• The noise impact of jets is not yet known, but the CS100 is expected to meet existing requirements.

Noise levels have been a central concern in debates about the role of the Airport in the city. Noise data for the new CS100 aircraft are not yet available, leaving a key question unanswered in the review of Porter’s proposal. Based on available specifications it is expected that the CS100 will meet the noise requirements of the Tripartite Agreement, and in fact Porter’s purchase of the planes is conditional on the jets meeting existing requirements. Given the importance of this issue it is clear that no decisions should be made until the City can determine whether or not the CS100 (or any other aircraft in its class) will meet the noise requirements set out in the Tripartite Agreement.

• Existing noise measures and standards may not capture the real impact of the Airport on the waterfront and they should be revisited.

Regardless of whether the CS100 is found to meet existing noise requirements, the City should consider reviewing and potentially revising the noise impact measures and standards that are set out in the Tripartite Agreement. Aviation consultants Airbiz point out that the current use of Noise Exposure Forecasts (NEF) entails a cumulative measure of noise throughout a day, but fails to capture the noise impacts of individual flights near homes. As well, the NEF contour lines that establish the acceptable spread of noise impacts outward horizontally from the Airport are two-dimensional, and therefore do not take into account how noise impacts are experienced differently at various heights. As more and more tall buildings are developed in the waterfront area it will be important to establish standards that take height into account.

No single metric can accurately compare different noise events or cumulative sound exposure because of inherent differences in individual perceptions. The most appropriate and transparent approach to measuring and regulating noise from the Airport is therefore to use a combination of metrics in real-time, including non-auditory metrics such as number of flights.

• The proposal presents a risk to the overall enjoyment of the waterfront but a clear way to measure this impact is needed.

There is a risk that the introduction of jets and/or an increase in passenger volumes may tip the balance of enjoyment and the sense of the place of the waterfront as a recreational and residential destination. Many people may enjoy seeing airplanes landing and taking-off, but there will be a threshold of combined airport-related impacts (e.g. noise levels, frequency of flights and plane size) that once crossed will create a nuisance for most, with the sense that the Airport dominates the area. To date, survey results have consistently identified noise as a concerning issue for Toronto residents. Greater understanding is therefore needed of the cumulative effect of noise, frequency of flights, and size of aircraft associated with the proposed expansion of the Airport or its potential growth without jets.

The proposal does not suggest an increase in the number or frequency of flights. However, the City would be prudent to assume that any investment in physical expansion and new aircraft at BBTCA could be complemented by efforts to maximize profitability through increased passenger volumes. It is known that the CS100 is a larger aircraft than the Dash 8 Q400, and thus, jets could potentially be perceived as more imposing to residents and visitors of the waterfront, the Islands or in the Inner Harbor. As well, the City should consider whether the approval of jets could over time lead to the introduction of even larger aircraft, as occurred with the evolution of the Dash 8 Q400 aircraft.

There is an inherent degree of subjectivity to this issue—the questions of what constitutes too loud, too many and too big are certain to yield a range of answers. Nonetheless, the effect of Airport activity on people’s enjoyment of the waterfront should be quantified to the best degree possible and acceptable standards should be established before jets are approved and before passenger volumes increase significantly without a plan in place.

31 Airbiz Aviation Strategies Ltd., Billy Bishop Toronto City Airport Porter Airlines Proposal Review, Interim Results and Findings – Addendum, 26 August 2013, p. 10
33 Ibid.
The proposed expansion would have some impact on boating in the Inner and Outer Harbours. The Tripartite Agreement does not permit any changes to the Marine Exclusion Zones (MEZ) that would materially encroach on the Western Gap. Still, the proposed 200 metre runway extensions for Runways 08 and 26 do include widening the MEZs but only in the areas closest to the runway ends and not at the points that extend furthest into the Inner Harbour and Lake Ontario.34 The proposed changes include a 25.2 metre widening of the eastern MEZ at its southwestern corner and 11.6 metre and 12.1 metre widenings of the western MEZ at its northeastern and southeastern corners respectively.35 It is Porter Airline’s position that by leaving the buoys in place at the extremities of the MEZs, the proposal does not affect access to the Western Gap.36 However, Ferry boat operators have expressed concerns that the widened MEZ on the eastern runway end will impede the ferry route to Hanlan’s Point, since the approach and departure routes for the ferries can change significantly in different weather conditions. The actual impact the widening would have on other recreational and commercial boats is not known at this time but the MEZs already take up a significant amount of navigable water space in the Inner and Outer Harbours and the City should not support further encroachments.

34 Porter Airlines, Letter to Deputy City Manager John Livey, September 3 2013.
35 Ibid.
36 Ibid.
Porter Airlines’ Proposed 200m Runway Extension Includes Wider MEZs at Both Ends
• There is a risk that more significant runway and/or MEZ expansion could be imposed by Transport Canada, leading to further encroachment into the Inner and Outer Harbours.

Proposed expansion could require more land and water space than indicated because the proposal hinges on two exemptions from Transport Canada regulations. Porter Airlines has insisted that its proposed runway extensions are achievable without material movement of the MEZ buoys. However, this is only possible if Transport Canada allows Porter to continue operating with exemptions to its requirements for approach surfaces (the limits to which objects may project into the airspace). It is not clear that Transport Canada can continue to allow these exemptions if Runways 08 and 26 are re-categorized from Code 2 runways to Code 3 because of the expansion. The Code 3 runway classification is intended for larger aircraft, and the classification requires certain conditions including longer runways, wider runway strips and stricter (i.e. lower) obstacle limitation surfaces (regulated through AZRs).

There is also a concern that the proposed expansion of the runways and addition of runway end safety areas (RESAs) within current existing MEZ configurations will expose boaters to dangerous jet blast conditions. Bringing the ends of the runways closer to the MEZ boundaries could mean that jet blast effects would be experienced by nearby boaters if jets were to use the entire length of the runways upon takeoff.

Based on studies of aircraft similar to the CS100, it is possible that upon take-off the introduction of jets could produce sudden gusts in the range of 20-30 knots outside the MEZ and approximately 39-43 knots closer to the edge of the MEZ. The impacts of these jet blasts on boats and their crews would depend on the type and specification of the boats and their heading relative to the jet blast. Sailboats are most likely to be negatively impacted, as smaller keelboats may heel as a result of a 20-30 knot gust, potentially resulting in falls within the boat. The impact of 20-30 knot gust would be more drastic for centreboard boats, which could capsize and send the crew into the water.

To mitigate the effects of jet blast on boaters jet blast deflectors may need to be constructed at both ends of Runways 08 and 26. The spatial requirements of this construction should be determined to assess whether the deflectors can be built within the existing MEZ boundaries.

Toronto’s waterfront and its surroundings are valuable development areas for the City of Toronto. New development has transformed the Toronto skyline in recent years and roughly 3.6 million square metres of new residential, commercial, institutional and industrial development has been proposed for the area surrounding the Airport. The current activities of the Airport have evidently not inhibited waterfront development.

In addition to individual development projects, the waterfront is framed by areas where transformative change is being planned. Immediately west of the Airport, a vision for the future of Ontario Place is being developed although beyond a commitment to a new park on the shore of the East Island, facing the Airport, no definitive plans have been announced by the Province. To the east, significant new communities, parks, and employment lands are being built and planned for the West Don Lands, the East Bayfront and the Port Lands.

At a local scale, the former Canada Malting site is directly north of BBTCA on Eireann Quay. Part of the site is currently leased to the Airport for a taxi and queuing facility. However, the Central Waterfront Secondary Plan recognizes the Canada Malting site as having significant heritage value, and encourages some form of adaptive re-use.

Concerns have been raised as to whether the Airport or its proposed expansion does or will affect property value or demand. The studies undertaken for this Review indicate

37 Airbiz Aviation Strategies Ltd., Billy Bishop Toronto City Airport Porter Airlines Proposal Review, Interim Results/Findings, p. 27
38 CH2M Hill Canada Ltd., Porter Airlines Runway Extension Proposal Review Coastal Processes and Environments – DRAFT Fuel Tank and Jet Blast Addendum, November 21, 2013
39 Ibid.
Approach Surface
Outer Surface
Transitional Surface

Airport Zoning Regulation Surfaces for Billy Bishop Toronto City Airport
that the Airport does not affect property demand or value. A preliminary canvass indicates that there is no concern relating to the Airport regarding current or future demand among condominium developers.\textsuperscript{40} As well, an assessment of the Airport’s impact on condominium values concludes that there is no indication that BBTCA has had an impact on the sale or resale condominiums in its vicinity. Demand in the area remains stable and prices are increasing.\textsuperscript{41}

Another important consideration is how the Airport does or may affect land use or the height of new development. Transport Canada regulates structure heights near airports through Airport Zoning Regulations (AZRs) to maintain obstacle free airspace and ensure that potential and future development is compatible with safe aircraft operation.

The AZR for BBTCA, enacted in 1985, requires that nothing is constructed on any land that will exceed the height limits of the Airport’s established Approach Surface, Outer Surface, or Transitional Surface. These surfaces are essentially the determined height limits beyond which development may not extend vertically. Overall, the existing AZR is not a significant limitation for the Toronto Islands or most of the mainland waterfront, but development permissions for Ontario Place, the Canada Malting site and the Port Lands could be affected.

The AZR Outer Surface regulations extend outward at a constant height of 76 metres. This surface only applies to the Toronto Islands where no significant development is planned.

The Transitional Surface restriction areas extend northward roughly to the shoreline of the waterfront, covering some of the southern end of Bathurst Quay (where the Canada Malting site is located) and nearly all of Ontario Place. The elevation of this surface climbs steeply northward from the Airport’s runway strip at a rate of 1 vertical metre for every 7 horizontal metres, reaching a maximum elevation of 152 metres. Redevelopment of the Canada Malting site and new development on Ontario Place will have to take place below this surface.

For Runway 26, the Approach Surface restrictions extend eastward for nearly 8 kilometres covering much of the Toronto Port Lands and continuing until just east of Ashbridge’s Bay Park. The angle of this surface extends vertically from the end of the runway, rising 1 metre in height for every 20 horizontal metres, to a final elevation of 473.8 metres at its eastern end. The elevation of the Approach Surface is not likely to affect development height east of BBTCA, as the surface’s elevation rises from 152 metres in the middle of the Inner Harbour to 299 metres near the centre of the Port Lands.

The Approach Surface for Runway 08 also extends for nearly 8 kilometres (to the west), but rises less steeply at a rate of 1 metre in height for every 50 metres of horizontal extension. This surface only covers land once it reaches Humber Bay, and reaches an elevation of 234 metres just west of Royal York Road. The Approach Surface will therefore not likely affect development heights to the east of BBTCA.

It is not known whether the AZR restrictions will change in the event that jets are approved and the runways are extended. The potential implications of this on development heights should be detailed before any decision is reached on Porter Airline’s proposal.

BBTCA is within walking and cycling distance to Toronto’s downtown core. As well, there is streetcar access directly to and from the corner of Queen’s Quay and Bathurst Street. The Airport could be one of the best Airports in the world for connecting to a city centre by sustainable transportation modes. However, BBTCA passengers now overwhelmingly travel to and from the Airport by car or taxi. The Airport already has a significant negative impact on local traffic conditions, and the local road network operates at a very low level of service. Peak-hour Airport-related traffic creates a very congested environment near the Airport with spillover effects on the wider transportation network, most significantly at the intersections of Lake Shore Boulevard and Bathurst Street. The pedestrian trail system is also negatively affected in the area, as traffic congestion creates challenges for pedestrian crossings at intersections.

Immediate transportation improvements are already needed regardless of whether or not an expansion is approved, including changes to signalization, improved urban design, transit station construction, lane repainting and reconfiguration, and parking improvements, all of which would address pedestrian convenience, access to transit, and pick-up and drop-off activity.\textsuperscript{42}

\begin{itemize}
\item BBTCA has the potential for convenient and sustainable downtown-waterfront connectivity, but the existing Airport operations do not currently fit well within the local site or transportation context.
\end{itemize}

\textsuperscript{40} HLT Advisory Inc., Economic Impact Considerations of an Expanded Billy Bishop Toronto City Airport, p. 23
\textsuperscript{41} N. Barry Lyon Consultants, DRAFT Condominium Market Analysis: Billy Bishop Airport, November 2013
\textsuperscript{42} BA Consulting Group Ltd., Billy Bishop Toronto City Airport Transportation Assessment of Proposed Jet Activity—DRAFT Executive Summary and Key Findings, October 2013
• The proposed expansion will exacerbate already stressed traffic conditions in the vicinity of Eireann Quay.

If the existing flight movement cap is maintained, the introduction of jets is anticipated to increase traffic volume on Eireann Quay by 20%.\textsuperscript{43} This increase in traffic volume could be resolved by significantly increasing the proportion of BBTCA passengers using non-auto modes to get to and from the Airport.

If that mode switch cannot be achieved – and it will be very challenging given the current dominance of cars and taxis as mode choices to and from the Airport – then the increase in traffic associated with jets would need to be resolved through a series of road network improvements including a reconstructed westbound left turning lane at Dan Leckie Way and Lake Shore Boulevard and a restricted westbound left turn at the Bathurst Street / Lake Shore Boulevard intersection.\textsuperscript{44}
If jets are permitted and the daily movement cap of 202 is exceeded (which the TPA has indicated is not planned) the increase in hourly Airport-related traffic could only be accommodated through the drastic measure of extending Dan Leckie Way over the lake to Eireann Quay.\(^{45}\) This extension is clearly not acceptable or feasible in the waterfront context since it would encroach on the Inner Harbour, further fragment the park and open spaces on Eireann Quay, fragment the Waterfront Trail and potentially impact the Canada Malting heritage site. The construction would also involve lake-filling, which is restricted in the Official Plan except when it is needed for essential public works. While there is no sense in considering this option, it does demonstrate that there are no feasible options for increasing road network capacity for vehicular travel in the vicinity of the Airport. Based on this finding, transportation consultants BA Group recommend that the Airport be restricted to an hourly limit of 1,100 or 1,200 passengers, from a purely traffic management perspective.\(^{46}\) BA Group estimates that this is the peak operation of the Airport with jets under the existing self-imposed flight cap. This Review did not include the consideration of a well-developed, dedicated transit system to the Airport to achieve the modal split necessary for this level of passenger volume growth. This option should be explored further within the context of city-wide transit priorities.

\(^{45}\) Ibid. \\
\(^{46}\) Ibid \\
\(^{47}\) BA Consulting Group Ltd., Billy Bishop Toronto City Airport Transportation Assessment of Proposed Jet Activity—DRAFT Executive Summary and Key Findings, p. 41
The waterfront and Toronto Islands feature a network of parks and open space, providing a significant amount of active and passive recreation space in the study area, as well as a habitat for wildlife in some areas. Generally speaking, these features are well-connected by sidewalks, walkways, and the Martin Goodman and Waterfront Trails. Immediately surrounding the Airport is a cluster of parks and open spaces that form part of this overall network. Presently, overall connectivity between the parks and open spaces is interrupted by Airport-related activities including the vehicular traffic and taxi parking along Eireann Quay. Affected parks and open spaces include:

- A small park with a baseball diamond located just south of the City School and just west of the Airport’s temporary parking lot and taxi area on the Canada Malting site. This park is currently enclosed by high chain-link fencing on all sides, which protects users from Airport related traffic but hinders connectivity to other open spaces.
- Ireland Park, which is a 16,450 m² park located at the southeast corner of Eireann Quay, south of the Canada Malting site. It suffers from a lack of simple access and connectivity to the west and south, and the discontinuity of the water’s edge trail along the Western Gap.
2.3 The Neighbourhood Scale

Background

Though the Airport is significant both region and City-wide, it is important to consider it within the immediate neighbourhood context of Bathurst Quay. Because Bathurst Quay is part of the Central Waterfront area, all of the impacts and potential impacts discussed in Section 2.2 relating to traffic, the environment, noise and enjoyment are also relevant at this scale. In fact, impacts such as traffic, open space fragmentation and noise may be most acutely experienced in this neighbourhood because it is immediately adjacent to the Airport.

Bathurst Quay is currently the only area of the Central Waterfront that has mature community infrastructure in a concentrated area. There are residential areas to the north and east of the Ferry Terminal, along with local retail amenities. At Eireann Quay, there are two schools that share a building with the Harbourfront Community Centre (HCC). In 2012 the HCC offered more than 400 program sessions and 200 community partnership programs, designed to support community needs. Little Norway Park is also on Eireann Quay, and features a baseball diamond and a playground.

Conclusions

- The Airport’s operations and facilities already have a significant negative impact on the neighbourhood, and jets would likely exacerbate the existing problems.

Bathurst Quay community members regularly face intense car and taxi traffic as they access the school and community centre building. As well, Little Norway Park is surrounded by Airport activity, from the busy traffic on Eireann Quay to the Ferry Terminal and Airport parking along the waterfront. Current Airport passenger volumes have a major presence in the area and inhibit the functioning and enjoyment of the community’s institutions, parks, residences and employment spaces.

Given the challenges under existing conditions, there is an immediate need to better integrate Airport-related facilities, enhance access to and continuity of waterfront trails along Portland Slip and the Western Gap, and improve the environment of important Bathurst Quay community assets. It may be possible for the Canada Malting site to be redeveloped for adaptive re-use – in keeping with the Central Waterfront Secondary Plan vision – and that new development could provide acceptable longer term solutions to parking, taxi storage and drop-off. Ideally, facilities for parking, taxis or transit could be accommodated below grade, leaving the street level for retail uses and public realm improvements. This possibility should be explored with a focus on providing mutual benefits to the neighbourhood and the Airport.

The introduction of jets or an increase in flights per day would create more traffic on Eireann Quay and would very likely increase the amount of fuel that is transported through the Bathurst Quay community by trucks. Bathurst Quay residents would therefore be most affected by the groundside traffic, noise and safety effects of expanding the Airport. Airport growth should only be considered if these potential impacts are fully understood and can be effectively mitigated.
Next Steps

This Review has identified the need to properly address the existing Airport in terms of its benefits and challenges at the scale of the region, the city and the local community and to identify appropriate conditions for any significant increase of Airport activity – with or without jets. Four municipal conclusions can be drawn from this summary report.

1. Acknowledge the importance of the existing Airport and establish a management and planning framework to address it adequately.

The Airport is a significant economic asset for the City and the region and its recent growth demonstrates that it is meeting considerable travel demands in the Toronto area. Its location is a strategic advantage as it conveniently serves the largest concentration of economic and knowledge capital in Canada. Though close to Pearson International Airport there is no indication that it does or will significantly fragment the market or hinder the success of the Union-Pearson Express rail link.

Given its significance, an appropriately scaled Airport should be reflected in City planning documents and other policy considerations. It is highly unlikely that the Airport will be decommissioned and revert to parks uses, and there is a strong economic argument in favour of maintaining airport use. The absence of a long-term planning vision for the Airport prevents constructive consideration of how to improve its services and mitigate its impacts on the surrounding environment. The City of Toronto should therefore set out the long-term vision for the Airport in its Official Plan, including objectives for its economic contribution to the city and its optimal integration with the surrounding urban waterfront context, and incorporate considerations for the Airport in relevant secondary and precinct plans. At the same time, the Toronto Port Authority should collaborate with the City to develop a Master Plan for the Airport that will serve as a publicly sanctioned document that guides the development of the Airport going forward.

2. Address serious existing Airport-related challenges.

The Airport currently creates unacceptable traffic conditions in the Bathurst Quay neighbourhood and further north at Lakeshore Boulevard. The Airport can grow to 3.8 million passengers per year without the introduction of jets or any changes to the existing daily movement cap. A comprehensive transportation operations management plan is therefore needed to address both existing and future problems. A central objective of this plan should be to dramatically shift modal choice towards more sustainable and traffic-reducing modes such as walking, cycling, public transit and a greatly improved Airport shuttle service. The transportation operations and management plan would need to consider the following:

- Improving the signalization and intersection marking in the local street network to improve pedestrian safety and traffic flow;
- Carefully managing taxi movements to reduce conflict in the local community;
- Improving the transit stop infrastructure and pedestrian connections to promote walking and transit use;
- Significantly increasing the frequency and geographic reach of Porter Airlines’ shuttle service;
- Potentially introducing a publicly operated shuttle service if transit improvements by rail are not feasible;
- Increasing the pick-up/drop-off locations of the shuttle service, and potentially establishing remote collection stations; and
- Vigorously advertising the convenience of transit and shuttle services, and potentially including ticket price incentives.

In addition to traffic improvements the City should also revisit the noise standards and measures set out in the Tripartite Agreement and adopt new metrics – beyond existing two-dimensional NEF contours that only measure average daily noise levels – that will adequately account for the impacts of individual flights and the variance of noise impacts at different heights, in real time.
This Review has indicated that there is potential for significant passenger capacity increases at BBTCA with or without jets, and the City should establish conditions for growth regardless the outcome of the Review of Porter Airline’s current proposal. If the Airport exceeds its self-imposed cap of 202 movements per day there is no acceptable way to accommodate the resulting increase in passengers in the local road network if existing modal splits in favour of taxis and private cars persist. This is true whether or not the expansion proposal is accepted. The City should either establish passenger volume limits to reflect the maximum hourly road capacity (approximately 1,100 or 1,200 passengers per hour) or require a dramatic shift in modal choice from automobile to transit, shuttle services, walking and cycling.

The introduction of jets would create a substantial increase in traffic volume, making it even more imperative to resolve traffic issues through a comprehensive transportation operations and management plan. The achievement of an improved – even aggressive – modal shift for BBTCA passengers should be a precondition of the Airport’s expansion. This would require a transportation management plan as described above, with even stronger emphasis on shifting mode choices. This may require closing Eireann Quay (or a portion of it) to general traffic and exploring options for dedicated transit/shuttle facilities and below-grade or off-site pick-up/drop-off and taxi areas.

The proposal also raises several other valid concerns about the potential impact of Airport expansion on the overall waterfront and adjacent city. The CS100 jet aircraft are taller and wider than the Q400 planes, and their increased physical presence may affect the ability of residents and the general public to enjoy the waterfront, a risk that increases if jets are introduced and the number of flights per day increases.

The noise impacts of individual flights may not increase if the CS100 aircraft are as quiet as promised, but certification attesting to this should be obtained before they are approved for use at BBTCA. No increase in flights per day should be permitted if it creates an increase in cumulative noise impacts.

Though Porter Airlines’ position is that the runway extension can take place without material change to the Marine Exclusion Zones (MEZs), uncertainty remains about whether this would be acceptable to Transport Canada. The proposed runway expansion already includes additional encroachment into the Inner and Outer Harbours, and the effects of even greater encroachment would be unacceptable for both commercial and recreational use. The runway expansion should not be approved if there is a risk that Transport Canada will require changes to the MEZs or the construction of jet blast protection areas.

There are also concerns about the health, safety and security implications of an expanded Airport and the operation of jets. BBTCA is, after all, an active airport that is very close to residential and public areas. Concerns about these issues will only become more significant with an increase in use. As a condition for approval, the proponent must demonstrate how it can both safely introduce larger aircraft to an already constrained airport and ship more fuel by trucks and ferry. It should also clearly demonstrate that the expansion will not increase other health risks in the community.

It also is not known whether the existing Airport Zoning Regulations (AZRs) will change with the introduction of jets, or whether there will therefore be changes required to building height restrictions.

Some considerations do not seem to be negatively affected by the proposed expansion. There is no indication that the Airport negatively affects property values or the pace of development, and no serious risks to the aquatic and terrestrial environments have been identified. However, a bird strike assessment has not yet been conducted.

The City should set, monitor and enforce mode split targets that will improve local traffic conditions and facilitate convenient access to the Airport. Achieving this will require exploring all options, including considering investments in new public transit infrastructure that would connect directly to BBTCA’s groundside facilities and closing Eireann Quay to private vehicles in order to optimize the Airport’s transportation facilities. Satisfactory integration of the Airport and its travel and functional demands may ultimately require incorporating below-grade parking and taxi facilities in future adaptive re-use development plans for the Canada Malting building and site. The feasibility of all of these options should be studied and clear financing strategies and responsibilities should be established as part of a future Master Plan and future operating procedures.
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