE would NOT be usable on average. The summer months (May-Sept) during which windows must be open for temperature control ventilation are of specific concern for the communities.

86. The proposed GRE will contain baffles which will raise the elevation of escaping runup noise. Winds from Lake Ontario are expected to blow the run up noise further into the communities. **Can the signatories provide acoustic information as to runup noise dispersion into communities at proposed higher elevations?**

87. It was not clearly stated what technical report will result through this GRE review process. All publically available technical reports to date concerning Island Airport capacity expansion projects suffer from one or more of the following major deficiencies:

- report does not include a clear statement of project need
- report not certified with respect to the standards applicable to residential zoning
- report not sealed by a licensed professional in Ontario
- report issued as an incomplete 'draft' or 'interim' report, to avoid liability
- report contains obvious technical errors, commented on by public but never addressed
- report includes recommendations which fail to meet any known noise standard ie. the recommendations presented could not actually be approved by any of the Tripartite signatories per Section 16.

88. Community review of dBC and unweighted airport noise measurements to date show the composition of airport noise received by the communities contains a very significant excess of bass frequency compared to the dBA design frequency profile used for zoning. The dBA noise profile is one which contains 30% less bass frequencies relative to higher frequencies. See attached excerpt from *Jacobs Noise Study* p. I-3. Predictably, significant discomfort and annoyance for residents has resulted from this incompliance with zoning design standards. **Can the magnitude and composition of the proposed noise to be received by the communities meet the dBA design standard frequency profile to which the residential communities were zoned, and to which building materials were constructed per Ontario Building Code?**

89. The Island Airport noise documentation to date, using model database results converted into dBA units, does not appear to have taken into account the actual composition of airport noise actually being received by the communities. The extent to which excessive bass frequencies are being received in context of total noise has not been documented to date by the signatories. Resident concerns are thus minimized on paper. **Can the proposed 'with' and 'without GRE' composition of noise being received by communities, be documented by industry standard 1/3 octave bands, to ensure effective results for review?**

4. Operating Hours

4.1 Number of Runups and Need for GRE

90. Ports Toronto provided a letter to City dated May 24, 2016 contained appendices. Appendix E 'Aircraft Maintenance Run Procedures' on page 4 noted there are 5 types of runups. Meanwhile, the 2010 *Jacobs Noise Study* p.IV-1 noted that aircraft runups are needed for either pre-flight checks or aircraft maintenance. There appear to be more runups listed by the TPA in 2016 than Jacobs listed in 2010. **Can the Appendix E list of runups be similarly categorized by 'runup purpose' to understand the need for the proposed GRE at Island Airport?**

91. Several meeting comments requested that no runups be completed at Island Airport at all, and questioned why they were being done at the sensitive Island Airport site in first instance. Alternative solutions to the GRE project were raised by the public and acknowledged in the public meeting as not having been explored yet. The following questions remained: **Have the airlines been formally requested to relocate all non-emergency runups to other less sensitive airports where they are active? Were substantive responses received by the City listing all the alternative airport locations reviewed by the airlines, and the reasons why all other alternative airport locations could not be used for all non-emergency runups?**

92. The *Jacobs Noise Study* p.IV-1 noted that pre-flight aircraft runups are not a regulatory requirement but are required by most aircraft manufacturers' standard operating procedures. Runup noises were introduced to the communities gradually over several months following the introduction of the Q400 at the Island Airport in 2006. It appears that the proposed GRE is only required because of the make and model of the Q400 aircraft chosen by the airlines. Otherwise, based on *Jacobs Noise Study*, an enclosure for the runups would not be required for turbine engines. It appears the GRE is being built to support use of the Q400. Presumably the signatories have compiled and reviewed a comprehensive list of all alternative commercial aircraft makes and models that could be used at Island Airport, which would include the Q400. **Can the rationales be provided as to why any of these other aircraft cannot be used at Island Airport instead?** This will help in understanding why any GRE is needed at all and if contributions from the airlines are required (to contain discussed risk of future public debt).

4.2 Timing of Runups

93. Some information is provided on Appendix E page 7 as to when during an aircraft movement the various runups are needed. The pre-flight runups are done shortly before takeoff. The maintenance runups are done before, during, and after maintenance and/or repairs. Based on public meeting comments, there are some runups needed under emergency circumstances. **Can more information be provided as to the timing of runups (relative to takeoff or landing) for each of the various runups ie. the typical time between the various runup noise events for a given aircraft?**

94. Appendix E p.5 notes the operating hours of the proposed GRE. The selection of these proposed hours appears to be arbitrary. The hours should be related to the daily fluctuation of ambient background noise along the waterfront. The runup schedules should be limited to window of time

during which ambient noise is typical at daily maximums along the shoreline, which might help in mitigating the punishing noise change impacts still being proposed. On both July 13 and July 14, 2016, shocking runups were done at 8AM measuring approximately 83 dBA in plane of bedroom window and lasting up to approx. 10 minutes. A neighbour told me later one morning as we left for work that her ear had actually popped due to the unexpected runup noise event. The noise change effect of the runup on residents may have been worsened because of lower ambient noise at the time.

95. Another suggestion is that the runups should be done when many residents have left for work or are not at home. **Can the proposed runup hours be adjusted to address the above?**

96. The term 'restricted hours' is too vaguely defined. **Can examples be provided as to what types of situations would involve 'unforeseen and unavoidable circumstances' that should necessitate waterfront stakeholders to endure the additional 'beyond very significant' noise effects of runups? Can the cost benefit of doing a run up during restricted hours and not later during the day be provided?**

97. **Can airport decision makers please increase the available number of sleeping hours available to the community to a minimum of 8 hours?** The airport operating hours negotiated in the Tripartite Agreement appear to be motivated to affect an unreasonable health impact on the communities, especially given that actual site noise generation of airport operations exceed the official hours shown by approximately 3 hours. We do not want any runups during sleeping hours. **Can the Signatories confirm that all airport related noise was intended to be contained within the Official Noise Map at time of signing the 1983 Agreement in accordance with residential zoning requirements?**

98. **Can the signatories confirm the maximum number of runups to be done on a daily basis, and the fine for incompliance?** One runup per day was mentioned in the public meeting.

5. Terms of MOU

This submission has focussed on the list of items to be covered by the City's review of the Ground Runup Enclosure as noted in the public meeting. It is definitely not intended to be a complete summary of all Island Airport noise concerns. This submission assumes that the City will intervene with respect to any overnight construction impacts of the GRE if necessary.

The over-riding noise concerns of the Island Airport discussed herein need to be addressed and resolved. This resolution needs to be done under circumstances which are less chaotic than those which gave rise to the concerns in the first instance.

It is not fair that waterfront stakeholders need to be on constant heightened alert with respect to monitoring unanticipated airport activities which impact their lives, and then, on an annual basis, be forced to vigorously protect their interests against actions and inactions of the Tripartite Agreement signatories. The proposed MOU between the City and TPA should be a catalyst for resolution of several outstanding matters.

Yours Truly,

Hal Beck, P.Eng.
Waterfront resident representative on Toronto Port Authority committees since 2008

Appendix A – NEF Contour Figures

- 1978 Official Noise Map attached to Tripartite Agreement
- 2008 Annual NEF Contour issued by Transport Canada in June 2010 re Points X and Y

SCHEDULE "F"

Airport : Aéroport **Toronto Island**

These contours are subject to change and should be verified with the Corporation at time of use.

Les courbes sont susceptibles de modifications et il faut en vérifier l'exactitude auprès de la Société centrale avant de les utiliser.

Noise Exposure Forecast Projection du Bruit Perçu 1990

Scale 1:50,000 Échelle

Date April Avril 1978

Ref. No. No. de Ref. OR11

Sheet No. Planche No. 1

Of De 1

CMHC/SCHL

N.E.F. contours prepared for Central Mortgage and Housing Corporation by the Ministry of Transport (Canadian Air Transportation Administration)

P.B.P. cartes particulières préparées pour la Société centrale d'hypothèques et de logement par le Ministère des Transports (Administration du Transport Aérien du Canada)

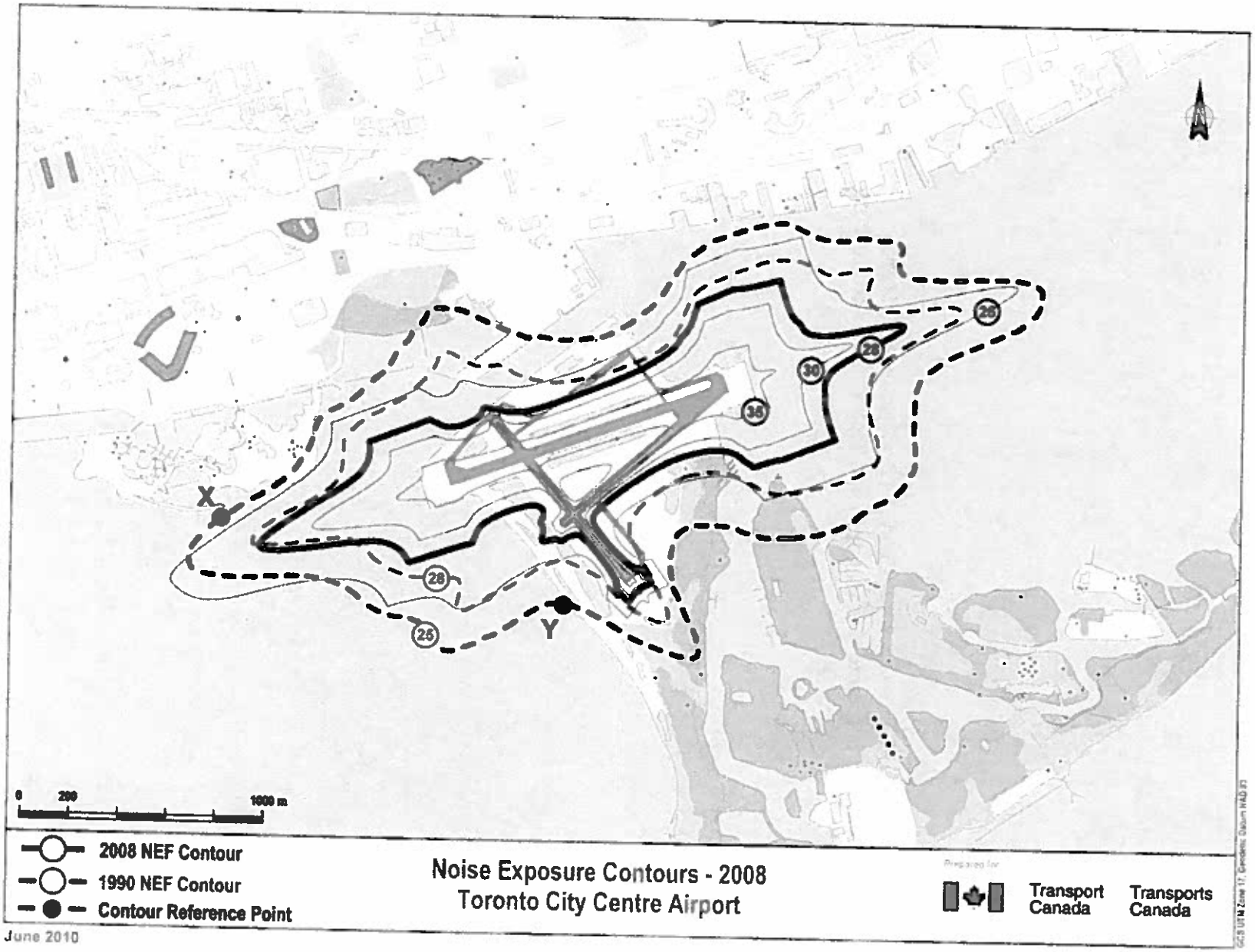

Figure 6 : Noise Exposure Contours - 2008

Appendix B

- Letter by Hal Beck dated May 20, 2015 on TPA Draft Noise Study Scope
- Excerpts from Ports Toronto 'Draft Study Design Report' dated April 16, 2015 on Noise

Hal Beck

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Tel: (416) 260-6028

May 20, 2015

Swerhun Facilitation

Att: Matthew Wheatley

Re: Draft Scope of Noise Study
Proposed Island Airport Runway Expansion

Dear Sir,

I am submitting the following preliminary comments on the draft scope of the Runway Expansion EA Study dated April 16, 2015 in conjunction with the 30 day public review period, focusing my comments solely on the proposed Noise Study draft scope.

Due to an unexpected and time consuming family health issue, my comments today are preliminary, incomplete, and unedited. With the exception for the sections on noise study scope, I have not fully read the entirety of the draft scoping document. Despite this, I trust my comments can be of some interim assistance with respect to protecting the Tripartite Agreement Signatories, taxpayers and residents from any retroactively accumulating, approved, or proposed damages which can be envisioned to result from executing the draft noise study scope as is.

Noise is a primary issue at the Island Airport and precedes the Porter jets proposal and this runway expansion study. Noise modeling is being used to quantify airport slot capacity and the resulting growth in vehicle trip generation rates for all study scenarios. Public concerns with past incomplete reports prepared by Ports Toronto, as well as stakeholder noise complaints regarding existing airport operations, remain unresolved.

Please review what is needed to address the following concerns within a revised scope of noise study.

Concerns with Draft Scope Appendix A, page 39 of 49

1. The standards, requirements, guidelines and bylaws to which the modelled or measured noise is to be assessed is not complete, totally clear, or specific in the draft scope. For example, according to the draft scope, Ports Toronto believes that a constant level of 70dB at point of reception is an acceptable assessment standard for a residential community, even though the onset of speech interference occurs at approx 50dB per noise literature. The draft scope of noise study does not clearly state that the technical work will be certified to meet LU-131 and/or NPC-300. It does not discuss the airborne noise vibration standard that will be met. The draft scope does not state that stationary source vibrations will be certified to NPC-207.

2. The definition of 'assessment' has not been provided. Past noise studies introduced criteria, contained incomplete analysis, but then did not properly assess the study findings against the criteria. The materials appear to blur the words assess and analyze.

3. In Spring 2011, Ports Toronto approved a 202 slots per day operation by relying on an incomplete uncertified noise report, which was not professionally sealed (see RWDI Study Nov 2010 and TPA Press Release April 4, 2011). The draft scope failed to note if a Final Noise Study on the proposed noise effects of the approved 202 slot per day operation of Q400 planes will ever be completed. The approval of 202 slots appears to be a major assumption of and requirement for the baseline of this study.

4. Given the arbitrary nature of the past airport expansion approvals by the Signatories, the materials do not confirm if the technical support documents informing the study findings will be labelled Final (not Draft), stamped by professional engineers licensed in Ontario and working in the GTA, and certified to fully meet the intentions of Section 16 of the Tripartite Agreement.

5. The complete scope of all stationary noise caused by all airport activities collectively will not be modelled or studied by Ports Toronto. The specific descriptions provided in the scope omit some activities and movements which collectively result in very significant existing impact.

6. Actual noise measurements at sensitive outdoor locations will be modelled but not field verified by Ports Toronto. There appears to be a discrepancy between the Appendix table columns regarding this. The approved escalated noise levels and constant roar from 202 slots per day of Q400 noise has not yet been experienced in the field, given the current approximate 50% under-utilization of the slots. The draft scope does not state that the findings for various uses will be assessed to all applicable outdoor noise standards including LU-131 or NPC-300. It appears only the proposed changes to approved noise levels, but not the actual magnitudes themselves, will be assessed by Ports Toronto.

7. The material indicates confusion as to the appropriate use of dBA noise weighted design criteria, which is supposed to be used as a planning design tool to lower the risk of community unrest due to the actual noise to eventually be received from an approved design. Noise measurements consist of sound pressures obtained simultaneously across a broad range of frequencies measured in Hertz (Hz). dBA and other noise weighting systems de-emphasize (or give lower weight to) the measured bass frequencies. Bass Hz can take longer to dissipate in air than high frequencies (ie. bass travels farther), and general audiologist literature shows that treble and high frequency hearing worsens relative to bass frequencies through aging, making people more sensitive to the bass frequency impacts coming from existing and projected airport activities. Designing with dBA weighting is a conservative measure. Using random field measurements obtained in dBA benefit the Signatories as they significantly reduce, on paper, the bass frequencies that are actually experienced by waterfront stakeholders, property owners, and residents, some of whom have complained of rattling windows due to noise. The material does not state that the various airport noise contributions will be documented in the 1/3 octave bands per noise standards. It appears that Ports Toronto still does not want to study why rattling windows exist in the pre-planned community since 2007.

8. Aircraft noise certification data will be referenced even though certification offset from flyover lies beyond the siting of the adjacent residential towers. The Signatories have not provided a rationale.

9. A sitewalk with residents in the various directly affected areas is not being proposed, in order to identify required and acoustically significant monitoring locations needed for this study and in perpetuity. The material does not state that targeted elevations and runway offsets will be identified to the satisfaction of all Signatories and stakeholders. There is little overlap in past noise studies as to receptor and/or measurement locations, leading to challenges in reviewing the historical record of noise effects under-estimation. To date since 1983, the Signatories have yet to decide on the acoustically relevant monitoring locations to be used in perpetuity by each of them to protect stakeholders from various airport activities.

10. The draft scope does not discuss establishing a feasibility project to permanently mount web enabled noise monitors on the sides of buildings at targeted elevations and runway offsets to pro-actively and continuously monitor airport noise in perpetuity. Why model the 95th busiest day when it can simply be measured.

11. The Signatories agreed amongst themselves that the 95% busiest day in aircraft movements should be estimated for NEF modelling purposes. The draft scope does not include a summary of the actual airport noise effects that are experienced during the 18 busiest days per year (5% of 365 days) which are not considered in the Island Airport NEF Contour Studies. The noise complaints on the actual 18 busiest days need to be reviewed for airport operations learning and scheduling refinement purposes. The noise effects on those 18 days may be so overwhelming that they are haunting resident memories for years.

12. The material does not provide the test conditions to which noise monitoring or field measurement will be completed, indicating that only random data will be collected and sampled. For example, any field data needs to be correlated to slot utilization intensity and to a number of previously submitted operational, meteorological, and marine test conditions. No rationale has been provided as to why a random data sampling approach, used for Greenfield subdivision noise design, is appropriate for Toronto's waterfront with its fluctuating daily airport slot utilizations, seasonal tourist venue impacts, and varying marine environmental noise conditions.

13. Based on the operating hours in the Tripartite Agreement, the Signatories agreed amongst themselves that the then proposed, now existing, residential community should have less than 8 hours of sleep. In 2007, Ports Toronto approved an earlier start to the daily ferry operation schedule which guarantees adjacent residents only 5 hours of undisturbed quiet. The noise generated during sleeping hours by the airport significantly exceeds MOE noise criteria, despite best efforts, due to closer proximity constructed by Ports Toronto. The draft scope is consistent with past studies in that it does not include that night time impacts will be broken out for modeling or review. The ongoing airport effects causing sleep interference and sleep deprivation include: curfew violations, Medevac helicopters and aircraft, ferry operation during sleeping hours, routine airport overnight maintenance, regular airport overnight construction, overnight trucking through the community, and overnight heavy equipment transfers on the ferry. Ports Toronto has never requested the typical maximum net Leq (3 seconds) be confirmed with respect to the pre-scheduled sleep interference and sleep deprivation impacts by the airport between the hours of 2200-0700.

14. The draft scope does not show the assumed slot schedule and utilization for each horizon year to be analyzed. This will impact the frequency of takeoff noise peaks projected during sensitive hours and the projected magnitude of constant roar from combined airport stationary noise sources, depending on actual slot utilization. The number of assumed utilized slots needs to be broken down into 15

minute intervals for noise and traffic review. This will greatly assist in papering over existing, projected, and proposed noise effects.

15. The scope does not include the existing prolonged speech interference impacts on the water surface experienced by recreational and other stakeholders along the perimeter of the existing and proposed marine exclusion zone.

16. The material indicates ongoing confusion in Ports Toronto EA documentation with respect to cumulative effects. The cumulative effect is one which includes the existing effects from all sources combined, in addition to the approved projected effects not yet experienced in field, plus the proposed effects of the project. The noise material appears to use the word cumulative in a manner which escapes from having to fulfill typical EA assessment requirements which are clearly of tremendous concern to waterfront stakeholders.

17. There does not appear to be discussion of specific horizon years in the noise scope. This is needed with respect to assessing cumulative noise effects of various existing conditions and of future land development approvals/ improvements with trip generation rates.

18. An incomplete assessment of sound levels from aircraft activity is proposed. Very significant stationary noise impacts from taxiing between hanger, terminal, and runway are not included in NEF contour modelling process. The short engine blast prior to takeoff is also not covered. At a typical airport site this noise generation would be dissipated prior to reaching residential zoned areas beyond land buffer, commercial belt, and 25NEF Control Contour line. Normally the 25 NEF residential limit is further offset from runways eg. over 1km away, as opposed to Island Airport. Tripartite Signatories approved residential zoning to overlook an offset 75m-300m from terminals and runway.

19. The material suggests that terrain noise modelling will not be completed as required to address the previously approved and now constructed residential tower corridor along the waterfront. Only modeling at ground elevation will be reviewed by Ports Toronto, ignoring the majority of residents.

20. There is confusion in the scope material with respect to the NEF modelling process. The material does not acknowledge that the NEF contour modelling process does not provide an accurate illustration of the actual noise environment in an urban marine environment. The NEF process was developed as land management tool to avoid residential conflict in future horizon years. The EPNL data contained within the NEF modelled noise contour map cannot be plotted on a water surface without calibration, as has been done in recent Noise Contour Studies prepared by Transport Canada at request of Ports Toronto. The Signatories are relying on these reports with respect to 'compliance' with the noise level provisions of the Tripartite Agreement. Note that it is understood that the 25NEF Control Contour attached to the Tripartite Agreement accounts for all noise considerations which exist naturally on the water surfaces (eg. see Points X and Y discussed in detail in the Tripartite Agreement). Residential towers were approved for construction with unprotected bedroom windowpanes and walls looking down on the Island Airport with the understanding that residential noise standards will be met beyond the 25NEF Control Contour plotted on the water surface.

21. The material indicates that Ports Toronto wants to avoid comparing in-field measurements to the 25NEF Control Contour as required to meet compliance requirements with the Tripartite Agreement. The material fails to clarify that a measured noise under ideal conditions in a testing facility will be lower than the noise level predicted by an ~~NEF noise map~~ EPNL for that same location. The NEF modelling

22. The NEF modeling process is based on available aircraft noise databases for specified and surrogate aircraft at specified loading. Also the flight paths that are modeled assume pilots will follow correct approach and take off angles. It has emerged that pilots are routinely using flatter angles to and from runway which increases noise impacts. The draft scope does not include a modeling sensitivity review on noise of various angles or payloads to confirm these unmitigatable effects on stakeholders.

23. There is a significant discrepancy in NEF planning contours modelled using 1983 software and current software, such that the noise map contours generated using the current software are considerably tighter to the runways. This increases the theoretical available remaining slot capacity at the airport when compared to the 25NEF Control Contour that was modelled using retired software. Recent Ports Toronto presentation material appears to assume this additional slot capacity will be available. The draft scope of noise study does not include a sensitivity analysis showing how many additional hundreds of additional slots, exceeding 202 slots per day, could be 'created' using current software in relation to the Control Contour noise map.

24. Based on the draft scope, Ports Toronto continues to believe that documentation of model calibration and modelling error is not required. Standard engineering modeling report requirements will not be done. Without calibration, the modelled results can be viewed as having been fabricated or merely the result of system defaults not applicable to the unique local conditions.

25. The draft scope does not establish a study to review the as-constructed building materials in adjacent waterfront towers and their ability to meet noise protection requirements from existing, projected, and proposed noise from airport activity. Several buildings do not have a ducted system for conversion to central air conditioning so that windows can remain closed for noise protection. For example, the STC values of the unprotected walls and windows, the internal room noise criteria per LU-131, and the approved as-constructed percent window/ floor areas parallel and perpendicular to noise source, need to be reviewed for the purposes of reverse calculation of the maximum airport noise previously envisioned by the Signatories in 2003 to be reaching the existing unprotected external bedroom walls and windows facing the airport.

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26. The draft noise study scope regarding traffic and ambient noise will ensure that ambient noise assumptions for waterfront stakeholders will continue to be significantly to very significantly over-estimated. The 'benefits' of this are that the Signatories can conclude that 'the area is already noisy', but most importantly this helps to reduce the magnitude of airport impacts on paper. All noise standards are assessed relative to ambient background noise. This is the standard formula typically applied: Airport Noise = Total Noise Measured minus Assumed Ambient Noise. The higher the assumed Ambient, the less the Airport Noise. Ambient noise is the urban hum from traffic, lights, ventilation, etc. Ambient noise excludes all aircraft noise by definition per noise standards. All recent noise studies prepared by Signatories have attempted to model the ambient noise (rather than

studying it) using specialized software which uses traffic data eg. ORNAMENT. The purpose of these models is to inform the design of noise barriers along roads among other things. The noise generation results of models are typically higher than they actual will be as they include safety factors to avoid future conflict resulting from the design for which the model was developed. By re-purposing the road traffic noise model results as assumed Ambient Noise for the waterfront, the Signatories are lowering the airport noise effects on paper, to a significant to very significant extent, that will in fact be experienced by stakeholders in real life.

27. Past noise studies have assumed an unreasonably high average percentage of heavy trucks on local waterfront roads, which has increased the assumed Ambient Noise level used in past for noise assessment of airport noise. This has lowered the airport noise impacts on paper. The material does not state that only reasonable truck volumes, % truck types, day/ night splits, and projected fluctuating truck speeds on given days will be used in the study of existing local waterfront conditions and projected effects.

28. Based on past studies and the draft scope, the Signatories have avoided studying the ambient noise profiles which exist in every urban waterfront. A 3D Ambient Noise profile for the Toronto Waterfront is needed to assess any noise impacts. For example, past night walks in Bathurst Quay after all airport related activities have ceased have shown an approx 15dB difference increase in ambient noise between the edge of Western Gap water edge (lowest reading) to the south sidewalk on Queens Quay in front of the Community Center where one is closer to the Lakeshore Boulevard and City core. Ambient noise is also highest at ground and lower elevations and decreases toward the top storeys of a tower, as one gets further removed from the urban hum far below. These profiles need to be mapped in order for any assessment of existing or projected noise change impacts. This urban marine phenomenon is enhanced by 'urban hum noise shielding' whereby the ambient background noise on the water side of a building is significantly lower than on the land City side of the same building. This phenomenon does not happen to same extent inside residential communities at typical airports surrounded by land, as large lake water surfaces do not emit urban hum. Ambient noise in some waterfront locations has actually lowered (gotten quieter) in the field over years due to the construction and ambient noise shielding of subsequent towers. The draft scope is consistent with past Ports Toronto reports in that it does not address these important noise standard compliance and noise change sensitivity related issues.

29. The scope does not explicitly note that the actual minimum Leq (3 seconds) will be measured in field at targeted acoustically significant elevations and runway offsets, and the variations plotted over a 24 hour period, in order to understand the significant to very significant fluctuation in ambient noise assessed impacts. These measurements need to be made under the following test conditions which may not always be present: calm weather, excluding all: aircraft or helicopter noise, ferry or construction noise, and unusual sounds like airport parking car alarms. Without considering these conditions, the calm ambient measurements will be too high and not fair and reasonable to be used for airport noise impact assessment.

30. The draft scope shows that all noise complaint data filed by residents to Ports Toronto (formerly Toronto Port Authority) since 2009 will not be reviewed or correlated with respect to the study conditions or goals (eg. time of day, nature of concern, postal code location, etc.) This includes approximately 9 months of noise complaints in 2010 which were never acknowledged or responded to by Ports Toronto. Ports Toronto remains 'aircraft agnostic' with respect to its operations, which means that it seeks to avoid learning proactively about their operations from the stakeholder

complaint data. The complaint data needs to be reviewed to inform the study otherwise responsibility for it needs to be transferred to a Responsible Authority.

31. The scope notes that the new WebTrak noise data and other remotely obtained data will be reviewed for noise impacts. Ports Toronto staff have noted in past that a high 63dBA is being assumed as ambient noise for Toronto's waterfront (see concerns about ambient noise assumptions). This is understood to be the high level of the noise filter settings on the two existing noise monitors being used by WebTrak, which can effectively filter out much of the airport generated noise. The draft study scope is not clear if the same or higher filter setting will be used by Ports Toronto during the proposed random uncontrolled data sampling in the waterfront.

32. The draft scope does not provide the assumed maintenance program and run ups to occur at Island Airport for each of the horizon years. The noise profiles included in the 2010 Jacobs Study appendices appear to have been filtered to exclude regular engine runup peaks of 80dBA at bedroom windowpane. The number of these high magnitude runups has decreased during sensitive hours since the downturn in airport traffic since Fall 2012. Past Ports Toronto reports have either ignored or under estimated these impacts.

Concerns with Draft Scope page 23

33. The draft scope for Noise Study contains an incomplete list of background reports and resources that the study team will need to be familiar with in order to complete this work. Please add the following reports to the list of reports shown on page 23.

- Dillon Consulting, Oct 2011. Noise Barriers and Engine Ground Run up Enclosure Environmental Screening Report.
- Dillon Consulting, March 2011. Proposed Pedestrian Services Tunnel and Perimeter Road Project Environmental Screening Report.
- Airbiz, Feb 2011. Airport Capacity Report Peer Review.
- RWDI, Nov 2010. Draft BBTCA Noise Impact Assessment.
- Jacobs Consultancy, Feb 2010. Draft BBTCA Noise Management Study – Interim Report.
- Jacobs Consultancy, Feb 2010. BBTCA Airport Capacity Report
- Sypher Mueller International, Dec 2001. Toronto City Centre Airport General Aviation and Airport Feasibility Study.
- Dillon Consulting, April 1998. Fixed Link to Toronto City Center Airport Environmental Assessment.

There are significant discrepancies and omissions contained in each report and between the reports contained in the draft scope and noted above, that will need to be addressed during this study.

We also expect the consultant to be fully conversant and/or able to complete and professionally certify engineering work to meet the following requirements, standards, guidelines, bylaws. Please also add these documents to the Work Plan list.

- MOE, Aug 2013. Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning, Publication NPC-300.
- MOE, Oct 1997. Noise Assessment Criteria in Land Use Planning, Publication LU-131, including the Annex, and the Requirements, Procedures, and Implementation.

- NRC, Dec 1996. NEF Validation Study (Part 1, Calculation of Airport Noise Contours; Part 2 Aircraft Noise and Its Effects; Part 3, Final Report).
- FAA. Federal Aviation Regulations (FARS, 14, CFR), Appendix A2, Section A36.4 - Calculation of Effective Perceived Noise Level from Measured Data.
- City of Toronto, Municipal Code, Chapter 591 Noise.
- City of Toronto, Bylaw 514-2008, Building Construction and Demolition.
- Several years ago, the City was involved in a legal case with the Docks Nightclub regarding noise propagation in Toronto's marine urban environment. Presumably, the City prepared noise guidelines and requirements specifically for the land uses in Toronto's waterfront to avoid future legal battles. Please post a copy of what the City learned through this legal case with respect to waterfront noise approvals.

Concerns with Draft Scope pages 35-39

34. The Part 1 Engagement summary did not note that time intervals between public meetings were so short that the project team did not have time to review or address public comments already submitted during and after the previous public meetings. The draft scope for noise study shows that the team has still not had a chance to review the comments provided during the initial pre-consultation meetings for this study. A Stakeholder Advisory Committee meeting was scheduled to coincide on the same date as the end of the 30 day public review period for the Draft Scope, which limited off-hours discussion opportunity between the volunteer stakeholder representatives, and illustrates Ports Toronto desire to 'get a study done' in as short a time as possible.

35. It was not stated that PIC materials were not distributed to the public at least 2 weeks prior to meetings to ensure fulsome informed discussion. The PIC 1 presentation materials, not available to the public prior to the public meeting, contained several issues which have not yet been addressed. This effectively wasted one of the 3 official public meetings, leaving stakeholders short-changed. The PIC 3 meeting agenda appeared to be extremely valuable, but was so loaded given the available public meeting time limit that it had to be aborted, resulting in little of the detailed focused input sought and needed by the Study Team to inform the draft scope of the study.

36. The Part 2 Engagement Plan does not include a flowchart and timeline summary as to the frequency and magnitude of public input through the Summer 2015 vacation season and Fall 2015 election period. In keeping with past studies, no input framework has been provided by Ports Toronto for an airport expansion study.

37. The list of agencies on page 36 does not include the MOE. It needs to be clarified which agency is reviewing which environmental factor, and specifically which agencies are responsible for commenting on noise study components.

Thank you for reviewing the above preliminary comments on the draft noise study scope.

Yours Truly,

Hal Beck, P.Eng.
Waterfront Resident
York Quay Neighbourhood Association representative to Ports Toronto Community Liaison Committee

Noise Assessment Overview

The Study Area

Where will the Environmental Assessment (EA) study the effects on the **Noise** component of the environment?

The original Study Area was defined by key receptor locations, which included:

- Residences in Eireann, Bathurst and York Quays;
- Recreational areas in the vicinity of the airport, including parks and public spaces;
- Waterfront School and City School at Queen's Quay; and
- Residences and recreational areas on Toronto Island, including parks and public spaces.

The original Study Area was selected to include residential uses, recreational locations (including parks and public spaces) and schools that are representative of areas that are most affected by changes to noise.

We've heard that people are concerned about effects extending to these key areas:

- Beyond Noise Exposure Forecast (NEF) contours;
- Along flight paths; and
- The Toronto Waterfront, the Beaches, Harbour, Islands, Leslie Street Spit and Port Lands.

After considering comments received to-date, the Study Area boundaries have been expanded to include:

- The Music Garden, Sugar Beach, Harbourfront Centre and the National Yacht Club to the north;
- Woodbine Beach, the Harbour and Clark Beach Park to the east;
- Algonquin Island to the south; and
- Ontario Place and the Toronto Sailing & Canoe Club to the west.

The purpose of expanding the Study Area boundaries is to ensure effects on the key areas are assessed in the EA. The boundaries of the revised Noise Study Area are depicted in the figure above.

What will be studied?

In general, the EA study's scope includes undertaking the following tasks:

1. Conduct a review of background information and additional sound modelling to document current noise conditions;
2. Identify changes in cumulative sound levels from the proposal (i.e. lifting the jet ban to allow commercial jets to operate out of the Billy Bishop Toronto City Airport (BBTCA) and an extension of the land mass at each end of the main runway by 200 metres);

3. The assessment will use the following models: the Noise Exposure Forecast (NEF), the Integrated Noise Model (INM), the Ministry of the Environment and Climate Change's (MOECC) models Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT), the Sound from Trains Environmental Analysis Method (STEAM), STAndard Method in Noise Analysis (STAMINA), and the ISO 9613 sound propagation model as incorporated into Cadna/A;
4. Noise modelling will be supplemented with data from new and historic ambient noise monitoring data;
5. Compare the resulting noise levels to criteria provided in the Tripartite Agreement and the MOECC guideline.
6. Consider the sound that people typically experience in terms of criteria such as degree of speech interruption (N70) as aircraft fly over, and thresholds from WHO (World Health Organization), Health Canada, and Health Council of the Netherlands publications Sound levels will also be evaluated at schools using the key indicators LDN (average sound pressure level over a whole day) and N70; and
7. Describe the results in a Noise Assessment Report.

From consultation that has occurred to-date, we understand that people are concerned with:

- In-the-moment experiences regarding noise levels at recreational areas, including the Music Garden and Tommy Thompson Park (TTP);
- Ground-truthing the noise models and in-the-moment experience with actual noise measurements at key areas; including: City School, residential balcony near Little Norway Park, the National Yacht Club and a 30th floor balcony on Queens Quay; and
- Understanding the difference in sound between Q400 (turbo propeller planes currently used by Porter Airlines and Air Canada) and CS100 jets (proposed by Porter Airlines).

The list above includes a sample of the issues we've heard so far. Additional issues raised are provided in ***Attachment A*** **- Summary of Key Comments Received and Resulting Changes in EA Scope** for review.

The table below documents the issues raised, how the EA will evaluate the issue and any updates made to the scope of work based on comments received.

Issue	Detail	In Original EA Scope?	In Draft Revised EA Scope?	Study Methods/Rationale
Noise Effects	In the moment noise levels in recreational areas	No	Yes	• The original EA scope included modelling noise levels at various recreation areas; including the City Park. However the NEF model is a regulatory model that is not intended to address in the moment noise levels. The U.S. Federal Aviation Administration's (FAA) INM model will be used as the basis for further analysis to address in the moment experience such as the degree of speech interruption (N70) as aircraft fly over. • Similar key indicators (N70 and LDN) will be the key indicators in evaluation at the schools. • As a result of consultation to-date, locations were added to the study; including the Music Garden, the Beaches, Toronto Harbour and the National Yacht Club.
Noise Effects	Comparing the noise model with actual noise measurements at key areas	Yes	Yes, with additions	• The NEF model is a regulatory model that describes the daily-average sound levels from aircraft on the runway and in the air on a peak predicted day, but is not intended for comparison with ground-truth measurements. As such, measurements have only limited meaning in comparison with the modelled NEF results. The FAA's INM model will be used as an alternative for modelled sound levels of aircraft in the air and on the runways to facilitate comparison with measurements and other criteria such as degree of speech interruption (N70) as aircraft fly over. Sound levels will also be evaluated at schools using the key indicators LDN and N70.

Issue	Detail	In Original EA Scope?	In Draft Revised EA Scope?	Study Methods/Rationale
				▪ Noise monitoring will be undertaken at several locations yet to be determined within the Study Area. Candidate locations under consideration include the Waterfront School, a residential balcony next to Little Norway Park, an upper floor balcony at a condominium along Queens Quay and the National Yacht Club. ▪ The influences of special local conditions, including weather conditions at the time of measurement would be considered. The public could then be given access to the noise monitoring data. ▪ The scope of real-time monitoring is currently being reviewed.
Noise Effects	Compare the sound from the Q400 and CS100	Yes	Yes, with additions	▪ Sound level data for the Bombardier Q400 and CS100, beyond the certification data, will be requested from Bombardier to provide a more comprehensive comparison of sound from the Q400 turbo-prop and CS100 jet planes.

Background Studies Reviewed and Additional Information Sources

The following studies were reviewed to inform the effects assessment, this information also allowed the Study Team to determine which additional studies should be conducted.

- ACRP, 2014. Document 16 - Assessing Aircraft Noise Conditions Affecting Student Learning Volume 1 Final Report;
- AirBiz, 2013. Billy Bishop Toronto City Airport Porter Airlines Proposal Review Final Report;
- Dillon Consulting, 2011. Proposed Noise Barriers and Engine Run-Up Enclosure Environmental Screening Report;
- Golder Associates, 2013. Health Impact Assessment Proposed Billy Bishop Expansion, Appendices C (Noise Assessment) and D (Air Quality Assessment);
- RWDI, 2005. Noise Impact Assessment, Ferry Passenger Transfer Facility, TCCA. Report No. W06-5022A; and
- RWDI, 1997. TCCA Aircraft Noise Study. Report No. 96-351-09.

These studies assessed current noise conditions, mitigation measures for current conditions, effects of noise on sensitive receptors, and the potential changes to noise associated with the operation of CS100 jets at the airport. Some studies indicated that projected noise levels would not exceed NEF boundaries, but CS100 noise certification data was not available at the time of the studies.

To address the gaps in information, this EA will collect information from the following sources:

- 2014 WebTrak, community noise monitors (shows aircraft movements to and from airports and associated noise levels);
- New noise monitoring program;
- Existing noise impact assessments and engine run-up reports will be reviewed;
- Integrated Noise Model;
- Noise Exposure Forecast model; and
- CS100 noise certification data.

Effects Assessment

The information collected as part of the EA will allow the Study Team to assess potential effects from changes in noise listed above and in **Attachment A.** These changes could affect community assets. A community asset is a feature that may be affected by the proposal and that has been identified to be of concern by the public, government agencies, Aboriginal peoples, or the proponent. Noise change could affect the following community assets:

- Public health;
- Recreational uses;
- Residential uses (such as individual condominium units);
- Tourism; and
- Institutional uses (such as the City School).

Appendix B - Work Plans details how effects on the assets will be measured and what information sources will be used.

Please note that the EA Scope will be informed by feedback received through the consultation process.

Attachment A: Comments Received and Resulting Changes in EA Scope

Issue	Details	No (original EA scope)	Yes (revised EA scope)	Key study (multidisciplinary studies)	Study method
					▹ The EA will also assess likely indoor noise impacts at sensitive receptor locations through modelling efforts. ▹ Noise measurements will be taken at residential locations as well. The specific locations of these residences have been determined with input from consultation to-date, and include: a residential balcony near Little Norway Park and a 30th floor balcony on Queens Quay. ▹ This EA will also review air quality impacts that could affect people's use of their private outdoor space. To assess these impacts, interviews with condominium boards and local residences will be conducted in the Study Area. ▹ Traffic and transportation studies will be reviewed to provide comment on effects to people's ability to access their properties, parking and active transportation.
	assess impacts on aesthetics and views from water and land	yes	yes	built environment (socio-economic)	▹ The EA will create rendered visualizations of future development models to ascertain the visual impacts of the proposal from different important vantage points. ▹ These vantage points will be determined through consultation with members of the public, stakeholders and public agencies. There will be additional opportunities to provide input on these locations as part of the Study Design review period.
	expand study area beyond the AZRs and the Central Waterfront Secondary Plan to include areas further east	no	yes	land use &built environment	▹ The land use & built environment study area has been expanded to include the Unilever Site and portions of the Beaches neighbourhood. Both of these areas include sensitive uses (planned or existing) outside of the extents of the Airport Zoning Regulations and the Central Waterfront Secondary Plan that could be affected by the proposed changes to the airport/airport operations.
	undertake precedent analysis of other airports and their associated adjacent land uses	no	yes	land use &built environment	▹ Land use controls and guidelines for settlement areas adjacent to comparable airports will be reviewed.
Noise	assess current noise levels during testing, take-off and landing	yes	yes	noise	▹ Sound levels from aircraft activity on runways, take-off and landing are accounted for in the Noise Exposure Forecast (NEF) modelling. Testing will be modelled separately in Cadna and then included in the assessment.
	assess future noise levels during testing, take-off and landing	yes	yes	noise	▹ Sound levels during testing, take-off and landing will be modelled to predict changes to these levels at multiple receptor points in a future environment.
	Impacts of noise on outdoor activities	yes	yes, with additions	noise	▹ Modelled noise levels at various sensitive outdoor receptor locations will be analysed to determine how changes to noise levels affect the use and enjoyment of outdoor community amenities and private outdoor space.
	measure current and future noise levels	yes	yes, with additions	noise	▹ Noise levels at several sensitive receptor locations be monitored to understand how the noise from flight activities, including testing, take-off and landing, are experienced at different locations. These recorded sound levels will supplement the modelled noise levels to determine the anticipated impacts from the jet aircraft, based on noise certification data.
	assess impacts of noise on indoor environment	yes	yes	noise	▹ Modelled noise levels at various sensitive outdoor receptor locations can be analysed to determine how changes to noise levels affect the use and enjoyment of indoor private space, taking into account the difference in volume likely with open or closed windows, and with different building techniques.
	assess impacts of noise and vibration on upper floors of existing and new buildings	no	yes	noise	▹ Different locations will have different experiences of noise, and it is acknowledged that upper floor balconies or open windows with a line-of-sight to airport activities, including plane taxiing, take-off and landing may not experience noise in the same way as those receptors at ground level equidistant to the upper floor receptor, especially when taking into account a proposed noise barrier. These effects will be discussed in the assessment report.
	assess impacts of noise on learning outcomes at City School	yes	yes, with additions	noise	▹ Sound levels from the airport will be modelled using the FAA's INM model. The metrics LDN and N70 will be used to compare with the findings reported in ARCP Document 16.
	measure noise in dBC and assess low frequency noise	no	no	noise	▹ dBC measurements are typically used for low frequency sources such as military jet aircraft. The EA team has requested frequency data from the manufacturer of the CS100 and Q400 to better understand the need for this type of noise measurement; however, at this time it is not anticipated that this will materially affect the outcome of the noise assessment and therefore it is recommended to measure noise using the approved standard of measure for this type of application which is a dBA measurement.
	measure noise in "real time" instead of averaging noise levels over a period of time	no	yes	noise	▹ Measurement of noise levels in real time is recommended, including residential areas. There will be additional opportunities to provide input on these locations as part of the Study Design review period. This task would build on and supplement the noise study done by Jacobs Consultancy in the study "Billy Bishop Toronto City Airport Noise Management Study – Interim Report" (February, 2010).
	expand study area to include areas eastwards, westwards, and closer to the Marine Exclusion Zone (MEZ)	no	yes	noise	▹ Additional receptors within the range of the NEF model can be added; however, the NEF model is limited outwards to the geographic extent of the NEF 25 contour. ▹ A larger study area will be accommodated by using Federal Aviation Administration's (FAA) Integrate Noise Model (INM).
	calibrate Noise Exposure Forecast (NEF) model with measured noise levels	no	yes	noise	▹ The NEF model is a regulatory model that describes the daily-average sound levels from aircraft on the runway and in the air on a peak predicted day, but is not intended for comparison with ground-truth measurements. As such, measurements have only limited meaning in comparison with the modelled NEF results. The FAA's INM model will be used as an alternative for comparison with measured sound levels at select locations. Monitoring locations are provided in the Noise Overview.
	assess noise impacts using newer guidelines and models from other airports or jurisdictions (e.g. UK, Germany and Hong Kong)	no	yes	noise	▹ The NEF model is the only noise model required under Transport Canada's consideration airport activity, and therefore is the only regulatory tool for addressing airport noise at the BBTCA. The FAA's INM will be employed to look at sound from the airport using other international criteria. INM was developed by the U.S. FAA, and is based on international standards. The specific international criteria from WHO (World Health Organization), and Health Council of the Netherlands guidelines will be referenced.
	show difference between noise profile of turboprops and jets	no	yes	noise	▹ The noise profile from flight testing of the CS100 will be requested from Bombardier and compared to the noise profile from the Q400 turbo propeller planes, if available.
	evaluate current noise compliance	yes	yes	noise	▹ Compliance with the Tripartite Agreement will be assessed through an examination of NEF compliance.
	assess cumulative impact of all noise sources	yes	yes	noise	▹ Impacts of changes to noise will not be assessed individually, but rather cumulatively. This means that the assessment of future noise levels will take into account other certain or reasonably foreseeable future noise sources within or in the vicinity of the study area. Noise sources will include noise from airport operations, including run-up engine testing, as well as noise from adjacent land uses.
Natural Environment	Review potential impacts of ground-side infrastructure and airborne pollutants on water quality in the inner harbour	No	Yes	marine physical and water quality	▹ The revised scope of work will include a review of potential sources of pollutants related to the proposal and the general effect those could have on water quality if released into the water column. Existing and proposed mitigation measures will be recommended based on the review, and future studies may also be recommended.
Run up Engine Testing	assess impacts of run up engine testing on air quality	no	yes	air quality	▹ The air quality model will include emissions associated with run up engine testing.

Attachment B: Work Plans - Measures of Effect and Data Sources

Issue	Measure of Effect	Additional Data Sources/Methods	
			▸ Compare results for ambient particulate matter for published threshold relative to impacts on vegetation. ▸ Ground level ozone will be assessed in accordance with the Ontario Ministry of Transportation guidelines ▸ Qualitatively assess odour and soot impacts for future with jets scenario relative to baseline conditions
Climate Change	▸ Levels of: carbon dioxide (CO_2), nitrous oxide (N_2O) and methane (CH_4)		▸ Greenhouse gas emissions will be estimated for baseline conditions, future conditions with jets and future conditions without jets. The emissions will be compared to relevant benchmarks such as total GHG emissions from the City of Toronto and the transportation sector ▸ Discuss initiatives to reduce GHG emissions in the airline industry
Noise			
▪ Public Health ▪ Recreational Uses ▪ Residential Uses ▪ Tourism ▪ Institutional Uses	▸ A weighted sound levels (Leq dBA and LDN) ▸ Noise Exposure Forecast (NEF) ▸ Number of Events above 70 dBA (N70)	*Data Source:*	▸ Noise Exposure Forecast model; ▸ US FAA Integrated Noise Model (INM); ▸ ISO 9613 model as incorporated into CadnaA ▸ ORNAMENT, STAMINA, and STEAM models ▸ 2014 WebTrak, community noise monitors (shows aircraft movements to and from airports and associated noise levels) ▸ Existing noise impact assessments and engine run-up reports will be reviewed ▸ New and historic noise monitoring data; and ▸ CS100 and Q400 noise certification data, supplemented by additional data from Bombardier
		Method:	▸ Assess sound levels, including changes in cumulative sound levels between the future scenario with jets and without jets. The following sources will be considered: aircraft in the air, on the runways, taxiing; performing run-ups (engine testing); the ferry; ground support equipment; road traffic and light rail transit ▸ The assessment will use the following models: the Noise Exposure Forecast model (NEF), the Integrated Noise Model (INM), the Ministry of the Environment and Climate Change's (MOECC) Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT) and the Sound from Trains Environmental Analysis Method (STEAM), the ISO 9613 sound propagation model as incorporated into CadnaA ▸ Noise modelling will be supplemented with data from new and historic ambient noise monitoring data. ▸ Compare the resulting noise levels to noise levels specified in Tripartite Agreement, the MOECC guideline NPC -300 and other criteria such as degree of speech interruption (N70) as aircraft fly over. Sound levels will also be evaluated at schools using the key indicators LDN and N70.
Water, Physical Environment and Water Quality			
Wave Formation	▸ Changes in wave height, wave period (i.e. time between two waves) and wave direction	*Data Source:*	▸ CH2M HILL Canada Limited, 2013. Porter Airlines Runway Extension Proposal Review Coastal Processes and Environments ▸ Dillon, 2013. Lakefill Within MEZ for the TPA; and ▸ Dr. Davidson-Arnott, R., 2013. Peer Review of Porter Airlines Runway Extension Proposal Review Coastal Processes and Environment
		Method:	▸ Review the above noted studies and analyze results regarding changes in wave formation ▸ Use this information to identify potentially required mitigation measures to protect the shoreline
Water Levels	▸ Changes in water levels in the western gap and nearby marina	*Data Source:*	▸ CH2M HILL Canada Limited, 2013. Porter Airlines Runway Extension Proposal Review Coastal Processes and Environments ▸ Dillon, 2013. Lakefill Within MEZ for the TPA; and ▸ Dr. Davidson-Arnott, R., 2013. Peer Review of Porter Airlines Runway Extension Proposal Review Coastal Processes and Environment
		Method:	▸ Review the above noted studies and analyze results for information which will allow the comparison of current water levels to future water levels. Changes in water levels can affect erosion and cause storm surges under storm conditions
Currents	▸ Changes in flow patterns and current speed	*Data Source:*	▸ CH2M HILL Canada Limited, 2013. Porter Airlines Runway Extension Proposal Review Coastal Processes and Environments; ▸ Dillon, 2013. Lakefill Within MEZ for the TPA; and ▸ Dr. Davidson-Arnott, R., 2013. Peer Review of Porter Airlines Runway Extension Proposal Review Coastal Processes and Environment
		Method:	▸ Review the above noted studies for results regarding changes in flow patterns as changes in flow patterns and current speeds could affect water quality, circulation, sediment transport and navigation
Sediment Transport	▸ Sediment deposition/accumulation in West Island, Western Gap and in the immediate vicinity of the extension of the land mass (to identify where sediment may deposit) ▸ Long shore sedimentation patterns (whether sediment moves along the shoreline) ▸ Sediment deposition/accumulation in the inner harbor ▸ Changes to type of sediment that could be moved by the currents (if currents speeds change, it can affect the size of sediment that moves)	*Data Source:*	▸ CH2M HILL Canada Limited, 2013. Porter Airlines Runway Extension Proposal Review Coastal Processes and Environments ▸ Dillon, 2013. Lakefill Within MEZ for the TPA; and ▸ Dr. Davidson-Arnott, R., 2013. Peer Review of Porter Airlines Runway Extension Proposal Review Coastal Processes and Environment
		Method:	▸ Review the above noted studies and comment on changes to flow velocity, wave height, period and direction, to interpret where sediment may deposit or accumulate if the land mass is extended
Water Quality	▸ Source of pollutants ▸ Type of pollutants	*Data Source:*	▸ As-built drawings ▸ 2015 Master Planning Exercise ▸ Runway preliminary design and/or detailed design drawings
		Method:	▸ Review the above-noted and other relevant studies and analyze results for information which will allow the comparison of current pollutant sources to future pollutant sources. Changes in pollutant sources or pollutant types can affect water quality without appropriate mitigation measures, so existing and proposed mitigation measures will also be reviewed, and additional measures or further detailed studies may also be recommended.
Transportation			
Public Safety	▸ Estimated increased risk of collisions	*Data Source:*	▸ Using available data and studies to provide information regarding existing safety conditions. ▸ The existing studies may include: ▪ SA Group, 2013. BBTCA Transportation Assessment of Proposed Jet Activity Summary Report ▪ CommunityAIR, 2014. Reviewing Deluce's Jets Proposal: What the City Has (and Hasn't) Done; and ▪ Urban Strategies Inc., 2013. BBTCA Review Urban Planning & Design Assessment of Potential Transportation Impacts & Mitigation Measures ▸ New traffic studies and model for Eireann Quay, including forecast projections
		Method:	▸ Use projections from existing traffic assessments/models to estimate changes in collision risks between vehicles, pedestrians, and cyclists

Appendix C

- Discussion excerpts from 2010 Jacobs Noise Report

DRAFT

BILLY BISHOP TORONTO CITY AIRPORT – NOISE MANAGEMENT STUDY – INTERIM REPORT

Prepared for:
Toronto Port Authority

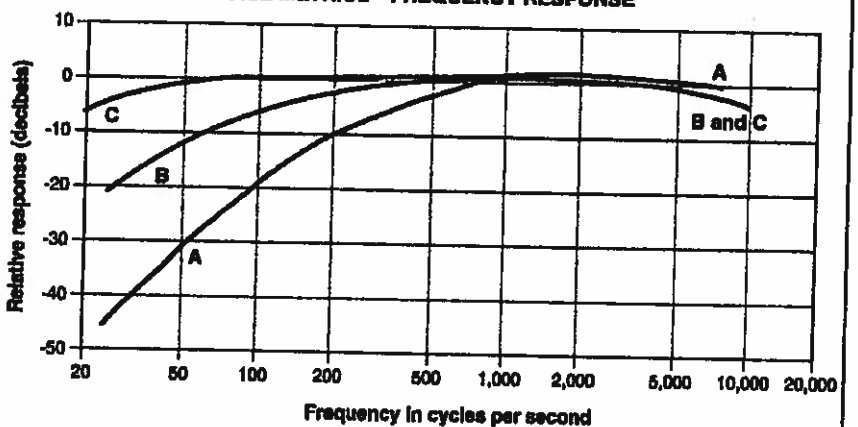
Prepared by:
Jacobs Consultancy Canada Inc.
220 Laurier Ave., West, Suite 500
Ottawa, Ontario, Canada K1P 5Z9

February 2010

JACOBS Consultancy
Transportation Solutions

Figure II-3

NOISE METRICS—FREQUENCY RESPONSE



Source: A. Peterson and E. Gross, *Handbook of Noise Control*, West Concord: General Radio Company, 1967.

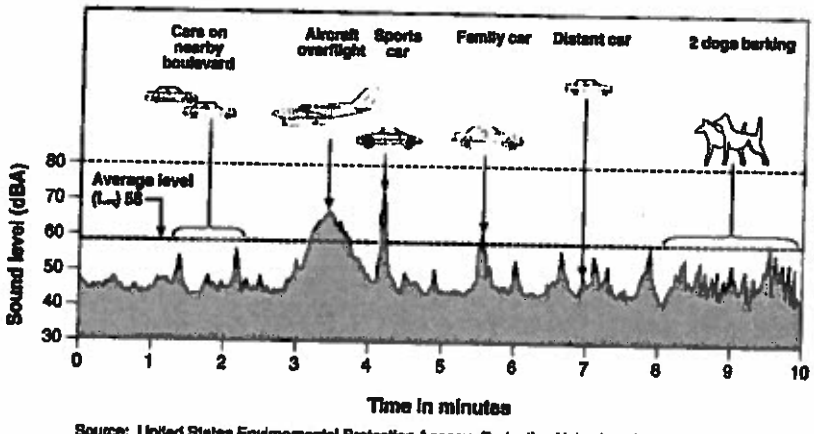
Supplemental Noise Metrics

The measurement of sound is not a simple task. Consider typical sounds in a suburban neighbourhood on a normal or "quiet" afternoon. If a short time in the history of those sounds is plotted on a graph, it would look very much like Figure II-4.

On Figure II-4, the background, or residential sound level in the absence of any identifiable noise sources, is approximately 45 dB. About three-quarters of the time, the sound level is 50 dB or less. The highest sound level, caused by a nearby sports car, is approximately 70 dB, while an aircraft generates a maximum sound level of about 68 dB. The following subsections provide a discussion of how variable community noise is measured.

Figure II-4

NOISE METRICS—COMPARATIVE NOISE LEVELS



Source: United States Environmental Protection Agency, *Protective Noise Levels, Condensed Version of EPA Levels Document*, November 1978.

IV. RECOMMENDED NOISE ABATEMENT MEASURES

One of the main objectives of the Noise Management Study is to provide guidance for the development and implementation of noise abatement measures. The following are the recommended noise abatement measures resulting from the study.

Noise From Ground Operations – Reverse Thrust Braking

The use of reverse thrust after landing improves safety margins by providing a retardation largely independent of runway surface conditions. Its use also increases runway capacity. The full value of reverse thrust however is only realized at high engine thrust and this surge of power, particularly during the evening and night, or in a period when there are no take-offs dominating the noise environment, may create a noise problem.

Because of the safety considerations it is not possible to altogether ban the use of this technique. In practice, however, it is often possible to balance the safety aspect in terms of the actual runway length available. Consequently, for sufficiently long runways, the selection of idle rather than full reverse thrust will significantly reduce the noise, while ensuring that the full reverse thruster is immediately available in case an emergency develops.

In the past, the Airport has promoted the concept of a balanced use of reverse thrust. In the case of Porter Airlines, they have adopted a corporate policy to discourage the use of reverse thrust to only whenever safety considerations require it. Instead Porter uses a technique available with turboprop aircraft known as "flat pitch propeller braking" which helps to slow down the aircraft but at a considerably lower noise level than conventional reverse thrust. Other operators have differing policies with respect to the use of reverse thrust, but in general, operators are beginning to limit unnecessary reverse thrust because of the potential fuel savings and decrease in noise levels. Smaller and lighter single engine aircraft do not generally require reverse thrust because of their much lighter weight.

RECOMMENDATION #1 – TPA to develop a formal policy encouraging operators to limit the use of reverse thrust, above idle power, consistent with the safe operation of the aircraft. Further, the policy is to be actively communicated to the pilot community.

Noise from Ground Operations – Engine Run-ups

Aircraft engine run-ups are required for both aircraft maintenance and for pre-flight checks. Although engine run-ups are not necessarily a regulatory requirement, they are a part of most aircraft manufacturers' standard operating procedures (SOP). For example, the SOPs for single and twin engine aircraft typically require that pre-flight engine run-ups be undertaken prior to each flight segment in order to check engine instruments and performance. During a run-up procedure, aircraft are generally positioned in a heading within 20 degrees (plus or minus) of the actual wind direction.

Maintenance engine run-ups are considered to be any operation of aircraft engines for the purpose of assessing engine performance before, during, and after maintenance and/or repairs. All other engine run-ups not covered under the maintenance category are deemed to be operator engine run-ups and may include (i.) routine engine and instrument checks carried out by a pilot(s) prior to a take-off procedure, and (ii.) the warming-up of piston or turboprop engines.

Although the Airport has requested based and itinerant pilots to refrain from engine run-ups on the apron areas and during night-time hours, there continue to be pilots who ignore the requests. A review of historical noise reports filed by community members suggests that on occasion engine run-ups have contributed to the report filings. There are a number of measures that can be undertaken in order to mitigate the noise generated from aircraft engine run-ups.

RECOMMENDATION #2 – TPA to develop and enact aircraft engine run-up policies and procedures which are formally communicated to the pilot community, addressing allowable times, specific areas, exceptions.

At present, the Airport has designated the end of Runway 33 as an engine run-up area. Although this area is suitable for maintenance related run-ups, it is not practical from a runway capacity and safety perspective for pre-flight run-ups due to its distance from the main runway (08-26) and apron areas. Pre-flight run-ups would be better suited at or near the predominant runway ends. These run-up areas or pads should allow the ability for other aircraft to bypass while an aircraft engine run-up is being performed in order to maintain runway system capacity.

RECOMMENDATION #3 – TCCA to assess and potentially develop designated engine run-up areas, including a maintenance run-up area (i.e. end of Runway 33) and runway end run-up pads (i.e. end of Runway 15; eastern edge of the Terminal Apron near Runway 26 end). Further, the TCCA should seek approval to have the designated run-up areas identified in the Canada Flight Supplement (CFS).

Occasionally, the placement of engine run-up areas or pads allow for the introduction of noise control barriers which may aid in further mitigating the noise impacts resulting from engine run-up procedures. Noise barriers are typically designed to absorb a majority of the sound vibrations rather than allowing them to reflect off of the surface. Some noise control barriers are able to absorb up to 70% of the sound vibrations reaching it.

RECOMMENDATION #4 – TPA to assess the potential of implementing noise control barriers at or near any proposed aircraft engine run-up areas or pads.

Noise from Ground Operations – Aircraft Taxing

Pilots taxing an aircraft to or from a runway will generally apply a low power or throttle setting except when they are starting from a standing position. In this instance, the pilot will apply 70 to 80 percent of the so-called "breakaway" thrust for a short period (typical 3 to 5 seconds) until the aircraft begins to roll. There are occasions where pilots of twin or turboprop aircraft will choose to taxi with a single engine in order to save on fuel burn (since a low throttle setting is much less efficient than at higher throttle settings) and engine wear. Use of a single engine for aircraft taxi may increase the noise generated but only marginally. In and of itself, aircraft taxi operations contribute only a small fraction of the noise generated within an airport environment.

Some past noise reports filed by community members appeared to have originated because of aircraft taxiing on Taxiway Alpha around the Runway 15 end which has exposure to the adjacent Yacht Club and Bathurst Quay residences. It is believed that the reports were a result of pre-flight engine run-ups rather than actual taxi operations. In addition, aircraft waiting to take-off from Runway 08 would have their tails directed in a north or north-easterly direction during a pre-flight engine run-up thus exacerbating the situation. This issue could be addressed by adopting the same measures discussed above for the engine run-up areas.

Noise Sensitive Areas

Noise sensitive areas (NSA) are specifically designated zones, primarily constituting residential uses, where aviation activity is limited in order to mitigate noise impacts on the community.

There are three (3) NSAs surrounding the Airport, as published in the current version of the CFS, which limits aviation activity to above 2500 ft ASL. The NSA was recently revised by Nav Canada to incorporate the eastern portion of Ward's Island. There are a number of recently developed residential areas that just fall outside the current NSA, including some high-rise condominiums. Consideration should be given to determining whether these areas should be incorporated into the NSA boundaries in order minimize noise impacts from close flying aircraft.

TPA would need to formally request Nav Canada to review the viability of any proposed revisions to the NSAs from an airspace, flight routing and safety perspective. If deemed acceptable by Nav Canada and other relevant stakeholders, such as change would require final approval from Transport Canada and the Canadian Aviation Regulation Advisory Council (CARAC) in order to publish in the CFS and Canada Air Pilot (CAP).

RECOMMENDATION #5 – TPA to discuss with Nav Canada possible revisions to Noise Sensitive Areas in order to better reflect the current land uses in the communities surrounding the airport lands while maintaining safety and capacity in the surrounding airspace.

The current NSAs in the vicinity of the Airport, are designated as areas to "avoid flight below 2500 ASL". Any infraction into these zones are not enforceable by the Airport, but are enforceable by Transport Canada in accordance with CAR 602.105. Overlying the Airport and the NSAs is the Toronto Terminal controlled airspace which limits operations above 2500 ASL to aircraft which are properly outfitted with a Mode C transponder and radio, and with the authorization of ATC.

Despite the current NSAs being published in the CFS and the CAP and continual reminders by the Airport Management, there are a number of pilots who occasionally track through NSAs. However, there are instances when Nav Canada do direct air traffic through the NSAs. The Toronto/City Centre VFR Terminal Procedure Chart, contained in the CFS, shows three aircraft flight routes. These are:

- Don Valley Route which accommodates inbound and outbound traffic;
- HWY 2 Route which handles inbound traffic from the east over land; and
- Lakeshore Route which handles outbound traffic to the east over water.

The HWY 2 Route tracks over one of the NSA zones north of the Beaches VFR check point. (VFR check points are geographical points which VFR traffic uses for position reporting to ATC.)

An alternative to the HWY 2 Route could be to relocate the southward segment that currently overflies the NSA to airspace over the R.C. Harris Water Treatment Plant and intercept the Beaches VFR check point at its current location. Although this would bring inbound traffic closer to outbound traffic over the lake, aircraft would keep watch for oncoming traffic and maintain radio contact as they currently do on the Don Valley Route, which handles inbound and outbound traffic.

RECOMMENDATION #6 – TPA to discuss with Transport Canada and Nav Canada the feasibility of redesigning the HWY 2 Flight Route to avoid tracking through the Greenwood Section of the Noise Sensitive Area.

Rotorcraft Operations

Like propeller aircraft, helicopters, or more appropriately referred to as rotorcraft, have an acoustical signature which is dependent on the type and size of powerplant. In addition, rotorcraft noise consists of a broadband spectrum generated by vortex formation and shedding in the flow past the rotorcraft blade. In addition, superimposed on the broadband spectrum for rotorcraft is a rotational noise known as blade slap. This high amplitude periodic noise plus highly modulated vortex noise caused by fluctuating forces on the blade due to the cutting of one blade's tip vortices by another blade and transonic shock. Blade slap is a distinctive, low frequency throbbing sound which increases during certain descent, maneuvering and high-speed cruise operations.

At BBTCA, the predominant rotorcraft operations are medevac and sightseeing related. Rotorcraft operators are required to file flight plans and take approach and departure instructions from Nav Canada ATC.

According to the Tripartite Agreement, once the threshold of rotorcraft movements is reach, rotorcraft approach and departure paths are to be established. As a result of this threshold being reached, Transport Canada, Nav Canada and the TPA held discussions during the first half of 2009. It was agreed among the parties to publish a procedure in the CFS to specify that established flight paths must be used by all rotorcraft operating to and from the BBTCA. The following procedure was adopted into the CFS as of October 2009: "Unless authorized by ATC, rotary wing aircraft are to conform to established circuit pattern.".

In order to mitigate rotorcraft noise on the surrounding communities during hovering exercises, the TPA has established procedures governing rotorcraft ground operations at the Airport. During normal operating hours, rotorcraft maintenance or training that requires hovering exercises must be conducted on the threshold of Runway 33. If Runway 33 is unavailable, then the threshold of Runway 06 becomes the alternative. After normal operating hours and for Ministry of Health medical evacuation flights only, rotorcraft maintenance is permitted in front of Hangar 4A; however, operators are encouraged to use the threshold of Runway 33 or 06.

It is suggested that the TPA encourage helicopter operators which conduct movements particularly during nighttime operations (principally Ministry of Health air ambulance) to utilize the Runway 08 end upon return from an emergency call and to utilize an approach slope of 5 degrees or greater.

Use of Preferential Runway

Preferred runway directions for takeoff are designated for noise abatement purposes; the objective being to use, whenever possible, those runways that permit aircraft to avoid noise-sensitive areas during the initial departure and final approach phases of flight.

Noise abatement is not the determining factor in runway designation under the following circumstances:

- If the runway is not clear and dry, i.e., it is adversely affected by snow, slush, ice, water, mud, rubber, oil or other substances;
- when the crosswind component, including gusts, exceeds 25 KT; and
- when the tail wind component, including gusts, exceeds 5 KT.

Although ATC personnel may select a preferential runway in accordance with the foregoing criteria, pilots are not obligated to accept the runway for taking off or landing. It remains the pilot's responsibility to decide if the assigned runway is operationally acceptable.

RECOMMENDATION #7 – TPA to discuss with Transport Canada and Nav Canada the feasibility of designating preferential runway use in order to avoid Noise Sensitive Areas. Refer to example preferred runway use procedures.

ATC are also able to use preferential runway procedures to distribute traffic away from approaches that have a greater noise impact on surrounding communities, provided that meteorological conditions allow. This is particularly helpful during nighttime operations. Typically, when winds are less than 5 knots, pilots can use other than prevailing wind runways.

EXAMPLE OF PREFERRED RUNWAY PROCEDURE:

- Consistent with safe operating procedures, ATC will assign runways to minimize as many departures and arrivals as possible over residential areas adjacent to the airport.
- The order of preference is:

DEPARTUES	ARRIVALS
26	08
XX	XX
XX	XX
XX	XX

- Under conditions where there is a mixture of arrivals and departures and it is not operationally practicable for ATC to use multiple runways, the preferential runway determination will be based on the runway preference for departures.
- Limiting Factors: (affecting order of preference):
  - Wet, snow covered or icy runway surface conditions.
  - Strong winds favoring non-preferential runways which are beyond safety limits of aircraft being operated with an effective crosswind exceeding 15 knots for arrivals and departures or tailwind exceeding 5 knots.
  - Use of a less preferred runway is acceptable if a backlog of aircraft traffic builds up on the airport due to aircraft waiting for departure.
  - Preferential runway out of service due to airfield maintenance reasons, or an aircraft halted on the runway due to mechanical problems which preclude its immediate removal.
  - Medivac aircraft may deviate from the preferred runway system as circumstances require.
- Note: These procedures shall not limit the discretion of either the ATC or the pilot with respect to the full utilization of the airport in the event of an unusual situation.

Redesign of Approach and Departure Flight Paths

As part of the work of the Noise Management Study, a review was conducted of the existing VFR and IFR approach and departure flight paths to identify opportunities for mitigating community noise impacts while maintaining airspace safety, integrity and capacity. Earlier in this brief, it was identified that a potential redesign of the existing HWY 2 VFR Approach Path could eliminate transiting through the Greenwood section of the NSA northeast of the Airport (if found feasible following a thorough technical assessment).

The review identified that the existing published non-precision RNAV (GNSS) A approach path tracks over portions of Algonquin and Ward's Island and the corresponding NSA. It is believed that the approach could potentially be redesigned to avoid the NSA; however, it would require a thorough review of the impacts to the adjacent airspace, approach and departure paths and existing obstacles.

RECOMMENDATION #8 – TPA to discuss with Transport Canada and Nav Canada the feasibility of redesigning the non-precision RNAV A approach path in order to avoid the Algonquin and Ward's Island Noise Sensitive Area.

Improvements to Published Noise Abatement Procedures

As previously noted, Airport noise abatement procedures and restrictions are published in the CFS and the CAP. Any changes to these procedures and restrictions must first be vetted through Nav Canada and other relevant stakeholders, and then, if there are no objections, the changes must be approved by Transport Canada and CARAC prior to publishing.

As part of the work of the Noise Management Study, a review was conducted of the existing procedures and restrictions contained in the CFS and CAP. From the review, it is believed that there is opportunity for improvement and additions to the wording. For example, language should be included advising of the engine run-up policy and locations.

RECOMMENDATION #9 – TPA to discuss with Transport Canada, Nav Canada and other stakeholders the potential for improvements to the stated procedures and restrictions in the CFS and CAP as they relate specifically to noise abatement and other matters which impact community noise.

V. COMMUNICATIONS AND COMMUNITY OUTREACH

The following are the recommended communication and outreach strategies and initiatives.

RECOMMENDATION #10 – Implement improvements to the summary noise reporting metrics to make them clear and more understandable to the community and provide comparisons to prior year's results.

RECOMMENDATION #11 – Improve response time (e.g. within 96 hours) and communication procedure for community noise reports.

RECOMMENDATION #12 – Conduct quarterly meetings with tenants and key users to communicate progress of noise management program and to discuss and resolve specific noise issues and noise mitigation opportunities.

RECOMMENDATION #13 – Provide further opportunities for educating the community regarding aircraft noise and noise abatement procedures through the TPA website and printed media.

RECOMMENDATION #14 – Establish a "Fly Quiet" voluntary compliance and pilot participation program which rewards pilots for compliance with mandatory and recommended noise mitigation procedures.

VI. ON-GOING NOISE MANAGEMENT EFFORTS

Establishing a Noise Management Program

In order for noise management policies, procedures and promotion to be effective and meaningful, it is crucial that the TPA establish a permanent noise management program. In so doing, the TPA recognizes that the conditions at the airport, within the aviation community and the surrounding communities change over time and require that noise mitigative measures keep pace.

The corner stones of an effective noise management program are:

- Periodic monitoring and assessment of airport generated noise;
- Consultative process with airport stakeholders and the community to assess the effectiveness of policy and procedures and recommend changes to reflect changing conditions;
- Compliance monitoring, reporting and enforcement; and
- Effective communication and program promotion to the aviation community and the general public.

In order to implement such a program, the TPA will need to allocate sufficient resources which current may not exist.

RECOMMENDATION #15 – Assess possible organizational changes to better address and implement noise management initiatives, including assessing the cost-benefits of outsourcing noise reporting and monitoring functions.

RECOMMENDATION #16 – Establish a permanent noise consultative process, involving airport and community stakeholders. The process would address the assessment of noise events and reports, trends in the frequency or type of noise issues, recommend changes to procedures, ensure transparency and timely response and information.

Appendix D

- Discussion excerpts from YQNA letter dated Jan 28, 2011 (TPA Public Outreach Failures)

PUBLIC CONSULTATION CONCERNS

YEAR 2010 PUBLIC OUTREACH FAILURES

This is a synopsis of public consultation processes that took place over the past year, to document the adversarial context in which the TPA Tunnel Screening Report was prepared from the communities' perspective.

There has been one Public Information Center (PIC) on the Draft Airport Noise Study to date, and three PICs on the Tunnel Screening Study to date.

Draft Airport Noise Study

Tunnel PIC No.1 was scheduled for March 24, 2010 immediately after a Public Information Center that took place on February 17, 2010. The purpose of the earlier Feb 17 PIC was to present a Draft Noise Study Report for the Island Airport as prepared by Jacobs Consultancy.

The draft report was to have been developed through a community Advisory Group established by the TPA in November 2008. The Advisory Group consisted of representatives from all local neighbourhood associations, sailing clubs and waterfront interest groups. The invitation extended by the TPA to these various stakeholder groups showed awareness by the TPA of the geographical range and scope of effects that current and future airport activities have.

Aside from a project launch meeting, the Advisory Group met only twice over a 12 month period, for reasons which were mostly related to lack of TPA initiative in setting up regular monthly meetings. The meetings that were held featured poorly structured agendas that were not circulated in advance, no follow up on discussed items or minutes, no interim status updates concerning delays in project, and a general lacking in proactive attitude on the part of the TPA to build project momentum with the community. As a result, opportunities for effective public input to this important Study suffered.

The Advisory Group was abruptly disbanded by the TPA at the end of January 2010 without ever having had opportunity to comment collectively on the first draft report prepared in isolation by the TPA. There was not one opportunity for the Advisory Group to provide any collective input of substance regarding the technical matters of the Study, for incorporation into the Draft Airport Noise Study Report. This is in sharp contrast to the information shown in related TPA News Releases.

Immediately after it was confirmed that the TPA had in fact disbanded the Advisory Group without its knowledge, the TPA scheduled Noise Study PIC No.1 to occur just two weeks later, on Feb 17, 2010. The contents of the Draft Noise Study as presented to the public were virtually unchanged from the first draft circulated to the Advisory Group one year before in 2009, on which the Group was not given opportunity for collective input.

Despite very limited advance notice nor wide spread notification of the meeting, the Noise Study PIC No.1 on Feb 17, 2010 generated significant interest in the community and a significant number of concerns. Though the notice for the event stated that a 'public meeting' would be held, an 'open house' was presented by the TPA instead. Given the significant volume of concerns previously documented by residents, the switch in meeting format by the TPA to a typical Open House format,

did not demonstrate an understanding by the TPA of local circumstances, despite the TPA being reminded thereof by email in the days leading up to Feb 17, 2011.

During the ensuing communal walking tour of the Open House materials with TPA Director Ken Lundy, residents forwarded field noise measurements they had taken using meters calibrated with those of local noise consultants and articulated significant areas of concern regarding the transparency, traceability, and integrity of several chapters of the Draft Noise Study report. All technical discrepancies noted could have been avoided had the draft Noise Study report data and analyses work been completed in an open and transparent process as discussed with the TPA in the very first Advisory Group meeting one year previous.

Public comments on Feb 17 were being documented by 3 designated 'scribes' identified by the TPA in advance of the meeting. The public commented for the purposes of documentation, consideration, and incorporation into the Airport Noise Study findings, as would normally be done at any Open House. The summary of public comments from this meeting were never issued by the TPA. **Can the TPA issue the summary of public questions and comments compiled at the Noise Study PIC No.1 on Feb 17, 2010?**

For inexplicable reasons, the TPA scheduled Tunnel PIC No.1 immediately after the conclusion of the meeting of Feb 17, 2010 such that it would occur one month later on March 24, 2010. It appeared confusing to residents that the lower-level Tunnel Study would be commenced while significant outstanding discrepancies remained between modeled and field results shown in the higher-level Noise Study. Typical private and public sector processes would normally dictate that lower level studies conform to higher level studies and not the other way around as appears to be the case here.

<u>Draft Tunnel Screening Study</u>

The Tunnel PIC No.1 on March 24, 2010 was once again set up by the TPA as a typical Open House, despite the very obvious stakeholder need for a sit down public meeting as requested by the community on several occasions prior to and on Feb 17 of the previous month.

TPA staff attending on March 24 were accompanied by security personnel coordinated in advance by the TPA. In doing so, the TPA demonstrated its knowledge that it was not adhering to a code of practice in commencing the tunnel study while several higher level issues to which the tunnel study would need to conform were still being studied (see above paragraphs). Residents filmed portions of the PIC to protect themselves from potential TPA accusations of having unreasonable concerns or behaving violently. The questions and concerns expressed at the Tunnel PIC on March 24, 2010 have not yet been compiled or responded to by the TPA. **Can the TPA issue the summary of public questions and comments raised at the Mar 24, 2010 Tunnel PIC No.1?**

Consultation with potentially affected parties was NOT done early in the tunnel screening study nor throughout the process. In mid-November, the TPA announced to the community that it had completed a Draft Tunnel Study in isolation, and that it had pre-scheduled two public consultation meetings for Nov 30, 2010 and Jan 12, 2011. In addition, the TPA gave a final cut off date for all comments of January 28, 2011 upon which time the decision to proceed with tunnel would be made shortly thereafter. This pre-set timetable of meetings straddling the Christmas break would knowingly leave no time in between the two meetings for the TPA to ever analyze or incorporate any community input that might have been raised in the meetings. As a consequence, the timetable as

presented indicated to the residents that any comments they make at the meetings will be responded to in a defensive manner by the TPA and will not be incorporated into the development of Study findings. The TPA had once again knowingly set up an avoidable adversarial context for a public meeting.

The Tunnel PIC No. 2 on November 30, 2010 was announced with just two weeks advance notice of the meeting date, resulting in both executive members of YQNA and BQNA unable to attend. YQNA members had scheduled a meeting for Nov 30, 2010 in September and were unable to attend, though some arrived on time for the meeting to try to participate immediately at commencement. The meeting start time was delayed 30 minutes by the TPA beyond the posted start time, and therefore YQNA members could not input collectively at that meeting. In addition, active and informed members of BQNA were unaware of the Tunnel PIC No.2 meeting until 4 days prior to November 30, 2010. Neither the Board or building administrators of Windward Coop non-profit housing at 34 Little Norway Crescent were directly informed of the project or of the meetings by the TPA - even though the Coop building is situated 75 m from the proposed tunnel site. It is assumed that other directly affected stakeholders were not contacted by the TPA about this study. This is not representative of good EA planning protocol, nor does it represent the Best Practices of either the Private or Public Sectors. **Can the TPA confirm why it chose not to reach out to the communities in advance of the meetings? Can the TPA confirm if there is anything which prevents the TPA from contacting directly affected stakeholders as would normally be done?**

Tunnel PIC No.2 on Nov 30 seemed to have been packed with TPA consultants and staff. There were no maps on display showing land-use and surrounding infrastructure prior to the meeting. A key person (TPA's 'community liaison officer') was absent, and clearly the concerns previously expressed by the community, had not yet been transmitted to members of TPA's management. Almost half the public questions on Nov 30 were responded to by Dillon with the words: "those concerns are not considered part of this study". At the request of Braz Menezes, YQNA planning committee, 40 copies of the Draft Report from Dillon Consulting, were received and subsequently distributed to YQNA members and the balance to BQNA members. The main substantive comments received in response, reflect those previously made by the handful of participants at the Nov 30 meeting. **Can the TPA incorporate the issues raised by the public on Nov 30 and Jan 12 in the Screening Report, and show how the public concerns have or have not been addressed, as per typical study processes? Can the TPA compile all correspondence received in an Appendix to the report?**

<u>TPA Consultative Committee</u>

In late 2010, the TPA announced its intention to establish a new committee to meet quarterly to review airport activities and prepared a formal Terms of Reference. The idea for this Committee was floated by the TPA at the February 17, 2010 public meeting, one year ago, two weeks after the TPA had disbanded the Noise Study Advisory Group without warning or explanation. Far fewer community associations will be represented on the new Consultative Committee than was previously included on the former Advisory Group, however, the new committee will include several private business interests. It is hoped this will lead to some fruitful exchanges.

<u>Porter Airlines Speaks on Behalf of TPA</u>

We note that there have been on-going comments by Porter CEO in the national media in recent months referring to airport facility negotiations, while also discussing slot and flight numbers that are

higher than anything that has ever been presented to the public by the TPA. These comments do not consider the perspectives of the community. The comments appear to undermine the ability of the TPA to affect control on airport activities with respect to the planned, promised, projected, and potential effects with or without the tunnel project.

Community Noise Complaints Not Responded To

For the past couple years, the TPA had been posting monthly summaries of noise complaints logged by residents on its website. The complaints were accompanied by a brief response from the TPA concerning the complaint, however, these have not been detailed enough in terms of what specific ground or air maneuvers were the source of the concern. Mutual educational opportunities regarding the complaints have not been pursued by the TPA.

The monthly summaries were generally posted 3 months after the complaints were logged, leaving the complainer to wait that length of time to finally learn what caused the noise. As of March 2010, the TPA decided to stop responding to noise complaints and the monthly summaries are no longer being posted. **Can the TPA confirm how noise complaints during tunnel construction, as shown under the mitigation measures in the Screening Report, will be dealt with immediately given the lack of responsiveness evidenced to date? Can the TPA attach all monthly complaint summaries including its responses in an Appendix to the Screening Report in order to document the high number of unresolved resident noise complaints considered in the Screening Report analyses? Can the TPA post all complaints logged since March 2010 on its website?**

TRUST ISSUES

Several members of the community verbally noted during the Jan 12, 2011 Q&A that they do not trust Dillon Consulting. One resident recalled that in recommending a bridge alternative in the early 1990s, Dillon made comments that the airport would not be viable without the bridge. In addition, Dillon has also been referred to as "the faithful lap dog of the TPA" in past articles of a local newspaper. (The comments were not written by any active member in any neighbourhood association.)

The perception of the community is that Dillon is exclusively selected by the Toronto Port Authority (TPA) because it will write a biased reports in favour of client wishes, as sometimes seen in a private sector client relationship, rather than neutral, unbiased reports typical of public sector client relationships. **Can the TPA confirm whether or not there are any special provisions included in the signed contract with Dillon Consulting with respect to limitation of liabilities regarding the codes of practice typically employed on a project of this significance? Can these provisions and/ or the terms of the fee contract document be forwarded or else reviewed in confidence with YQNA?**

Desirably Dillon is not included or selected on the next couple assignments in order to eliminate these perceptions of preparing biased studies (whether founded or unfounded), as these issues reflect negatively on the TPA. **Can the TPA disclose the results of its Request for Qualification (RFQ) process, confirming the list of acceptable consultants? Moving forward, can the TPA contract its consultants through an open Request for Proposal (RFP) process?** This is important given the importance of studies yet to be completed and the cost effectiveness of them. It is desirable that all

studies related to public infrastructure be carried out in a transparent, sensitive, and comprehensive manner.

Individual members of the community verbally noted on Nov 30, 2010 and Jan 12, 2011 that they do not trust the Toronto Port Authority (TPA). The comments appeared to be in response to the handling of responses by the TPA during Public Information Centers (PICs) and also based on inaction over issues already discussed and documented in past with the community. Individuals in both recent meetings ended their line of questioning in frustration by asking 'how it was possible for TPA staff to sleep at night'. On Nov 30, one resident actually requested that Director Ken Lundy put his words in writing because the resident said he did not believe that what was being promised him in public would in fact be implemented. On Jan 12, a different resident said to Ken Lundy: "We don't trust you. You lied to us". This is a serious matter having important ramifications with respect to the approval process for this Tunnel Screening Report.

TPA 'CONFLICT OF INTEREST'

It appears the selection of the Study EA process, evaluation of the effects, and the final decision whether to proceed with the tunnel project, is in the exclusive purview of the TPA, who is also perceived to be the project proponent likely to receive benefit from the results of this project.

A proponent is typically defined as one who carries out or proposes to carry out an undertaking, or is the owner having charge, management or control of the undertaking. In addition, the TPA is perceived to be a federal agency who is the Responsible Authority (RA) under the CEAA having the decision making authority and ability to provide information or advice. **Can the TPA confirm in the report its dual role as both Proponent and RA concerning this project, as it is not clear? What steps has the TPA done during the study to date, to address its widely perceived conflict of interest on this study?**

A dual role for an approval agency has not been the typical process or methodology in completing EA Studies for transportation improvements along the Waterfront or elsewhere. There is normally recourse for the public to a third party in the approval process. EA processes in general are by their very nature set up to avoid a potential for conflict of interest that the TPA finds itself in here. **In recognition of the significant weaknesses in due process, can the TPA confirm from whom it will seek a higher level approval prior to making a decision on the proposed works?** It is recommended that the TPA seek referral through the Minister of Environment, to Minister of Transportation as provided for under Canada Port Authority Environmental Assessment Regulations (SOR/99-318) and (SOR/2007-108).

Appendix E

- Toronto Port Authority Press Release dated April 4, 2011

Media

Press Releases

| Past releases

Toronto (April 4, 2011) –The TPA today announced that after taking into consideration the Environmental Assessment Screening Report and comments emanating from public participation in its review of the Environmental Assessment (EA), it has concluded that the proposed pedestrian/services tunnel and perimeter road project is unlikely to cause significant, adverse environmental effects. The final screening report is now available on the TPA website.

The EA, which has been underway for more than a year, is an important part of the tunnel planning process. With this report now in hand and as a result of its analysis, the TPA continues to consider proceeding with the project. The TPA is now issuing the Request for Proposals (RFP) to the three consortia vying to design, build, finance and maintain the proposed tunnel.

The EA found that the proposed pedestrian/services tunnel is unlikely to cause significant, adverse environmental effects. Some minor, localized and short-term construction related effects are expected, and the Report included recommended measures to mitigate these effects. The TPA will ensure that these mitigation measures are implemented, and has included them as requirements in the RFP.

Although not required for the Project, the TPA also provided reports prepared by RWDI, a renowned air quality expert, which considered the air quality and noise impacts of the Billy Bishop Airport operating at its forecast 202-slot capacity. According to the EA, prepared for the TPA by Dillon Consulting: "RWDI concluded that there would not be significant effects on air quality or noise impacts from the Billy Bishop Airport as the aircraft slots are fully utilized."

As previously announced, the TPA initiated an environmental assessment in February 2010, as required under applicable legislation. The environmental assessment considered not only the construction and operation of the proposed project, but also the cumulative effects of the project related to airline passenger use, local vehicular traffic, and noise and air quality impact, among other factors. After an initial public consultation session held on March 24, 2010, the TPA and the independent environmental assessment consultant Dillon Consulting maintained a public exchange and dialogue process that included making information available on the TPA's website, obtaining and considering comments and questions, obtaining information from government agencies, and meeting with stakeholders. The 95-page draft environmental assessment screening report was made available for distribution and public review on November 16, 2010. On November 30, 2010, the TPA held a second public meeting to obtain further input on the environmental assessment and the proposed project. A third public meeting was held on January 12, 2011, with January 28, 2011 being the cut-off date for comments about the report.

In August 2010, the Toronto Port Authority issued a Request for Qualification (RFQ) to interested parties to indicate their interest in and qualifications for the proposed Billy Bishop Airport Pedestrian/Services Tunnel Project.

In accordance with the terms of the RFQ, and with the participation of P3 Canada, the TPA shortlisted of three qualified proponents that will be invited to participate in the next, and final stage of the selection process: the Request for Proposal (RFP) stage.

The three consortia invited to bid on the project - Forum Infrastructure Partners, Elite Tunnel Group and City Airport Tunnel Partners - represent a cross section of leading local and international construction and design firms. These teams have been chosen from a group that originally exceeded 50 private sector proponents. "The project has attracted interest from a broad cross-section of well known Canadian, American and European proponents with the right combination of experience and financial capacity to partner with us," said TPA Chairman Mark McQueen. "The success of the revitalization of Billy Bishop Airport has brought about a delightful challenge – we need to ensure that our infrastructure lives up to the airport's popularity."

The consortia have six months to submit proposals to the TPA for its consideration and review.

The public-private partnership (P3) procurement process which the TPA is following, would reduce costs, ensure on-time and on-budget delivery of the project, and enhance the potential for innovations in public infrastructure.

McQueen reiterated that the tunnel would be paid for by passengers who use the popular Billy Bishop Airport. As previously announced, 100 per cent of the cost of design, building, financing and maintaining the tunnel will be ultimately borne by departing passengers via Billy Bishop Airport's existing $20 Airport Improvement Fee (AIF). For comparison purposes, each passenger at Pearson International Airport currently pays an AIF of $25 per departing flight.

In 2010, approximately 1.2 million passengers used the airport, an almost 50 fold increase in five years. The TPA is expecting more than 1.5 million passengers in 2011.

The TPA's professional advisors include Dillon Consulting, NORR Architects, Hatch Mott MacDonald, Brookfield Financial, Deloitte & Touche LLP, Gowlings LLP, P3 Canada, Marsh Canada and P1 Consulting.

— 30 —

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Appendix F

- Discussion excerpts from 2010 RWDI Noise Impact Assessment

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Draft Report

BBTCA Noise Impact Assessment

RWDI # 1010187
November 2010

SUBMITTED TO

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Table 8: Predicted 2010 and 2016 Road / LRT Traffic Night-time Sound Levels L_{eq} (Night)

Receptor No.	2010 (dBA)	2016 (dBA)	Difference (dB)	Human Perception of Change in Levels	Significance of Change
R1	64	64	1	Imperceptible Increase	Insignificant
R2	70	70	0	No Change	Insignificant
R3	61	62	1	Imperceptible Increase	Insignificant
R4	54	55	1	Imperceptible Increase	Insignificant
R5	59	59	0	No Change	Insignificant
R6	61	61	1	Imperceptible Increase	Insignificant
R7	59	59	0	No Change	Insignificant
R8	54	55	1	Imperceptible Increase	Insignificant

Notes: Apparent arithmetic discrepancies are due to rounding.

The maximum change in road and LRT traffic noise for L_{eq} (Night) values are predicted to be 1 dBA, which is considered to be imperceptible. 2016 residential development within the study area would not be restricted by MOE LU-131 guidelines [1]. Warning clauses relating to potential road traffic noise levels, central air conditioning requirements, and provisions for specific housing constructions would be required at some receptors because of road and LRT traffic.

4.2 Airside Activity Noise

Receptors within this study receive noise impacts from airside activity (aircraft in flight, landing, and take-off roll) from aircraft associated with BBTCA, as well as overflying aircraft associated with Lester B. Pearson International Airport (LBPIA).

Aircraft noise impact predictions in the vicinity of Canadian airports and associated land-use planning activities use the Noise Exposure Forecast (NEF) model developed by Transport Canada [15]. The NEF value is a complex, calculated measure of the aircraft noise based on the type of aircraft in use, the take-off and landing patterns of the aircraft, times of operation and runway configuration. The model does not include ground-based noise from aircraft other than the landing and take-off rolls. The NEF represents the noise exposure over a typical 24-hour period with a penalty applied to night-time operations. The model requires information on peak planning day aircraft movements (defined as the 95th percentile day of the year, where 100 % represents the busiest day), aircraft type, destination, runway configuration and utilization. Since there is minimal air traffic activity at night, usually restricted to air ambulance, the noise assessment assumes no noise impacts from airside activity during the night-time period.

As discussed in Section 2.2.2, under the Tripartite Agreement, the NEF 28 contours cannot extend past the Tripartite Agreement 1990 NEF 25 contour, except in areas to the southwest over Lake Ontario [7]. The Tripartite Agreement noise contours are provided in Appendix E. All residences within the study area lie outside the Tripartite Agreement 1990 NEF 25 contour.

Airside noise impacts (i.e., noise from aircraft in the air) on the identified receptors were determined by converting the NEF value for each receptor location to a L_{eq} (24) value (as measured in dBA). Estimates of 2010 airside noise levels were based on the December 2001 Sypher, Mueller report Toronto City Centre Airport General Aviation & Airport Feasibility Study [16] which developed the NEF 28 noise contours for the year 2000, and are included in Appendix F.

LBPIA contributes to the airside noise impacts within the study area. The airside noise level impacts due to the LBPIA are based on measurements of aircraft overflight noise from the original 1997 RWDI study [17]. These measured levels were added to the estimated BBTCA airside noise levels to derive a total predicted L_{eq} (24) and L_{eq} (Day) airside noise level.

As shown in Table 9, airside noise levels at the eight receptor locations for both the 2010 and 2016 years are the same as the 1990 NEF 25 contour level was used as the basis to estimate airside noise effects (because the 1990 NEF 25 contour level cannot be exceeded).

Table 9: Predicted Total Airside Noise Levels (BBTCA and LPBIA Overflight Levels in dBA)

Receptor No.	2010[1]		2016[1]	
	L_{eq} (24)	L_{eq} (Day)	L_{eq} (24)	L_{eq} (Day)
R1	55	57	55	57
R2	56	58	56	58
R3	56	58	56	58
R4	57	59	57	59
R5	56	58	56	58
R6	55	57	55	57
R7[2]	56	58	56	58
R8[3]	57	59	57	59

Notes: [1] Results were extracted from previous 2005 study.
[2] The results at R7 were assumed to be the same as R5 due to equivalent distance to BBTCA.
[3] The results at R8 were assumed to be the same as R4 due to equivalent distance to BBTCA.

All residences and passive land use areas within the study area lie outside of the Tripartite Agreement 1990 NEF 25 contour, and are therefore expected to have NEF values at or below NEF 25 for 2010 and 2016 conditions. Under current land use guidelines for new residential development, no airside aircraft noise-related restrictions are expected to apply for 2010 or 2016.

4.3 Groundside Activity Noise

The assessment of BBTCA groundside activity noise impacts included aircraft taxiing between the gate and the runway, run-up (aircraft starting up for take-off), and ground support equipment (e.g., fuel trucks, baggage handlers). These noise levels were predicted in order to determine the total cumulative sound levels for both 2010 and 2016 at the receptors of interest.

DCL provided 2010 and 2016 weekday peak planning day aircraft movements by aircraft type, which is contained in Appendix G. The 2010 and 2016 scenarios capture the local and itinerant aircraft using the airport. The local aircraft traffic is referred to as Touch and Gos (TGOs) and the itinerant aircraft traffic is referred to as Landing and Take-offs (LTOs).

TGOs refer to action by an aircraft consisting of a departure on a runway, operating in the local traffic pattern or within sight of the airport, landing without stopping and then takeoff. An aircraft can complete this procedure a number of times. TGOs aircraft ground-based activity of moving to and from the gate, taxiing to and from the runway and run-up is included within the LTOs movements contained in Appendix G. TGOs landing and taking-off after the initial takeoff and landing are not included in the ground-based noise assessment, but are included in the airside noise assessment.

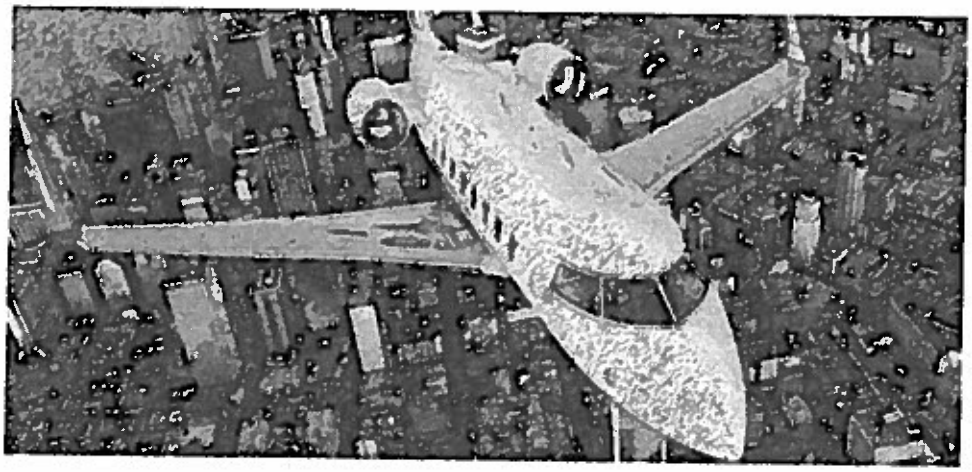
There is minimal air traffic activity at night (2300h to 0700h), usually restricted to air ambulance. Groundside activity noise was included in the assessment for the nighttime period to primarily account for groundside activity in preparation for the daytime air traffic and after daytime air traffic has ceased.

Appendix G

- Discussion excerpts from TP1247

Transport Canada
Transports Canada

TP 1247E
(05/2005)



Aviation

Land Use in the Vicinity of Airports

Eighth Edition

TC-1001740

Canada

4.7 RECOMMENDED NOISE CONTROL ACTION

For a specific noise problem, Table 4 may be used to select different actions.

4.8 RECOMMENDED PRACTICES

NEF/NEP contours approved by TC Aviation are to be used in conjunction with these guidelines to encourage compatible land use in the vicinity of airports. Therefore, it is imperative that these official contours be distributed by Airport Operators to the authorities responsible for land use and zoning of the affected land. This would normally include both provincial and municipal planners, and zoning boards. It should be noted that distribution of these official contours is not restricted.

Table 2

COMMUNITY RESPONSE PREDICTION

Response Area	Response Prediction*
1 (over 40 NEF)	Repeated and vigorous individual complaints are likely. Concerted group and legal action might be expected.
2 (35-40 NEF)	Individual complaints may be vigorous. Possible group action and appeals to authorities.
3 (30-35 NEF)	Sporadic to repeated individual complaints. Group action is possible.
4 (below 30 NEF)	Sporadic complaints may occur. Noise may interfere occasionally with certain activities of the resident.
* It should be noted that the above community response predictions are generalizations based upon experience resulting from the evolutionary development of various noise exposure units used by other countries. For specific locations, the above response areas may vary somewhat in accordance with existing ambient or background noise levels and prevailing social, economic and political conditions.	

Appendix H

- Discussion excerpts from NPC-300

Environmental Noise Guideline

Stationary and Transportation Sources – Approval and Planning

Publication NPC-300

Ontario

Table C-4
Indoor Aircraft Noise Limits
(Applicable over 24-hour period)

Type of Space	Indoor NEF/NEP*
Living/dining/den areas of residences, hospitals, schools, nursing/retirement homes, daycare centres, etc.	5
Sleeping quarters	0

* The indoor NEF/NEP values in Table C-4 are used to determine acoustical insulation requirements based on the NEF/NEP contour maps.

C4 Noise Impact Assessment – Stationary Sources

This Section applies to the introduction of new noise sensitive land uses or the redevelopment of existing noise sensitive land uses within the potential influence area of existing or planned new stationary sources.

C4.1 General

The information and the sound level limits are the same for Part B and Part C of this guideline.

In comparison to noise from transportation sources, in many circumstances, noise from stationary sources may be controlled more effectively at the source. If noise control measures are recommended to reduce the noise impact, these measures should be designed in accordance with the following principles:

(1) communication and cooperation between the proponent of the noise sensitive land use and the stationary source owner are desirable and highly encouraged;

(2) where practicable, source mitigation is the preferred option;

(3) implementation of noise control measures at the source will typically require an MOE approval;

(4) the goal of implementing receptor based noise control measures at the noise sensitive land use is to ensure compliance with the sound level limits in this guideline;

(5) measures aimed at the indoor environment, such as air conditioning, which would allow windows to remain closed, are not considered relevant in a Class 1, 2 or 3 area because the sound level limits for stationary source sound levels apply to the outdoor planes of windows and windows are assumed to be open;

(6) the use of central air conditioning may be acceptable under special circumstances, or in a Class 4 area where central air conditioning forms an essential part of the overall building design; and

C4.5 Sound Level Limits – General

Note that the sound level limits in this Part C are the same as those presented in Part B for the MOE approval requirements for stationary sources of noise.

The outdoor sound level limits described in Section C4.5 apply to points of reception at outdoor locations defined in the point of reception definition in Part A. The selection of the location is based primarily on the principle of predictable worst case noise impact. A further criterion that may be applied to the selection of a point of reception is that the location be in a usable area. Where it can be clearly demonstrated that a particular area is unusable or unsuitable for use, locations within that area may be excluded from the application of potential points of reception. Examples of potentially unusable areas are driveways leading to parking garages or parking lots for high-rise multi-unit buildings.

The above usability criterion should be generally considered early in the planning process of a new development and should relate to specific design configurations proposed in land use planning stages, rather than during a later stage when the noise impact assessment considers points of reception.

The plane of a window sound level limits, Sections C4.5.1 and C4.5.2, apply to a location in the plane of any window on a noise sensitive space. The limits are not required to be applied to windows in noise insensitive areas such as staircases, corridors, bathrooms, closets, utility rooms, etc., that are fully partitioned from noise sensitive spaces.

In principle, the objective of complying with the plane of window limits in Table C-5 and Table C-6 is to be protective of noise sensitive spaces, i.e. indoor areas. This objective of protecting indoor areas should be considered in the noise impact assessment when the building façade includes ventilation devices or openings that may reduce the transmission loss and compromise the indoor noise environment.

C4.5.1 Steady and Varying Sound – Outdoors and Plane of Window

For sound from a stationary source, including Quasi-Steady Impulsive Sound but not including other impulsive sound, the sound level limit at a point of reception, expressed in terms of the One-Hour Equivalent Sound Level (L_{eq}) is the higher of the applicable exclusion limit value given in Table C-5 or Table C-6, or the background sound level for that point of reception. The outdoor sound level limits for stationary sources apply only to daytime and evening (07:00 – 23:00 hours). Sound level limits apply during the nighttime period (23:00 – 07:00) for the plane of the window of a noise sensitive space. In general, the outdoor points of reception will be protected during the nighttime as a consequence of meeting the sound level limits at the adjacent plane of window of noise sensitive spaces.

Note that for Class 1, 2 and 3 areas, the plane of window limits apply to a window that is assumed to be open. For Class 4 areas, the plane of window limits apply to a window

which is assumed to be closed. This distinction does not affect the prediction of plane of window sound levels.

Table C-5
Exclusion Limit Values of One-Hour Equivalent Sound Level (L_{eq}, dBA)
Outdoor Points of Reception

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	55
19:00 – 23:00	50	45	40	55

Table C-6
Exclusion Limit Values of One-Hour Equivalent Sound Level (L_{eq}, dBA)
Plane of Window of Noise Sensitive Spaces

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	60
19:00 – 23:00	50	50	40	60
23:00 – 07:00	45	45	40	55

C4.5.2 Impulsive Sound – Outdoors and Plane of Window

For impulsive sound, other than Quasi-Steady Impulsive Sound, from a stationary source, the sound level limit at a point of reception expressed in terms of the Logarithmic Mean Impulse Sound Level (L_{LM}) is the higher of the applicable exclusion limit value given in

Table C-7 or Table C-8, or the background sound level for that point of reception. The outdoor sound level limits for stationary sources apply only to daytime and evening (07:00 – 23:00 hours). Sound level limits apply during the nighttime period (23:00 – 07:00) for the plane of the window of a noise sensitive space. In general, the outdoor points of reception will be protected during the nighttime as a consequence of meeting the sound level limits at the adjacent plane of window of noise sensitive spaces.

Notwithstanding Publication NPC-103, Reference [29], the following sound level limits in

Table C-7
Exclusion Limit Values for Impulsive Sound Level (L_{LM}, dBAI)
Outdoor Points of Reception

Time of Day	Actual Number of Impulses in Period of One-Hour	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 23:00	9 or more	50	50	45	55
	7 to 8	55	55	50	60
	5 to 6	60	60	55	65
	4	65	65	60	70
	3	70	70	65	75
	2	75	75	70	80
	1	80	80	75	85

Table C-8
Exclusion Limit Values for Impulsive Sound Level (L_{LM}, dBAI)
Plane of Window – Noise Sensitive Spaces (Day/Night)

Actual Number of Impulses in Period of One-Hour	Class 1 Area (07:00–23:00)/ (23:00–07:00)	Class 2 Area (07:00–23:00)/ (23:00–07:00)	Class 3 Area (07:00–19:00)/ (19:00–07:00)	Class 4 Area (07:00–23:00)/ (23:00–07:00)
9 or more	50/45	50/45	45/40	60/55
7 to 8	55/50	55/50	50/45	65/60
5 to 6	60/55	60/55	55/50	70/65
4	65/60	65/60	60/55	75/70
3	70/65	70/65	65/60	80/75
2	75/70	75/70	70/65	85/80
1	80/75	80/75	75/70	90/85

C4.5.3 Sound Level Limits for Emergency Equipment

The sound level limits for noise produced by emergency equipment operating in non-emergency situations, such as testing or maintenance of such equipment, are 5 dB greater than the sound level limits otherwise applicable to stationary sources, described in Sections C4.5.1 and C4.5.2.

The noise produced by emergency equipment operating in non-emergency situations should be assessed independently of all other stationary sources of noise. Specifically,

the emissions are not required to be included with the overall noise assessment of a stationary source facility.

In addition, sound level limits do not apply to emergency equipment operating in emergency situations.

C4.5.4 Sound Level Limits for Layover Sites

The sound level limit for noise from a layover site in any hour, expressed in terms of the One-Hour Equivalent Sound Level (L_{eq}) is the higher of either 55 dBA or the background sound level.

C5 Noise Impact Assessment – Multiple Sources

Impulse sources, non-impulse sources and emergency equipment are to be analyzed separately. Where there are multiple, non-impulse sources at a stationary source, the noise assessment should be based on the combined effect of all sources comprising the stationary source, added together on an energy basis.

C6 Noise Impact Assessment – Supplementary Noise Limits

Indoor limits for transportation sources applicable to noise sensitive land uses are specified in Table C-2 and Table C-4. Table C-9 and Table C-10 are expanded versions of Table C-2 and Table C-4, and present guidelines for acceptable indoor sound levels that are extended to land uses and developments which are not normally considered noise sensitive. The specified values are maximum sound levels and apply to the indicated indoor spaces with the windows and doors closed. The sound level limits in Table C-9 and Table C-10 are presented as information, for good-practice design objectives.

Table C-9
Supplementary Indoor Sound Level Limits
Road and Rail

Type of Space	Time Period	L_{eq} (Time Period) (dBA)	
		Road	Rail
General offices, reception areas, retail stores, etc.	16 hours between 07:00 – 23:00	50	45
Living/dining areas of residences, hospitals, schools, nursing/retirement homes, daycare centres, theatres, places of worship, libraries, individual or semi-private offices, conference rooms, reading rooms, etc.	16 hours between 07:00 – 23:00	45	40
Sleeping quarters of hotels/motels	8 hours between 23:00 – 07:00	45	40
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	8 hours between 23:00 – 07:00	40	35

Table C-10
Supplementary Indoor Aircraft Noise Limits
(Applicable over 24-hour period)

Type of Space	Indoor NEF/NEP*
General offices, reception areas, retail stores, etc.	15
Individual or semi-private offices, conference rooms, etc.	10
Living/dining areas of residences, sleeping quarters of hotels/motels, theatres, libraries, schools, daycare centres, places of worship, etc.	5
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	0

* The indoor NEF/NEP values listed in Table C-10 are not obtained from NEF/NEP contour maps. The values are representative of the indoor sound levels and are used as assessment criteria for the evaluation of acoustical insulation requirements.

C7 Noise Control Measures

The following sections provide MOE guidance for appropriate noise control measures. These sections constitute requirements that are applied to MOE approvals for stationary sources. This information is also provided as guidance which land use planning authorities may consider adopting.

The definition in Part A describes the various types and application of noise control measures. All the noise control measures described in the definition are appropriate to address the impact of noise of transportation sources (road, rail and aircraft) on planned sensitive land uses. Only some of the noise control measures described in the definition are appropriate to address the noise impact of stationary sources on planned sensitive land uses.

C7.1 Road Noise Control Measures

C7.1.1 Outdoor Living Areas

If the 16-Hour Equivalent Sound Level, L_{eq} (16) in the OLA is greater than 55 dBA and less than or equal to 60 dBA, noise control measures may be applied to reduce the sound level to 55 dBA. If measures are not provided, prospective purchasers or tenants should be informed of potential noise problems by a warning clause Type A.

If the 16-Hour Equivalent Sound Level, L_{eq} (16) in the OLA is greater than 60 dBA, noise control measures should be implemented to reduce the level to 55 dBA. Only in cases where the required noise control measures are not feasible for technical, economic or administrative reasons would an excess above the limit (55 dBA) be acceptable with a warning clause Type B. In the above situations, any excess above the limit will not be acceptable if it exceeds 5 dBA.

and rail noise. The resultant acoustical descriptors should be subsequently combined to determine the required components.

C7.4 Aircraft Noise Control Measures

If the outdoor NEF/NEP value is less than 25, further assessment is not required.

If the receptor location is within the NEF/NEP contours of 25 and 30, the dwelling should be designed with a provision for central air conditioning. In addition, building components including windows, doors, walls and ceiling/roof should be designed to achieve the indoor sound level limits of Table C-4. Warning clause Type C is also recommended.

If the municipality, in accordance with Reference [26], approves residential development above NEF/NEP 30, central air conditioning should be implemented with warning clauses Type B and D. In addition, building components including windows, doors, walls and ceiling/roof should be designed to achieve the indoor sound level limits of Table C-4.

C7.5 Combination of Road, Rail and Aircraft Noise

The noise impact in the OLA and in the plane of a window, and the requirements for outdoor measures, ventilation measures and warning clauses, should be calculated separately for surface transportation and aircraft noise. The surface transportation noise impact should be determined by combining road and rail traffic sound levels.

The assessment of the indoor sound levels, and the requirements for the acoustical performance of building components should be done separately for road noise, rail noise and aircraft noise. The resultant sound isolation parameters should be subsequently combined logarithmically (on an energy basis) to determine the overall acoustical parameter. Selection of the required components should be based on the overall combined acoustical parameter.

C7.6 Stationary Source Noise Control Measures

Where the noise impact exceeds the applicable sound level limits, mitigation is required in order to meet MOE approval requirements.

The noise control measures may be implemented on the site of the noise sensitive land use or at the source. For noise impacts from stationary sources, the preferred and normally the most economical and practical option is to implement noise control measures at the source.

Although the MOE in not involved in the approval of the noise sensitive land use, the MOE is involved with the stationary sources in the context of MOE approvals. The

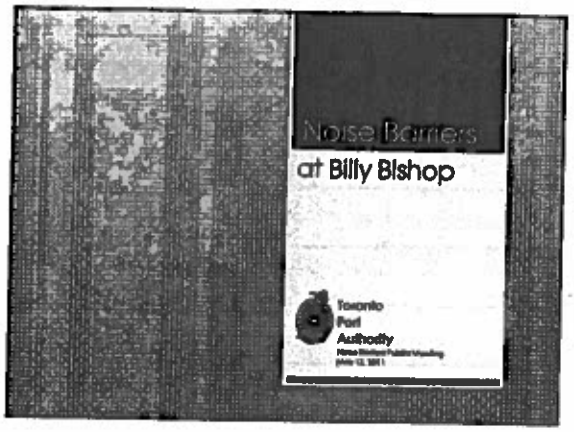
Appendix I

- Discussion excerpts from TPA Noise Barrier EA PIC handout dated May 21, 2011

PUBLIC MEETING

MAY 12, 2011

12/05/2011

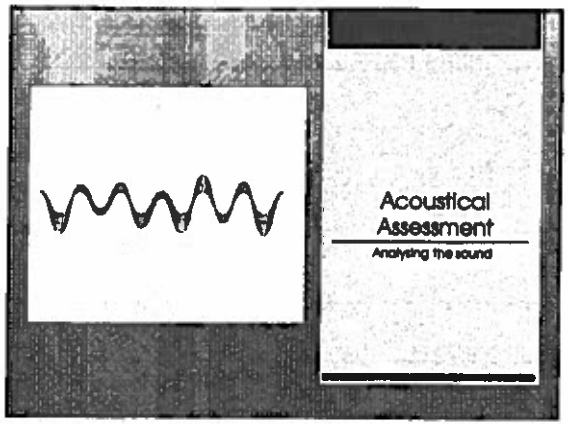


Who's Here

- Toronto Port Authority
- Dillon Consulting Limited
- Aercoustics

Agenda

- 6:30 – 7:15 – Presentations
- 7:15 – 8:00 p.m. – Q&As



Acoustical Assessment

- Mandate:
  - To determine effectiveness of barriers
- Results:
  - Will reduce the sound at lower levels

Acoustical Assessment

Sound Level Change (dB(A))	Perception Rating
1 - 3	Insignificant
3 - 5	Noticeable
5 - 10	Significant
≥10	Very Significant

INSIGNIFICANT

NOTICEABLE

SIGNIFICANT

VERY SIGNIFICANT

YVR GRE Facility
Noise <_2af00b@yvr.ca>
To
wayne.christian@rogers.com

Jul 21 at 4:21 PM

This message contains blocked images.
Show Images
Change this setting

Dear Wayne,

Thank you for contacting the Vancouver Airport Authority.

To provide some general background information, there is an average of 14 run-ups a day at YVR. These run-ups are tightly controlled through directive and procedures in order to minimize noise disturbance and to ensure a high level of safety on the airfield. The run-up directive requires all maintenance run-ups be approved by the YVR Operations and prescribes where and when run-ups can occur based on aircraft type and power settings. If approved, the operator is assigned a specific location and heading for the run-up. The locations and headings attempt to minimize noise to those living in the immediate vicinity of the airport.

The Ground Run-up Enclosure (GRE) facility is one of the run-up locations at YVR. It is located on the south side of the airport (south of YVR's south parallel runway) adjacent to the South Terminal Building. This site was selected as there are a number of maintenance bases on the south side of the airport and also because it provided the best noise reduction of all the sites evaluated. The primary users of this facility are the operators on the south side – mostly twin propeller commuter aircraft and some business jets. The use is not restricted to scheduled passenger operators.

The GRE is the preferred location for high power run-ups (above idle and full power) on the south side of the airport. The table below provides details of the approximate number of high power run-ups on the south side between 2012 and 2015 and the percentage of these run-ups in the GRE.

YEAR	Approx. number of high power run-ups on the south side	% of south side high power run-ups conducted in the GRE
2012	1580	81%
2013	1220	73%
2014	1150	74%
2015	1210	77%

For further details on run-up operations and the GRE at YVR, please feel free to view our annual noise reports athttp://www.yvr.ca/en/about-yvr/noise-management/publications.

Kind regards,

Rachel Min
Environmental Analyst
VANCOUVER AIRPORT AUTHORITY

WEB: WWW.YVR.CA | TWITTER: @YVRAIRPORT

Christian SR458454
Customer Call Centre <customercallcentre@yvr.ca>
To
wayne.christian@rogers.com
CC
Noise
Jul 19 at 1:06 PM
This message contains blocked images.
Show Images
Change this setting
Good Morning Wayne,

Thank you for contacting the Vancouver International Airport (YVR)!

Due to the nature of your inquiry I have forwarded your email to the appropriate department who will respond to you directly. If you require any further assistance please do not hesitate to contact us again.

Sincerely,

Monty, Operations Centre Agent
Marquise Group
For the Airport Authority
Tel: (604) 207 7022
e-mail: customercallcentre@yvr.ca

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

E-mail to YVR Airport July 19 2016

YVR.ca Contact Us Form

Subject: Services and Facilities
Full Name: Wayne Christian
Email: wayne.christian@rogers.com
Country: Canada
Postal Code: M5J2N3
Message:

```
Hello Vancouver Int'l,
I was wondering how many Ground Run-Ups took place in the the GRE facility at
YVR airport in each separate year from 2012 - 2015 inclusive?
Are there other Ground Run-Ups that take place at YVR airport  at another
designated/s location/s?
Is the GRE YVR facility only used for scheduled passenger flights (e.g. Air
Canada/Westjet etc.)?

With Thanks,
Wayne Christian
```

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Bryan Bowen

From:	WAYNE CHRISTIAN <wayne.christian@rogers.com>
Sent:	August-18-16 11:19 PM
To:	Bryan Bowen; Ed Hore; Hal Beck; Laura Cooper; Ulla Colgrass
Subject:	Vancouver International Airport (YVR) Correspondence - Engine run-ups and GRE Facility
Attachments:	GRE - VVR July 19 2016.docx

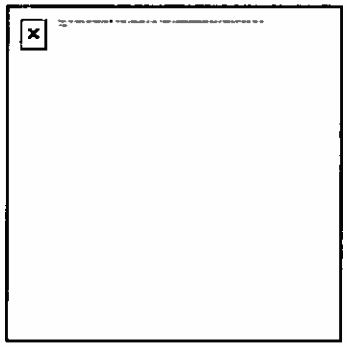
I think it is important to understand how Vancouver International Airport (YVR) engine run-ups/GRE related issues/noise complaints may or may not line up/compare to BBTCA (YTZ). To my knowledge

Please read new E-mail from YVR to me dated August 17 2016 found in enclosed updated word document.

Note - YVR states in this 'new' E-mail ...
"There are a total of 13 approved run-up locations at YVR" (Also note YVR could "authorize the use of other locations subject to operation and safety considerations").

Note - found in the '2015 YVR Noise Management Annual Report', it appears 'Noise Complaints' are recorded as ' Noise Concerns'

Go to - Publications | YVR (See page 18 of 28 from below web-address).



Publications | YVR

YVR's Noise Management Plans, Annual Reports, Monitoring Reports and Aeronautical Noise Management Committee minutes.

View on www.yvr.ca Preview by Yahoo

Mouse click 2015 Annual Noise Report (Specifically known as '2015 YVR Annual Noise Management Annual Report')

NUMBER OF CONCERNS

"In 2015, the Airport Authority received 1,667 noise concerns from 298 individuals. This represents a 5% decrease in concerns and a 7% increase in the number of complainants compared to 2014. Figure 9 presents a breakdown on the number of concerns and individuals for the past five years (2011-2015)."

In the calendar year of 2012, YVR recorded it's highest number of engine run-ups at 5,706 (See page 15 of 28 from the '2015 YVR Annual Noise Management Annual Report').

My correspondence with YVR is not complete as I must follow-up with at least one more returned E-mail for more clarification of facts/data.

I will provide provable and 'real conclusions' upon completed E-mail correspondence/s with YVR Authority in the near future (**most likely before the Labour Day Weekend**).

Regards,
Wayne Christian

Ministry of Municipal Affairs | **Ministère des Affaires municipales**

Ministry of Housing | **Ministère du Logement**

Municipal Services Office
Central Ontario
777 Bay Street, 13th Floor
Toronto ON M5G 2E5
Phone: 416 585-6226
Facsimile: 416 585-6882
Toll-Free: 1 800 668-0230

Bureau des services aux municipalités
du Centre de l'Ontario
777, rue Bay, 13e étage
Toronto ON M5G 2E5
Téléphone : 416 585-6226
Télécopieur : 416 585-6882
Sans frais : 1 800-668-0230

August 10, 2016

Bryan Bowen
Project Manager, Waterfront Secretariat
City of Toronto
Toronto City Hall
12th fl. E., 100 Queen St. W.
Toronto, ON M5H 2N2

Dear Mr. Bowen:

Re: Ground Run-Up Enclosure at Billy Bishop Airport

In keeping with the Province's one-window land use planning process, the Ministry of Municipal Affairs is providing these comments regarding the proposed Ground Run-up enclosure at Billy Bishop Airport.

The Ministry of Tourism, Culture and Sport has been pleased to be engaged in the consultation process with the City of Toronto regarding the proposed ground run-up enclosure at Billy Bishop Airport, particularly with regards to the impact to ongoing revitalization efforts at Ontario Place.

The province's vision for Ontario Place Revitalization is to create a year-round destination to engage visitors of all ages in a new parkland setting for recreation, festivals, music, culture and discovery. Please visit the ministry website for more information: http://www.mtc.gov.on.ca/en/ontarioplace/ontarioplace.shtml. The urban park and William G. Davis Trail is located on the eastern edge of the East Island, and is planned to open in 2017. It has direct sightlines to the Billy Bishop Airport and the proposed ground run-up enclosure.

The Province appreciates that Ontario Place will benefit from modest noise reduction due to the ground run-up enclosure. The Province also understands that there are technical limitations regarding the location and size of the enclosure; however, the Province asks that the City of Toronto work with Ports Toronto to consider tactics to further reduce noise at the site as well as to mitigate the visual impact of the structure. For example, the construction of a natural berm next to the enclosure could reduce the visual impact from the urban park and William G. Davis Trail. Staff at the Ministry of Tourism, Culture and Sport would be pleased to support any further work to reduce noise and visual impact, and you may contact the Director of the Ontario Place Revitalization Branch, Lindsay Jones at 416-325-3936 or Lindsay.Jones@ontario.ca.

We look forward to our continued engagement in the process moving forward.

Sincerely,

Mark Christie, MCIP, RPP
Manager, Community Planning and Development

.../2

YQNA
York Quay Neighbourhood Association

Suite 2011
55 Harbour Square
Toronto, Ontario
M5J 2L1, Canada

Website: www.yqna.ca
Email: info@yqna.ca

August 16, 2016

Bryan Bowen
Waterfront Secretariat, City Planning, City Hall
100 Queen Street West, 12th Floor, East Tower
Toronto, ON

Via email to: bbowen@toronto.ca

Dear Bryan:

Re: Proposed Ground Runup Enclosure at Toronto Island Airport
Application no. 160612 STE 28 TM

YQNA hopes that the City will seriously weigh the issues raised in Hal Beck's letter to you of July 28, 2016.

While we lack Hal's technical expertise, what we do know is that the noise issues at the Island Airport severely impact on the quality of life in the nearby community. We hear complaints continually. It is time for these issues to be seriously studied.

Although Ports Toronto proposes to build a Ground Run-up Enclosure (GRE), it is unknown whether this will make any real difference. Hal's letter makes clear that:

(a) community measurements show that noise levels at the Island Airport violate existing standards by a wide margin;

(b) the studies already done of noise are inadequate as detailed by Hal, and must be updated using professional, current methodology as he proposes; and

(c) until this is done, no reliable determination can be made of the extent of the noise problem at the airport, or what steps must be taken to fix it, including whether or to what extent a GRE will reduce noise for all waterfront residents, or in fact help at all.

We understand that the City cannot prevent Ports Toronto from building the GRE. It is possible that the GRE will be helpful, but there are many unanswered questions about it, and many reasons to doubt it will solve all or even most noise-related issues at the Island Airport. We therefore urge you to meet with Hal, to learn as much as possible about this widely misunderstood issue.

In negotiations with Ports Toronto as to the potential GRE, or in general, we suggest the City and Waterfront Toronto should take the position that Ports Toronto should fund adequate studies of noise and all related issues, as described in greater detail by Hal. Peer review may be appropriate as to the details of the analysis that Ports Toronto undertakes.

We look forward to discussing this important issue with you.

Yours truly,

Laura Cooper
Co-chair, YQNA

Ed Hore
Co-Chair, YQNA