



Airport Zoning Regulations (AZR) Gap Analysis for Niagara District Airport (CYSN)

Technical Planning Brief

Revision: 1 (Final)
Issued Date: May 15, 2025
Project Number: 24-0103

Prepared For:
Daniel Pilon
468 Niagara Stone Rd,
Virgil, ON, L0S 1J0
www.niagaradistrictairport.com

Prepared By:
Avia NG Airport Consultants
1187 Fischer-Hallman Road, Suite 623
Kitchener, ON, N2E 4H9
www.aviang.ca

Technical Planning Brief

SUBJECT **Airport Zoning Regulations (AZR) Gap Analysis (Revision 1)**
 Niagara District Airport (CYSN)

TO Daniel Pilon, CEO, Niagara District Airport

FROM Josh Horst MAVnMgt, Aviation Planner, Avia NG
 Janine Maurice MAVnMgt, Aviation Planner, Avia NG
 Natalia Lee Ho B.E.S., MCIP, RPP, Aviation Planner, Avia NG

PROJECT NO. 24-0103

DATE May 15, 2025

EXECUTIVE SUMMARY

The purpose of this Technical Planning Brief is to identify areas that are currently under protected or “gaps” within the existing airport zoning regulations. The intent is to ensure that the Airport’s existing and future certification requirements are adequately protected. The Airport Zoning Regulation (AZR) landscape in Canada is changing to increase airspace protection going beyond certification requirements, thus increasing protection for instrument flight procedures.

The existing Airport Zoning Regulations, SOR/84-901, as illustrated in **Figure 0-1**, dates back to 1984, and were put in place by the Minister of Transport to protect the long-term use and certification of the St. Catharines Airport as Niagara District Airport was once called. Similar to many other AZRs, those put in place for Niagara District Airport were designed taking into account the certification requirements of airports at the time, including Obstacle Limitation Surfaces.

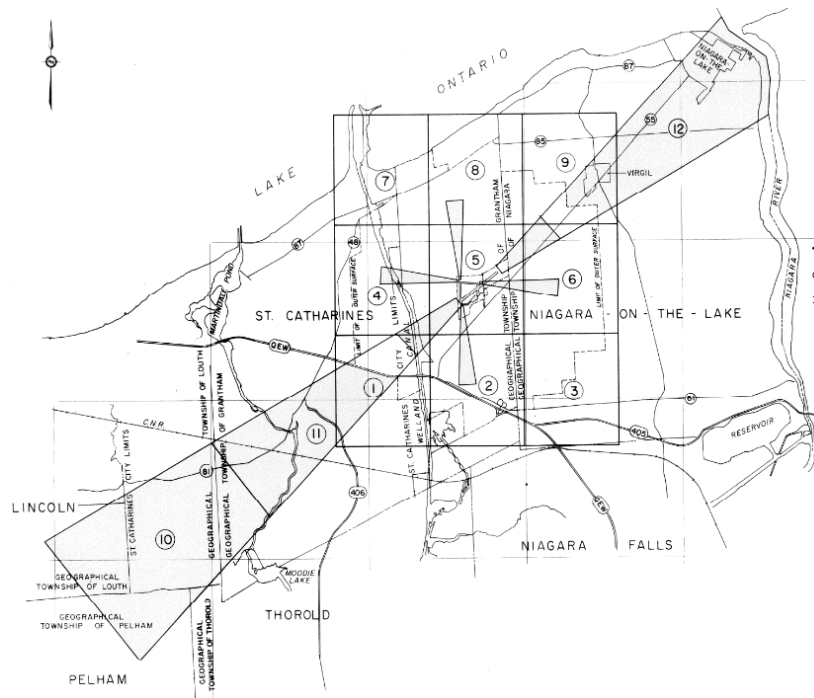


Figure 0-1 Existing Airport Zoning Regulations

The primary intent of these surfaces have been to ensure adequate Obstacle Limitation Surface protection based on the existing and future airport configuration as was contemplated at the time. However, since implementation of the existing AZR, changes in regulatory requirements have been observed and a long-term need to extend the Airport's primary runway has been identified as part of airport master planning efforts which was not previously accounted for in the existing AZR. Additionally, the increased use of and reliance on IFPs that extend well beyond the limits of traditional AZRs has exposed a risk of impact from high-rise development. Due to these changes, it has been identified that the existing, as well as contemplated future, airfield configurations would not be adequately protected by the existing AZR. An update to the AZR has therefore been recommended.

Avia NG, together with Transport Canada, NAV CANADA and several airports throughout Canada that have experienced firsthand the impact inadequate AZR protections can have are working together to increase airspace protections aimed at preserving use of Instrument Flight Procedures (IFPs). Not surprisingly, Niagara District Airport, having experience similar challenges related to impact of IFPs, has engaged Avia NG to assess the need for an AZR update and put forward recommendations in terms of next steps, as documented herein, for the preservation of existing and anticipated future IFPs serving the Airport. Having developed a sufficient understanding of the existing and future certification requirements and instrument flight procedures, recommendations applicable to an update to the AZR were put forward.

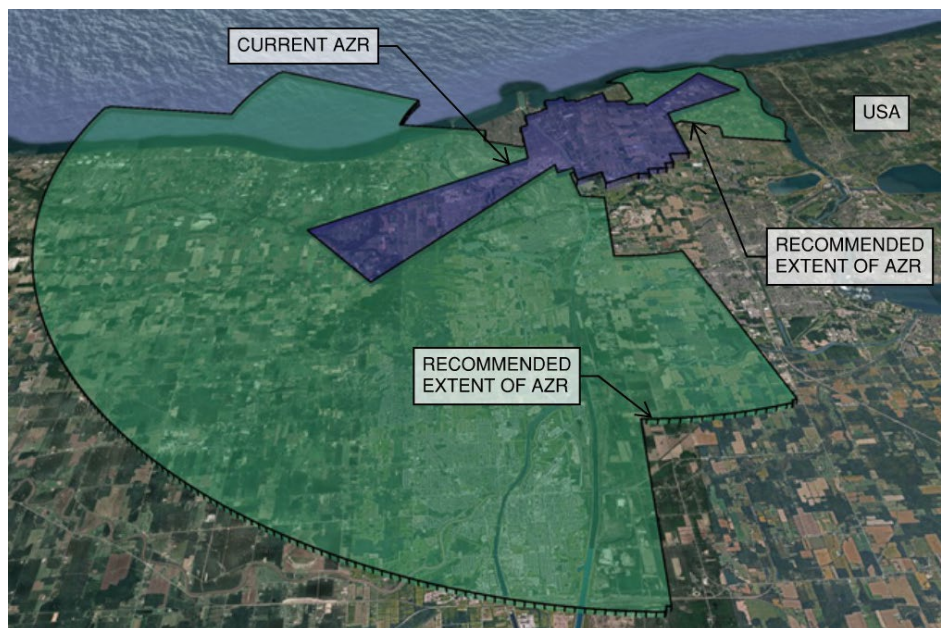


Figure 0-2 Recommended Extent of AZRs

Due to the complexity of the design criteria associated with IFPs and the corresponding obstacle evaluation surfaces, exact heights of the recommended AZRs have not been included as outcome from this study, rather guidance pertaining to the extent and approximate height limitations over key areas of focus have been included along with recommendations applicable to the extent of the AZR update.

It is Avia NG's understanding that the neighbouring municipalities of St. Catharines, Niagara-on-the-Lake and Niagara Falls are under significant pressure to provide housing and would like to maximize the use of lands to address such. With this in mind, eight (8) areas of focus were selected to provide preliminary constraints that could be used by the municipalities under further analysis. It is important to note, the recommended AZR footprint extends beyond these areas of focus, as shown in green in **Figure 0-2**. **Table 0-1** has been prepared to summarize the recommended AZR height constraints within these areas of focus.

Table 0-1: Summary of AZR Analysis Preliminary Findings

Areas of Focus	Recommended AZR Constraint			Change from Existing AZR	
	Max Elevation (m ASL)	Max Height (m AGL)	Storeys	Height (m)	Storey(s)
St. Catharines					
Queenston Street Intensification Area	198	88-98	21-23	~+13	+3
Welland Avenue Intensification Area (Centre)	140-198	35-98	8-23	0	0
Welland Avenue Intensification Area (West)	198	90-103	21-25	NEW	NEW
Welland Avenue Intensification Area (East)	140	35-40	8-10	0	0
GO Transit Secondary Plan Intensification Area	230-270	118-190	28-45	+0-40	+10
Areas with No Height Intensification Area	198	87-110	21-26	~4	+1
Niagara-on-the-Lake					
Virgil	140	45-53	11	~-13	-3
Glendale	140	19-34	5-8	0	0
Niagara-on-the-Lake Historic Old Town	240	128-165	30-39	~-5	-1
Niagara Falls					
Niagara Falls	330	140-215	33-51	NEW	NEW
QEW Skyway Bridge					
Bridge					

1. INTRODUCTION

The purpose of this Airport Zoning Regulations Gap Analysis report is to identify insufficient land use protections, or “gaps”, within existing zoning regulations to ensure that existing and future requirements of the Airport are sufficiently understood and addressed in future update to the AZRs. The goal of the gap analysis is to review and compare land uses where the Airport may be under protected from land uses that fall outside the jurisdictional limits of land use control measures currently in place. In that regard, consideration has been given to the existing and potential future airport requirements for airspace safeguarding, electronic navigational aid protection, and wildlife hazards. The report also identified risks associated with outdated Airport protection and presents the changes proposed to the *St. Catharines Airport Zoning Regulations (SOR/84-901)*. The analysis and recommended protections take into account recent modifications to Airport Zoning Regulations across Canada that goes beyond the typical Airport Operational Certification requirements.

Under protected, in the context of this report, refers to geographic areas identified with the potential to have land uses introduced or occurring that could result in future conflict with the preservation of accessibility and use to the Niagara District Airport [the Airport] by aircraft arriving or departing due to insufficient regulatory land use controls. Of particular concern are the lack of restrictions on obstacle heights, electronic interference, and bird attractants that could impact flight operations. Obstacles may include man-made structures, such as buildings or antennas, and natural elements such as trees.

The report has been divided into six (6) key sections:

1. **Introduction** – includes the purpose of the gap analysis associated with this report and provides context regarding typical Airport Zoning Regulations: what has been typically included and the shift in AZRs in Canada.
2. **Existing Conditions and Land Use Controls** – includes an overview to provide the reader with some background on the Niagara District Airport configuration and restrictions as well as that of surrounding municipalities.
3. **Needs Assessment** – includes an overview of the future runway configuration and level of service, future obstacle limitation surfaces.
4. **Instrument Flight Procedure Analysis** – includes a summary of the analysis completed regarding instrument flight procedures and level of service for the existing and potential future runway configurations.
5. **Findings** – includes an overview of the findings for each municipality which includes key areas of focus.
6. **Conclusion and Recommendations** – includes a summary of findings and recommendations concerning next steps.

1.1 AIRPORT ZONING REGULATIONS

Airport Zoning Regulations (AZR) are a set of federally enacted regulations that legally place restrictions on lands in the vicinity of airports in the interest of protecting airport and aircraft operations. Specifically, these restrictions typically take three main forms:

1. Height limitations for buildings, natural growth and other structures as a means of dictating obstacle heights found within defined obstacle limitation surfaces or key airborne manoeuvring areas;
2. Land use controls for metallic or frequency-emitting structures to prevent interference with aeronautical navigation equipment; and
3. Land use controls for waste disposal sites such as landfills to prevent locating wildlife attractants in proximity to an airport.

Existing AZRs for Niagara District Airport are outlined within the document titled *St. Catharines Airport Zoning Regulations (SOR/84-901)*. **Figure 1-1** illustrates the first few pages of the Existing AZR document.

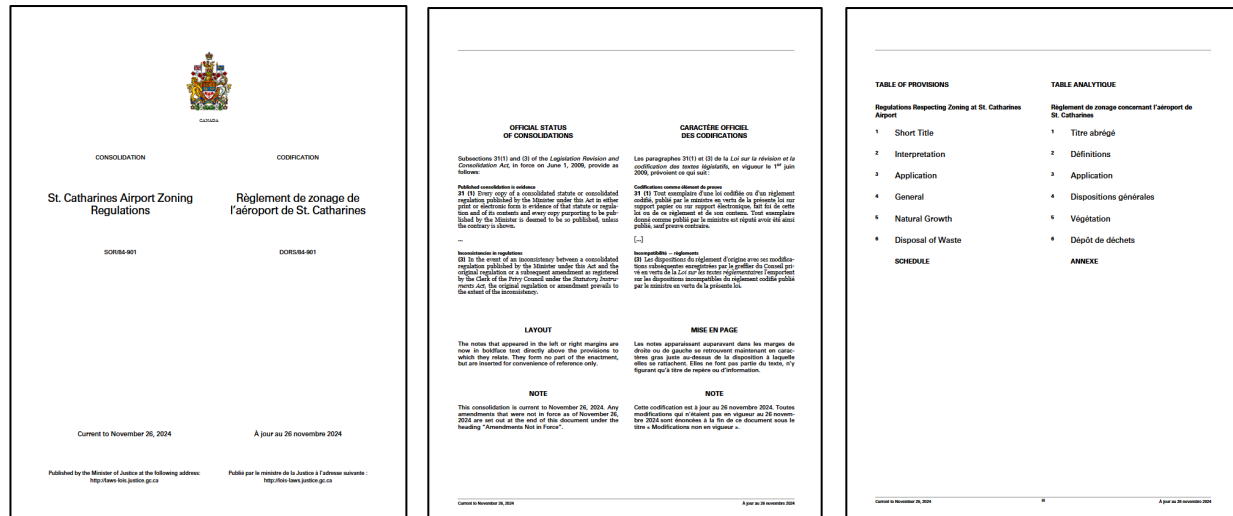


Figure 1-1: Cover Pages and Table of Contents for Existing St. Catharines AZR Document

AZR are put into place to prevent development that is incompatible with airport and aircraft operations from locating on the lands surrounding the airport. In so doing, they also prevent incompatible development from encroaching airports as urban development areas expand outwards toward them.

The height restrictions put into place by AZRs take the form of Obstacle Limitation Surfaces (OLS), which is a set of imaginary inclined and straight surfaces that delineate maximum heights of objects. **Figure 1-2** provides plan and profile views of a typical OLS. These surfaces are designed around key movement areas for aircraft during take-off and landing, which are the most critical phases of flight. While the runway strip protects for the take-off and landing rollout, the transitional and take-off/approach surfaces protect for the initial take-off and final landing airborne maneuvers, and the outer surface protects for circling aircraft and those maneuvering in the circuit. Standards pertaining to OLS are found in TP 312 *Aerodrome Standards and Recommended Practices* and internationally within International Civil Aviation Organization (ICAO) Annex 14 Volume 1 *Aerodrome Design and Operations*.

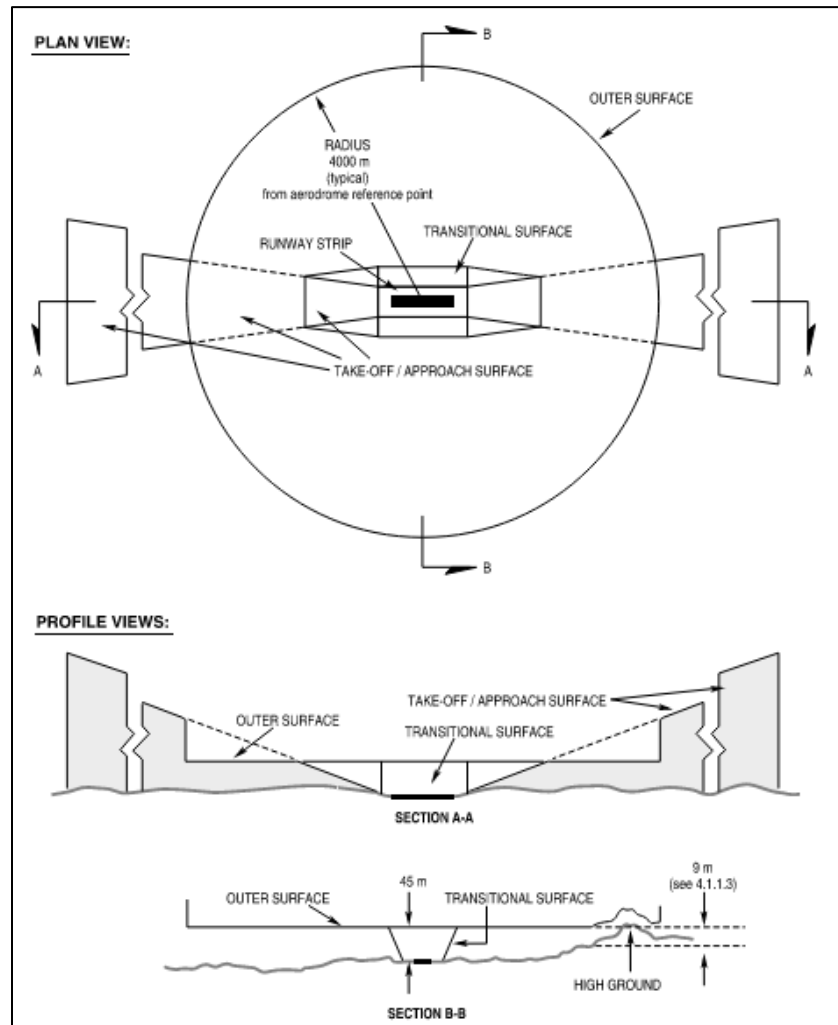


Figure 1-2: Typical Obstacle Limitation Surfaces (OLS) Configuration
(Source: TP 312 4th Edition)

OLS characteristics are decided for each runway based on the level-of-service. Airports often declare OLS characteristics for their daily operations based on the existing conditions of their runways; however, AZRs can also be prepared to protect the airspace for future anticipated runway characteristics and improvements to level-of-service. **Figure 1-3** illustrates the existing AZR OLS for Niagara District Airport as shown in the map book.

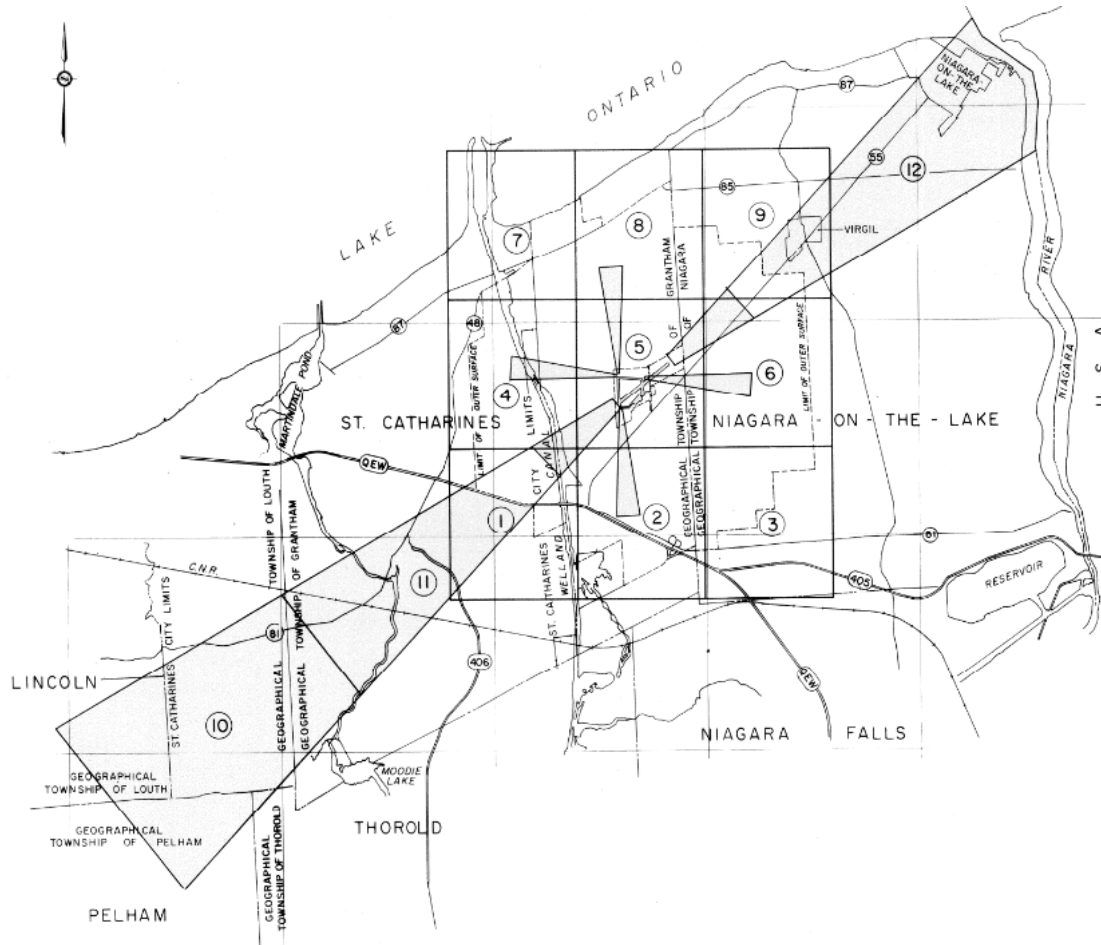


Figure 1-3: Layout of Existing St. Catharines Airport Zoning Regulations OLS

A significant advantage of AZRs is that they provide a legal and enforceable means through which to control obstacle heights around airports in reference to OLS. However, the use of OLS for AZR height restrictions, as is typically the norm, results in a lack of protection for instrument flight procedures (IFPs).

An IFP is defined by the ICAO as “a description of a series of predetermined flight manoeuvres by reference to flight instruments”. IFPs can be established for each airport where there is a need for aircraft to arrive or depart under Instrument Meteorological Conditions (IMC) and can be associated with non-instrument, instrument non-precision and/or instrument precision classified runways. Pilots operating under Instrument Flight Rules (IFR) are to adhere to the applicable procedures associated with their airport and runway of arrival or departure. Typically, IFPs apply to two critical phases of flight:

- 1) During the approach, from the time that the approach is initiated to the landing (Instrument Approach Procedure, IAP), and
- 2) During the take-off, from initial take-off roll to termination of the departure (Instrument Departure Procedure, IDP).

Standards and guidance related to IFPs are found in TP 308 / GPH 209 *Criteria for the Development of Instrument Procedures*. Instrument Approach Procedures (IAPs), while unique for each airport, represent an additional critical set of complex surfaces needing protection to ensure that aircraft arrivals and departures occur safely during instrument meteorological conditions (IMC).

Figure 1-4 provides a visualization of an instrument approach procedure.

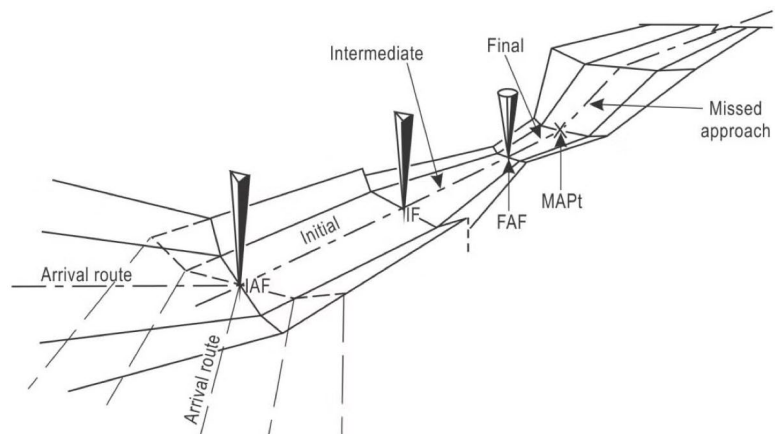


Figure 1-4: Sample of Instrument Flight Procedures

2. EXISTING CONDITIONS & LAND USE CONTROLS

This section reviews the existing conditions at the Niagara District Airport and provides an overview of land use controls applicable to both the Airport and St. Catharines as well as municipalities surrounding the Airport.

Niagara District Airport is located within the municipal boundary of Niagara-on-the-Lake, which is part of the Niagara Region. Niagara Region occupies the southeastern corner of Ontario and consists of 12 municipalities: Grimsby, Lincoln, West Lincoln, Wainfleet, Pelham, St. Catharines, Thorold, Welland, Port Colborne, Niagara-on-the-Lake, Niagara Falls and Fort Erie. **Figure 2-1** depicts the boundaries of municipalities in Niagara Region and the location of Niagara District Airport. Of the 12 municipalities, only five (5) underlie the existing St. Catharines AZR boundaries: Lincoln, St. Catharines, Niagara-on-the-Lake, Thorold and Pelham.



Figure 2-1: Municipalities of Niagara Region

2.1 NIAGARA DISTRICT AIRPORT

The Niagara District Airport is a public-use, regional airport, located approximately 2.2 kilometres east of the City of St. Catharines.

The Airport has three bi-directional runways, Runway 06-24, Runway 11-29 and Runway 01-19; four taxiways; and two aprons. According to the Airport Operations Manual (AOM), these runways have the following characteristics:

- **Runway 06-24** has a length of 1523.90m and width of 30.5m. Both ends of the runway have a reference code of 3C and non-precision level of service.
- **Runway 11-29** has a length of 606.08m and width of 23.0m. Both ends of the runway have a reference code of 1B and non-instrument level of service.
- **Runway 01-19** has a length of 761.29m and width of 23.0m. Both ends of the runway have a reference code of 1B and non-instrument level of service.

Figure 2-2 presents the latest aerodrome chart from the Canada Air Pilot (CAP), current to the December 26, 2024 issue.

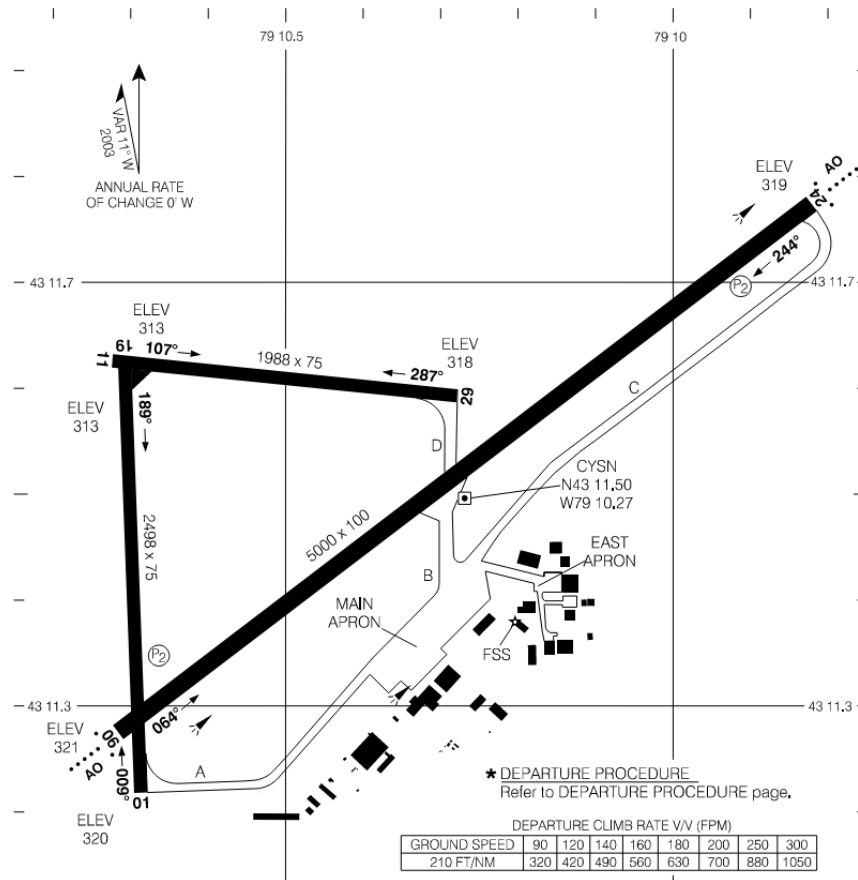


Figure 2-2: Niagara District Airport Aerodrome Chart (Source: NAV CANADA, CAP 04)

Figure 2-2 provides runway lengths and bearings as well as the navigational aids present at the airport. Existing Instrument Flight Procedures are further detailed in **Section 2.3**.

2.2 EXISTING OBSTACLE LIMITATION SURFACES

Under the Canadian Aviation Regulations, the Niagara District Airport has the obligation to maintain its OLS free of intrusions. These surfaces are recorded in the AOM. The current AOM from Niagara District Airport describes the OLS for each runway, which are currently based on the *Aerodrome Standards and Recommended Practices* (TP 312) – 4th Edition. The Airport’s existing OLS includes runway strips, approach and take-off surfaces, transitional surfaces and an outer surface. The characteristics of these surfaces are presented in **Table 2-1** of this report. Refer to **Figure 2-3** for an overview of the existing AOM for the Niagara District Airport.

Table 2-1: Existing AOM OLS Characteristics

OLS Characteristics	Runway 06	Runway 24	Runway 01	Runway 19	Runway 11	Runway 29
Runway Strip						
Overall Width	150m	150m	60m	60m	60m	60m
Distance from Threshold	60m	60m	30m	30m	30m	30m
OLS Characteristics	Runway 06	Runway 24	Runway 01	Runway 19	Runway 11	Runway 29
Approach Surface/Take-Off Surface						
Inner Edge Length	150m	150m	60m	60m	60m	60m
Distance from Threshold	60m	60m	30m	30m	30m	30m
Divergence	15%	15%	10%	10%	10%	10%
Length	3,000m	3,000m	2,500m	2,500m	2,500m	2,500m
Slope	2.5%	2.5%	5.0%	5.0%	5.0%	5.0%
Transitional Surface						
Slope	14.3% [1:7]	14.3% [1:7]	20.0% [1:5]	20.0% [1:5]	20.0% [1:5]	20.0% [1:5]
Outer Surface						
Elevation	140.0m ASL					
Dimensions	4,000m Radius from ARP					

Source: Niagara District Airport AOM Amendment 7 dated May 4, 2018

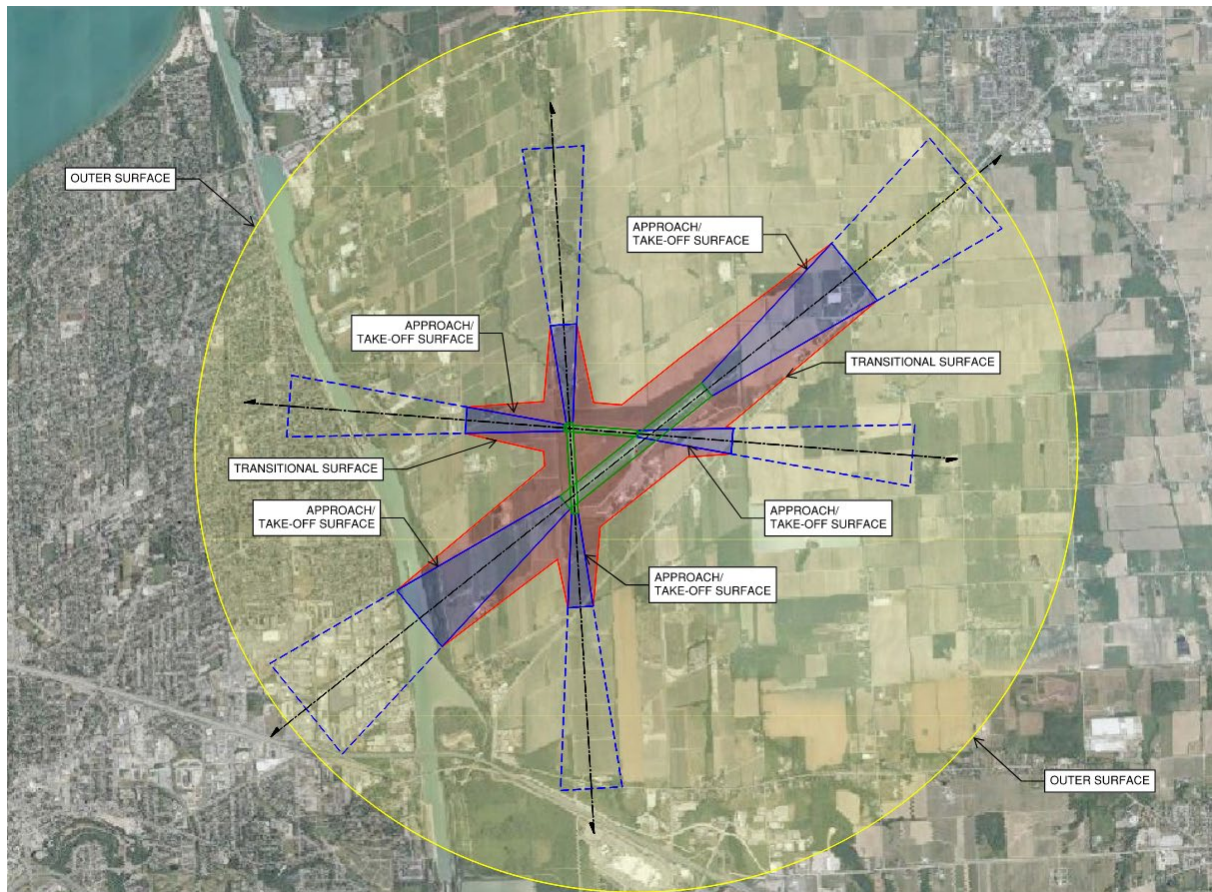


Figure 2-3: Existing Obstacle Limitation Surfaces

Although the Airport is required to maintain the OLS, there are no standards or regulations applicable to landowners within the limits of the OLS to remain clear of the Airport's OLS unless so protected by the AZRs. Consequently, for the OLS to be fully protected the AZRs must extend to protect at minimum the Airport's existing OLS.

2.3 ST. CATHARINES AIRPORT ZONING REGULATIONS

The existing *St. Catharines Airport Zoning Regulations, SOR/84-901*, as found on the Justic Laws Website, are the official enacted land use protections for the Niagara District Airport. It is important to note that Runway 11-29 at the Niagara District Airport is referred to as Runway 10-28 in the existing AZR text. It is common to observe differences in runway designation given that magnetic variation changes over time and results in re-naming of runways by calculated magnetic headings. The current AZR characteristics are listed in **Table 2-2** and illustrated in **Figure 2-4**.

Table 2-2: St. Catharines AZR Characteristics

OLS Characteristics	Runway 06	Runway 24	Runway 01	Runway 19	Runway 11	Runway 29
Runway Strip						
Overall Width	300m	300m	60m	60m	60m	60m
Overall Length	1,644.08m	1,644.08m	667.1m	667.1m	822.22m	822.22m
Approach Surface						
Inner Edge Length	300m	300m	60m	60m	60m	60m
Distance from Threshold	60m	60m	30m	30m	30m	30m
Divergence	15%	15%	10%	10%	10%	10%
Length	15,000m	To USA Border	2,500m	2,500m	2,500m	2,500m
Slope	1:50	1:50	1:40	1:40	1:40	1:40
Transitional Surface						
Slope	1:7	1:7	1:7	1:7	1:7	1:7
Outer Surface						
Elevation	140.0m ASL					
Dimensions	Normalized					

Source: St Catharines Airport Zoning Regulations SOR/84-901

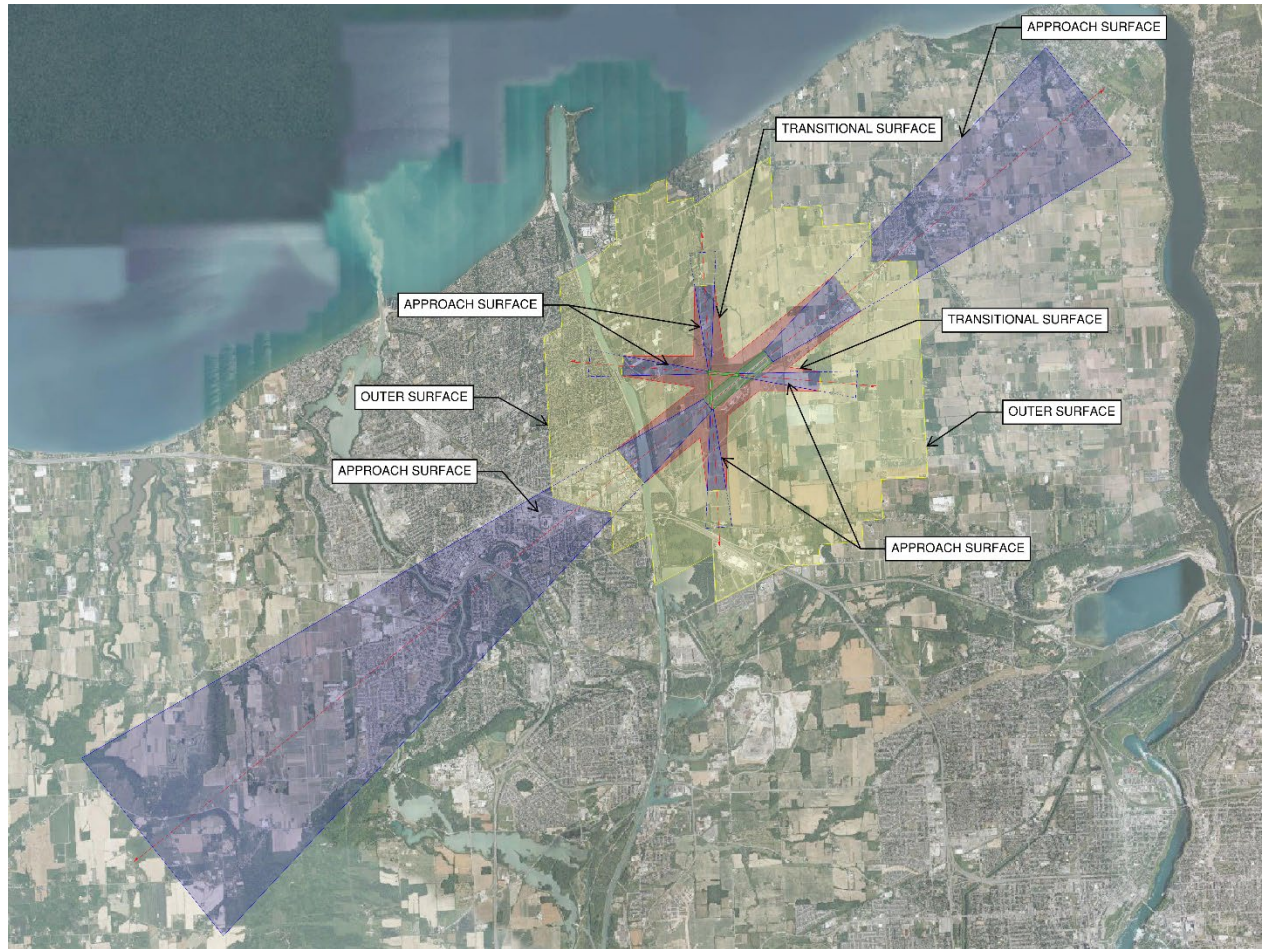


Figure 2-4: Existing Airport Zoning Regulations

The existing AZR for the Niagara District Airport includes a prohibition clause, *Disposal of Waste*, on land uses that attract wildlife. The existing AZR text does not include prohibitions on electronic interference with air navigation and communication. It also does not include any protections for Instrument Flight Procedures.

2.4 CURRENT INSTRUMENT FLIGHT PROCEDURES

Niagara District Airport currently has six (6) instrument arrival procedure options available for aircraft arriving at the Airport under IFR. Key characteristics for CYSN-IAP-3A and CYSN-IAP-3B are summarized in **Table 2-3**.

Table 2-3: Existing Instrument Flight Procedures

Instrument Flight Procedure	Decision Altitude (ft.)	Decision Height (ft.)	Advisory Visibility (SM)
RNAV (GNSS) RWY 06 (CYSN-IAP-3A)			
LPV	571	250	1
LNAV/VNAV	816	495	1 ¾
LNAV	780	459	1 ½
Instrument Flight Procedure	Decision Altitude (ft.)	Decision Height (ft.)	Advisory Visibility (SM)
RNAV (GNSS) RWY 24 (CYSN-IAP-3B)			
LPV	569	250	1
LNAV/VNAV	569	250	1
LNAV	680	361	1 ¾

Source: Canada Air Pilot 7 – 2024-12-26

The Canada Air Pilot IAP charts for both Runway 06 and 24 are show in **Figure 2-5** and **Figure 2-6**.

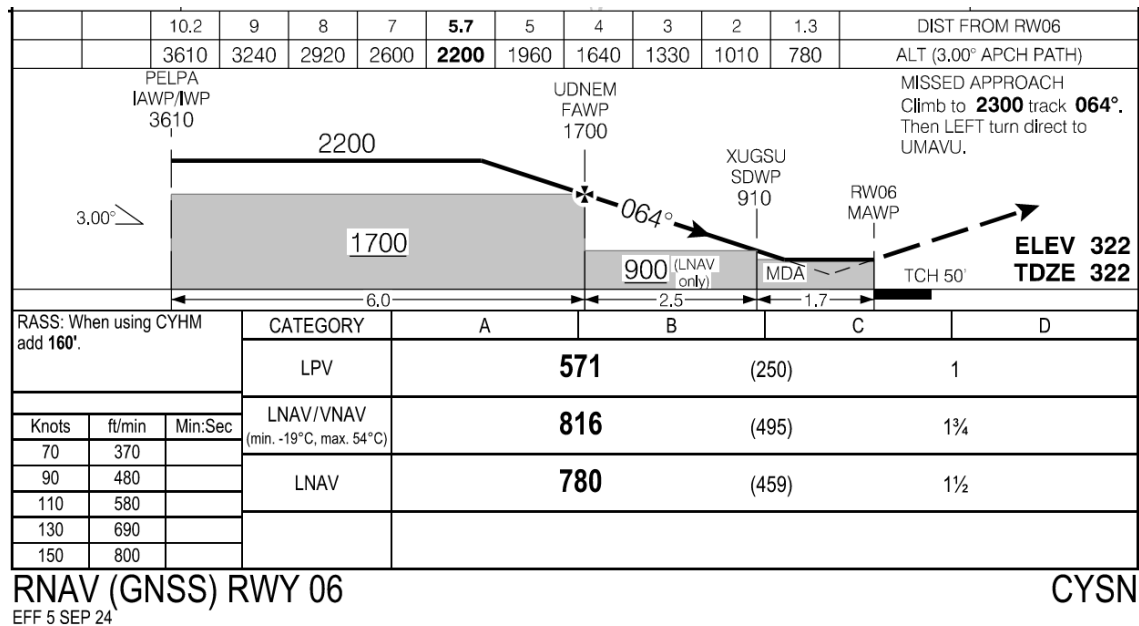


Figure 2-5: Runway 06 Instrument Approach Procedure (Source: Canada Air Pilot)

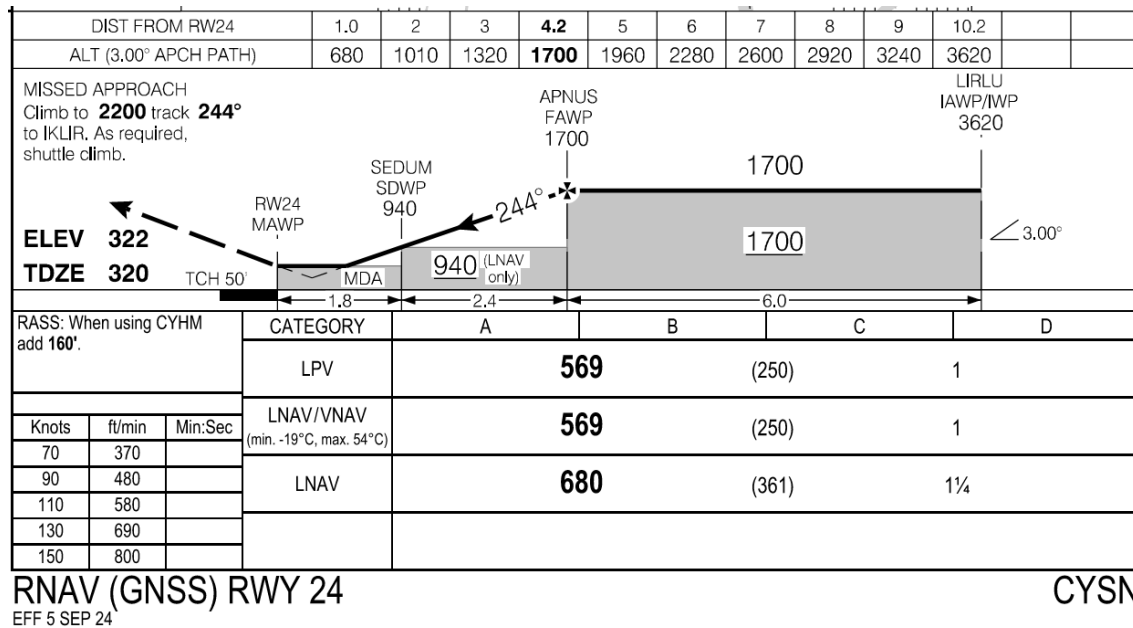


Figure 2-6: Runway 24 Instrument Approach Procedure (Source: Canada Air Pilot)

In addition to the six (6) identified RNAV IAP, Niagara District Airport also has Instrument Departure Procedures (IDPs) for Runway 01, 06, 19 and 24. These IDP are illustrated in **Figure 2-7**.

- Rwy 01 – ½:** Climb between hdg **039°** CCW to **191°** to remain clear of CYR518 and MISTY1 MOA. When CYA513 is active, climb between hdg **039°** CCW to **239°** to remain clear of CYR518, MISTY1 MOA and CYA513.
Note: Trees to 350 ASL aprx 530' past departure end of rwy.
 Tower to 386 ASL aprx 0.2 NM past departure end of rwy, 200' RIGHT of rwy centreline.
- Rwy 06 – ½:** Climb between hdg **036°** CCW to **244°** to remain clear of MISTY1 MOA, CYR518 and CYA513.
- Rwy 19 – ½:** Requires a minimum climb gradient of **210 ft/NM** to **1200**. Climb between hdg **209°** CW to **009°** to remain clear of MISTY1 MOA and CYR518. When CYA513 is active: Requires a minimum climb gradient of **210 ft/NM** to **1200**. Climb between hdg **248°** CW to **009°** to remain clear of MISTY1 MOA, CYR518 and CYA513.
 or
 SPEC VIS – Climb in visual conditions to cross the aprt at or above **3500 BPOC**. When CYA513 is active: SPEC VIS NOT AUTHORIZED.
- Rwy 24 – ½:** Climb between hdg **194°** CW to **038°** to remain clear of MISTY1 MOA and CYR518. When CYA513 is active, climb between hdg **264°** CW to **038°** to remain clear of CYA513, MISTY1 MOA and CYR518.
Note: Trees to 373 ASL aprx 0.3 NM past departure end of rwy, 930' RIGHT of rwy centreline.
 Possible ship to 450 ASL transiting canal aprx 0.8 NM past departure end of rwy.

Figure 2-7: Niagara District Airport Instrument Departure Procedures (Source: Canada Air Pilot)

2.5 MUNICIPAL PLANNING DOCUMENTS

The Niagara District Airport, and specifically its OLS, are afforded some level of protection by the existing AZRs, and to a lesser extent, municipal planning documents enacted by the Niagara Region and municipalities surrounding the Airport. Notable municipalities underlying the Airport's OLS are identified in **Figure 2-8**. This section describes airport-related policies or land use restrictions present in relevant municipal planning documents that support protection of the airport's airspace protection needs.

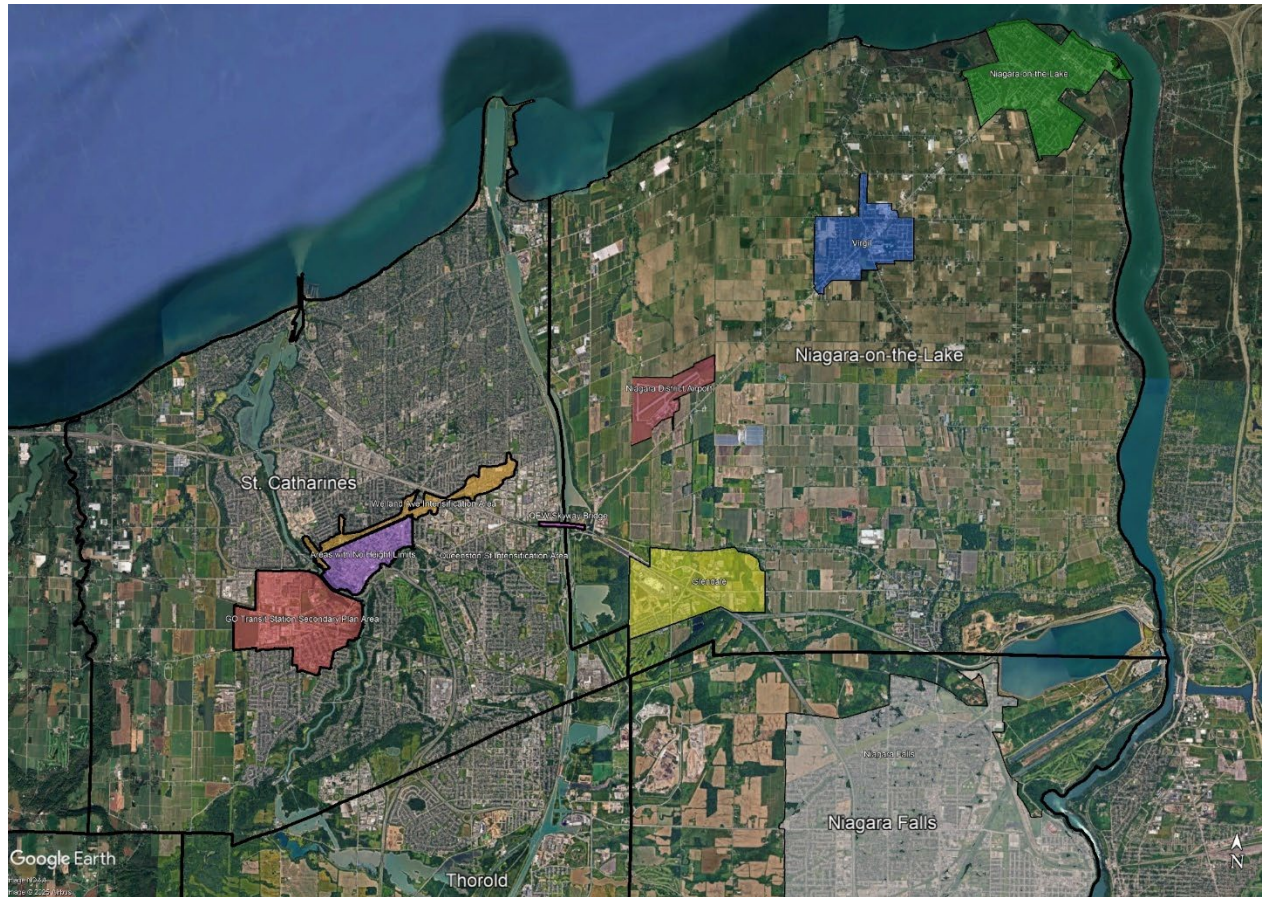


Figure 2-8: Municipal Boundaries

A number of municipal planning documents were consulted in this analysis to identify any restrictions imposed on development within lands underlying the Niagara District Airport OLS. Included as part of the review were the following:

- Niagara Region Official Plan (2024)
- Niagara-on-the Lake Official Plan (2017) and Zoning By-law (2016)
- St. Catharines Official Plan (2018) and Zoning By-law (2024)
 - Glendale Secondary Plan
- Niagara Falls Official Plan (2024) and Zoning By-law (2024)
- Thorold Official Plan (2016) and Zoning By-law (2019)

2.5.1 NIAGARA REGION OFFICIAL PLAN (2024)

The Niagara Region Official Plan (May 2024) is a broad, region-wide plan that outlines development policies and guiding principles for the entirety of the Niagara Region. Of the documents consulted, the Niagara Region Official Plan was the highest level of regional planning document examined, followed by the individual municipality Official Plans and Zoning By-laws, which are meant to be consistent with the Niagara Region Official Plan's policies and principles.

The plan calls for protection of short-term and long-term development objectives of the Niagara District Airport and recognizes the role of the St. Catharines Airport Zoning Regulations in restricting development near the Airport. The policies in the Official Plan emphasize the importance of developing compatible land uses near the Airport, including the development of supporting land uses near the Airport and locating sensitive land uses an appropriate distance from the Airport.

2.5.2 NIAGARA-ON-THE-LAKE OFFICIAL PLAN (2017) AND ZONING BY-LAW (2016)

Niagara-on-the-Lake is the north easternmost municipality in the Niagara Region, bounded by St. Catharines to the west, the city of Niagara Falls to the south, the United States to the east and Lake Ontario to the north. Niagara District Airport is found in the municipality of Niagara-on-the-Lake. This municipality is largely rural with small communities Glendale, Virgil, Queenston, St. Davids, McNab, Homer and Colemans found throughout. Of these communities, Virgil, Glendale and Historic Old Town are found within the limits of the existing AZR.

The Niagara-on-the-Lake Official Plan recognizes the importance of Niagara District Airport and makes reference to the St. Catharines Airport Zoning Regulations, recognizing that these federal regulations impose development restrictions in the vicinity of the Airport. The lands on which the Airport is located are designated for use as an airport and similar transportation facilities, as well as industrial land uses requiring close proximity to an airport. Other permitted uses are commercial and industrial land uses. Development is required to be in line with the existing Airport Master Plan and not conflict with the existing AZR.

Commentary on Niagara-on-the-Lake Zoning By-law designations for each urban area of focus are described in the following subsections.

2.5.2.1 COMMUNITY OF VIRGIL

Virgil is a small community found slightly north of central Niagara-on-the Lake, with the urban boundary illustrated in **Figure 2-9**. Virgil underlies the approach 24 surface of the Niagara District Airport AZR OLS. Much of Virgil is designated in the Niagara-on-the-Lake zoning by-law as low-to-medium density residential and commercial, with pockets of institutional and open space. Maximum permitted building heights for all land uses in the community are 11.0 metres or less, depending on the land use.

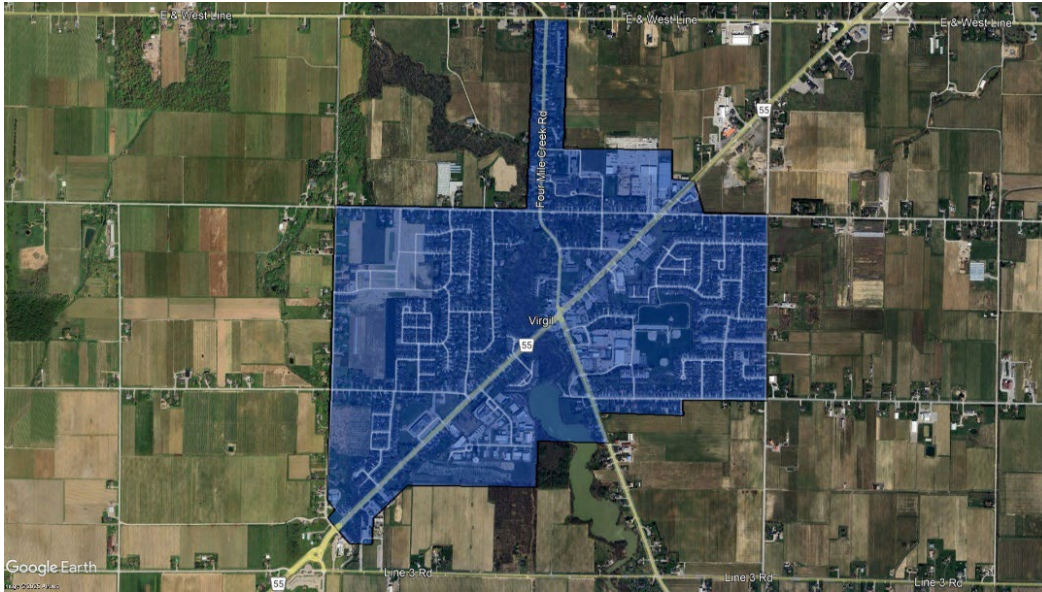


Figure 2-9: Community of Virgil Urban Boundary

2.5.2.2 HISTORIC OLD TOWN: NIAGARA-ON-THE-LAKE

The largest urban area within Niagara-on-the-Lake is the Historic Old Town, found in the northeast corner at the Canadian-American border, with the urban boundary illustrated in **Figure 2-10**.



Figure 2-10: Niagara-on-the-Lake Historic Old Town Urban Boundary

Historic Old Town underlies the end of the approach 24 surface of the Niagara District Airport AZR OLS. The Official Plan and Zoning By-law emphasize a diversity of land uses for the Historic Old Town, ranging from low-to-medium density residential to extractive and industrial. Of note is also the presence of lower density heritage and tourist designated districts, predominantly found along the northern waterfront. Maximum permitted building heights for all land uses in the community are 17.35 metres or less, depending on the land use.

2.5.2.3 GLENDALE

The community of Glendale is found in the southwestern corner of Niagara-on-the-Lake, abutting St. Catharines, with the urban boundary illustrated in **Figure 2-11**.



Figure 2-11: Community of Glendale Urban Boundary

Much of the Glendale community underlies the outer surface of the existing Niagara District Airport AZR OLS. According to the Niagara-on-the-Lake Zoning By-law, the community of Glendale belongs to the Glendale Community Zoning District and is zoned for medium-density residential as well as commercial, institutional and employment area land uses south of the Queen Elizabeth Way (QEW), and predominantly commercial and industrial north of the QEW. Maximum permitted heights are up to 18.0 metres for residential development and 15.0 metres for commercial development. A previous assessment conducted for the Niagara Region concluded that certain areas within Glendale that are being slated for potential future development may be restricted from building to the maximum permitted heights due to the existing AZR outer surface placing a maximum elevation of 140.0 metres above sea level over a considerable portion of the area.

This community is also associated with the Glendale Secondary Plan and Glendale District Plan, which place emphasis on mixed-use infill and intensified development within the Glendale community.

2.5.3 ST. CATHARINES OFFICIAL PLAN (2018) AND ZONING BY-LAW (2024)

The City of St. Catharines is found west of Niagara-on-the-Lake and the Niagara District Airport. It is one of the larger cities found on the Niagara Peninsula with active efforts toward intensification within the urban boundary. These intensification and growth areas are found in **Figure 2-12**.

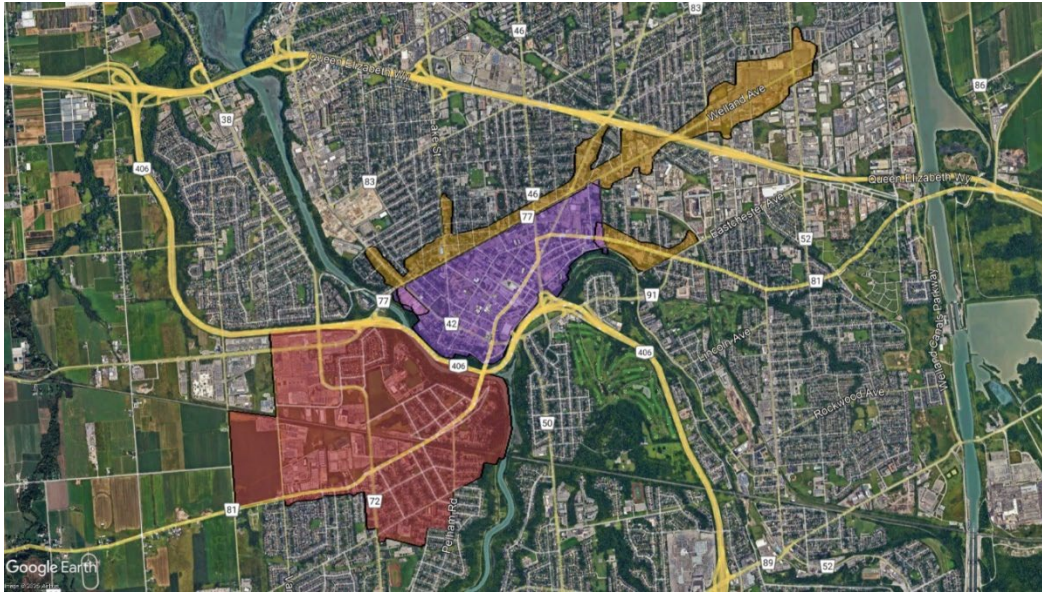


Figure 2-12: City of St. Catharines Intensification Areas

The City of St. Catharines underlies the parts of the approach surfaces for Runway 06 and 11 as well as the outer surface as represented in the existing AZR.

The St. Catharines Official Plan promotes the development of compact form and intensified development within the downtown area and designated intensification areas found generally in the geographic centre of the city. However, the Official Plan also references the existing AZR, stating that review of development proposals must consider the associated restrictions imposed by this federal regulation. The Zoning By-law for St. Catharines outlines a multitude of land use zoning designations within the city, including residential ranging from low density suburban residential to high density residential, as well as commercial, institutional, employment and mixed land uses at all density levels.

The City of St. Catharines Official Plan and Community Improvement Plan (2020) have designated multiple areas of future intensification found along major transport corridors within the inner city. Niagara Region identified more specifically three areas of focus that underlie the Runway 06 Approach Surface: the Queenston Street and Welland Avenue Intensification Area; the GO Transit Station Secondary Plan Area; and the Downtown Area.

The Queenston Street and Welland Avenue Intensification Area are found along major transport corridors in St. Catharines where intensification and taller developments are encouraged. These areas are illustrated in **Figure 2-13**.

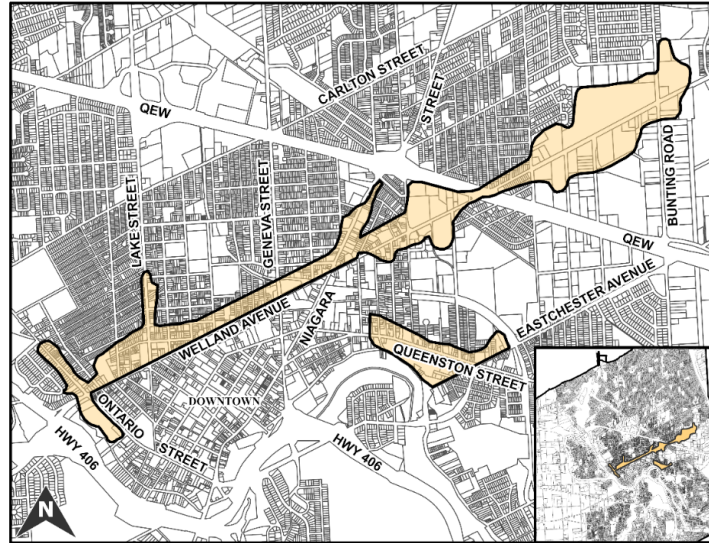


Figure 2-13: Queenston Street and Welland Avenue Intensification Areas

The GO Transit Station Secondary Plan Area is another area underlying the Runway 06 approach surface for which mixed-use intensification and redevelopment is encouraged. Adopted through By-law 2018-121 to the St. Catharines Official Plan, the GO Transit Station Secondary Plan Area encourages a mix of low-density through high-density development, with maximum permitted building heights ranging from 11 metres to 68 metres above grade, depending on the individual lot designation. The GO Transit Station Secondary Plan Area is illustrated in **Figure 2-14**.

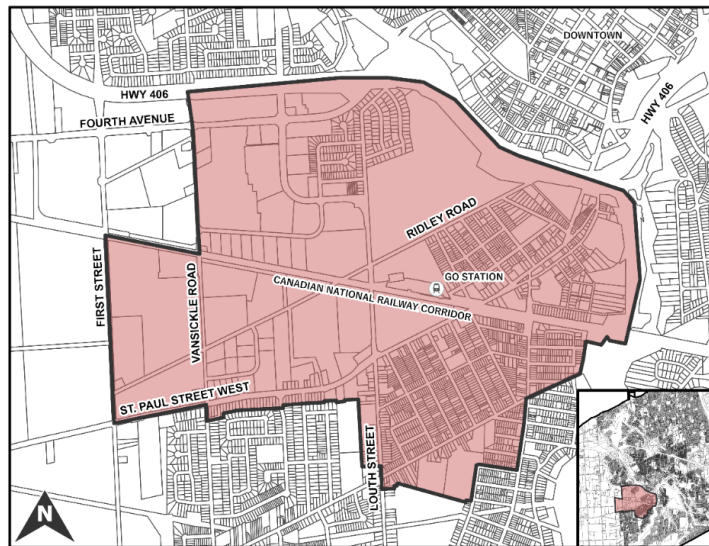


Figure 2-14: GO Transit Station Secondary Plan Area

The St. Catharines downtown area has a number of zones without maximum permitted building heights identified for commercial, residential and mixed-use developments. While there are other such zones found throughout the city, a concentration of them existing within the downtown area underlying the Runway 06 approach surface. The downtown area is illustrated in **Figure 2-15**.

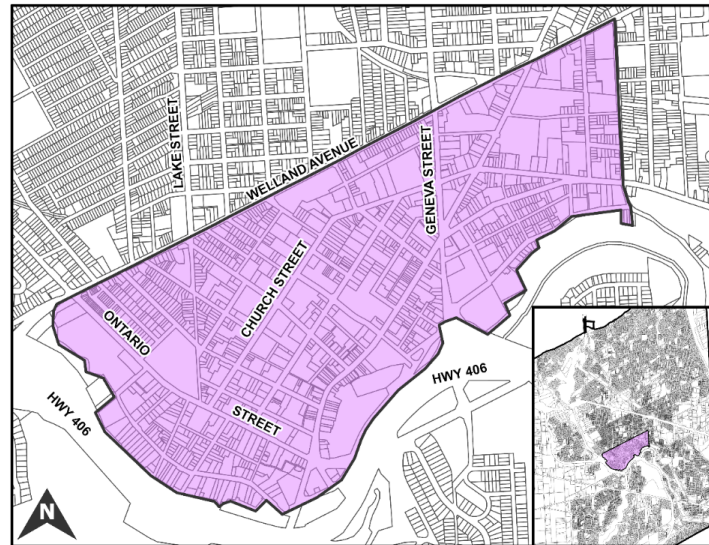


Figure 2-15: St. Catharines Downtown Area

It is recommended that development is monitored in the two identified intensification areas, GO Transit Station Secondary Plan Area, and the downtown area, as future developments may impact the airspace that may be required for the OLS or AZR of future airport runway configurations.

2.5.4 NIAGARA FALLS OFFICIAL PLAN (2024) AND ZONING BY-LAW (2024)

Niagara Falls is found on the far east end of Niagara Region, abutting the Canadian-American border, with the urban boundary illustrated in **Figure 2-16**.



Figure 2-16: Niagara Falls Urban Boundary

While Niagara Falls does not currently underlie lands to which existing AZR restrictions apply, it is of close enough proximity to the Airport that it warrants review in the event that level of service upgrades and/or runway extensions occur to increase the extent of the OLS.

The Niagara Falls Official Plan does not contain any principles or policies related to AZR- or airport-specific height restrictions or protections. The northern part of the Niagara Falls urban boundary, which is closest to the Airport, is zoned primarily for agricultural and open space uses, with some pockets of low-density residential and commercial throughout. In the Niagara Falls Zoning By-law, these designations permit maximum building heights of no greater than 12.0 metres.

2.5.5 THOROLD OFFICIAL PLAN (2016) AND ZONING BY-LAW (2019)

The City of Thorold is found south of St. Catharines and west of Niagara Falls. A small portion of the Runway 06 approach surface passes through the northwest corner of the Thorold municipal boundary, and as such, the Official Plan and Zoning By-law documents were examined as part of this review. The Official Plan does not contain any principles or policies related to AZR- or airport-specific height restrictions or protections. However, in the Zoning By-law, the lands underlying the sliver of Runway 06 approach surface are designated “Niagara Escarpment Plan”, which the Official Plan categorizes as a natural heritage designation area for ecological protection and places significant development restrictions for the area.

2.6 SUMMARY OF EXISTING LAND USE CONTROLS

This section has reviewed Official Plans, Zoning By-laws and Secondary Plans for the Niagara Region and the municipalities within it, including Niagara-on-the-Lake and communities Virgil, Historic Old Town and Glendale; St. Catharines; Niagara Falls; and Thorold.

In this review, it was found that the Niagara Region and all municipalities with a substantial portion of their lands subject to the existing Airport Zoning Regulations contain policies and principles in their Official Plans related to maintaining compatible land uses in the vicinity of the Niagara District Airport and adherence to restrictions imposed by the existing AZR. Official Plans, Zoning By-laws and Secondary Plans have all been generally in line with the Region’s Official Plan. However, the three Intensification Areas of Focus and Glendale community, for which redevelopment and intensification are designated, represent larger urban areas where future growth may project into airspace that may require future OLS safeguarding. The communities of Virgil, Historic Old Town, Niagara Falls and Thorold are sufficiently far from the Airport with relatively low-density land use designations, resulting in less concern for potential conflict with future AZR or OLS configurations.

3. NEEDS ASSESSMENT

This section of the report summarizes the potential future runway configuration and level of service change that are projected for the airport. The change in regulatory requirements pertaining to OLS and the change characteristics based on the future runway characteristics are outlined herein.

3.1 RUNWAY CONFIGURATIONS & LEVEL OF SERVICE

When determining an airport’s infrastructure needs, it is just as important to consider the airport in its existing configuration and level of service as it is to plan for the potential of extensions and expansions as well as level of service upgrades.

3.1.1 FUTURE LEVEL OF SERVICE

As noted in Section 2.1, the Airport’s primary runway has an instrument non-precision classification, which means a minima of 250 feet or higher and approach visibility of not less than 3/4 SM (RVR4000). There is potential need to improve the level of service by lowering the minima to 200 feet with approach visibility of not less than ½ SM (RVR2600). Lowering the minima to 200 feet would increase the Airport’s usability. In other words, it increases the likelihood that an aircraft could land at the airport under poor visibility,

3.1.2 RUNWAY USABILITY

The Airport, as part of the Master Planning process, has identified the need for additional commercial lands, leading to a review of the secondary runways. According to Transport Canada, it is recommended that the runway configuration should achieve a runway usability, from a wind direction perspective, of 95% or greater. A series of aviation wind roses were prepared to determine the runway usability based on several scenarios, as depicted in **Table 3-1**. The analysis concludes that the primary runway achieves the recommended usability and to put forward the recommendation to decommission Runway 01-19.

Table 3-1: Runway Usability

	Runway 06-24	Runways 06-24 & 01-19	Runways 06-24 & 11-29	Runways 06-24 & 01-19 & 11-29
Scenario 1				
15kt Crosswind and 10kt Tailwind				
All Wx	97.34%	N/A	N/A	N/A
IFR	97.81%	N/A	N/A	N/A
VFR	97.30%	N/A	N/A	N/A
Scenario 2				
Runway 06-24: 15kt Crosswind and 10kt Tailwind				
Runway 01-19: 10kt Crosswind and 5kt Tailwind				
All Wx	N/A	98.18%	N/A	N/A
IFR	N/A	99.02%	N/A	N/A
VFR	N/A	98.11%	N/A	N/A
Scenario 3				
Runway 06-24: 15kt Crosswind and 10kt Tailwind				
Runway 11-29: 10kt Crosswind and 5kt Tailwind				
All Wx	N/A	N/A	98.63%	N/A
IFR	N/A	N/A	98.28%	N/A
VFR	N/A	N/A	98.67%	N/A
Scenario 4				
Runway 06-24: 15kt Crosswind and 10kt Tailwind				
Runway 01-19 & 11-29: 10kt Crosswind and 5kt Tailwind				
All Wx	N/A	N/A	N/A	99.48%
IFR	N/A	N/A	N/A	99.49%
VFR	N/A	N/A	N/A	99.48%

3.1.3 FUTURE RUNWAY CONFIGURATIONS

The existing primary runway is not conducive for commercial traffic, except for small commercial aircraft such as Q400 aircraft. If there is a need to support commercial traffic, a runway extension would be favourable to support jet aircraft, including Boeing 737 or similar. It is, therefore, proposed that protections should be put in place to support the future extensions of Runway 06-24. The runway could be extended northeasterly by 820m (2,690 ft.) and southwesterly by 52.2 (171 ft.). However, to support the level of service change, Runway 06 will need to be displaced by 861 ft. from the new threshold for Runway 06.

Refer to **Figure 3-1** for illustration of the future runway configuration, including the potential future runway extensions and the removal of Runway 01-19 discussed in Section 3.1.2.

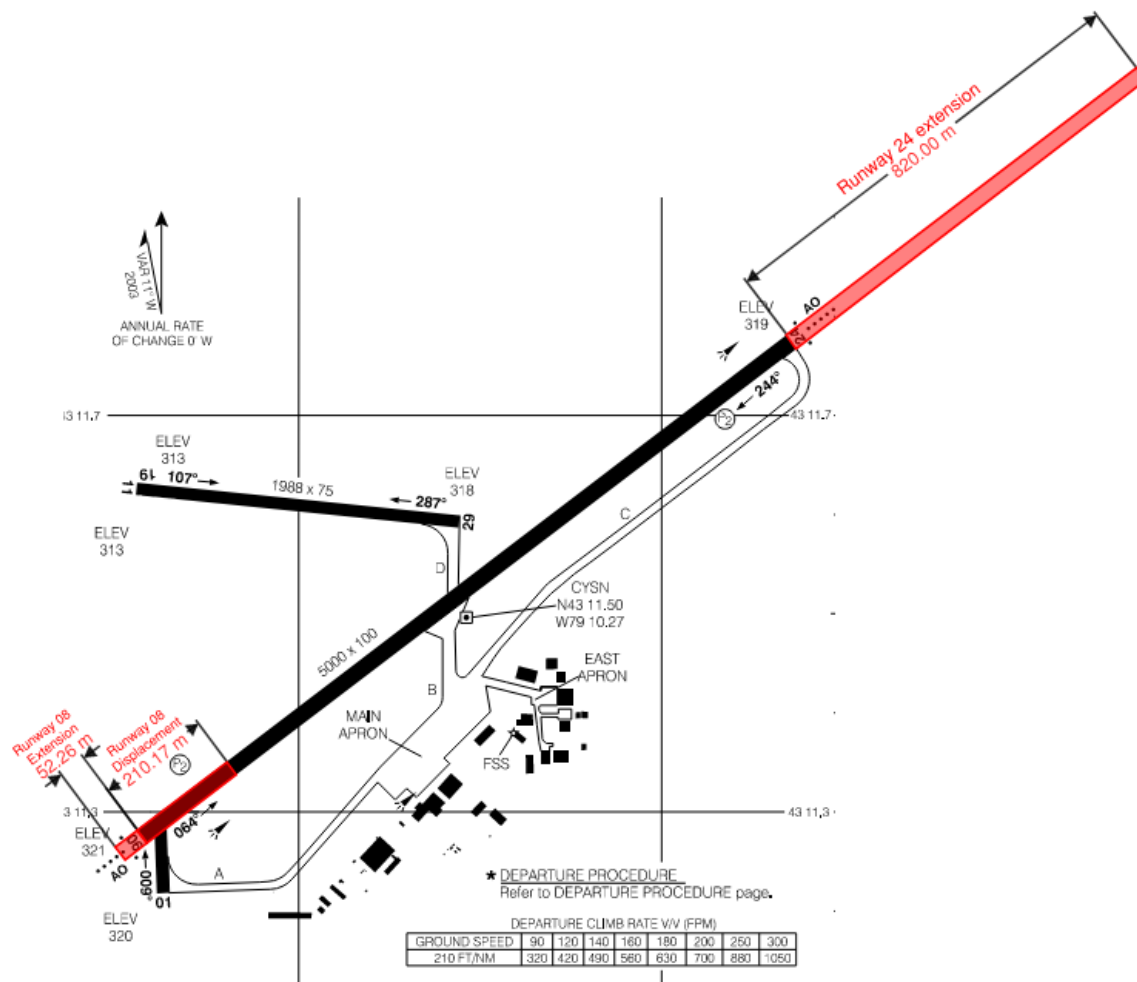


Figure 3-1: Future Runway Configuration

3.2 FUTURE OBSTACLE LIMITATION SURFACES

Upon implementing a level-of-service change to Precision, the runways will need to adopt the new Obstacle Limitation Surfaces (OLS) in accordance with the *Aerodromes Standards and Recommended Practices (TP 312) 5th Edition*. Therefore, the AZR protections should include protections for both the existing and future runway configuration.

The introduction of TP 312 5th Edition in 2015 included several changes to the OLS requirements. The OLS continues to include the runway strips, approach surfaces and transitional surfaces. Refer to **Figure 3-2** for three-dimensional illustration of the OLS retrieved from TP 312 5th Edition.

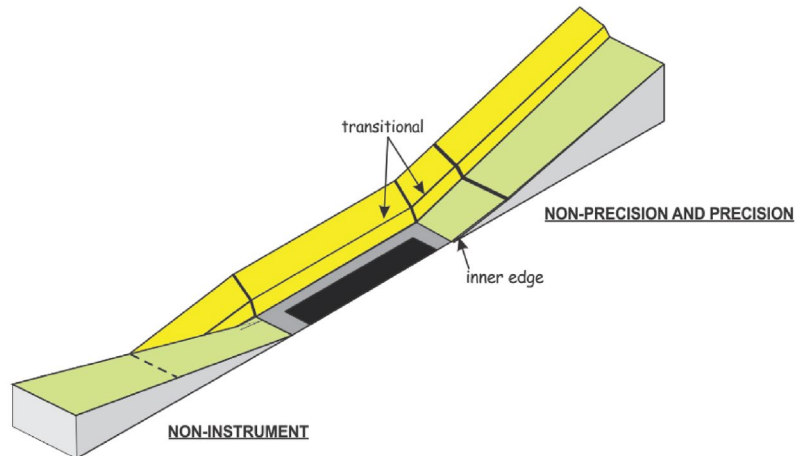


Figure 3-2: Obstacle Limitation Surfaces - TP 312 5th Edition

Additionally, the latest standards have introduced new surfaces, including the Inner Transitional Surface. This surface was introduced to ensure protection for navigational aids, mobile objects (aircraft or other vehicles) near the runway. These surfaces are typically contained within the Airport property limits, except where any potential future runway extensions that would extend beyond the Airport property boundaries. As illustrated **Figure 3-3** the Inner Transitional Surface is located above the Transitional Surface. Therefore, the Transitional Surface will always be the most critical surface and would not be declared as a separate surface under the future AZRs.

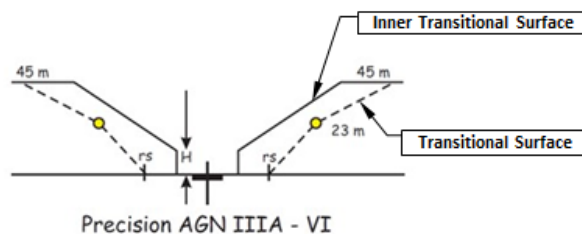


Figure 3-3: Inner Transitional Surface v. Transitional Surface

The changes to the standards also include the changes to the definition and characteristics of the take-off surfaces. In the previous edition, the take-off surface was combined with the approach surface. However, the surface has been redefined as its own surface to begin at the end of the clearway, which is also the end of the Take-Off Distance Available (TODA).

Similar to the Airport's existing certification OLS, once the Airport declares TP 312 5th Edition for its OLS, the Airport will have the obligation to ensure the OLS is clear of obstacles. Furthermore, the regulations that apply to airports are not considered legally binding to owners of lands within the limits of the OLS to ensure they maintain clearance from the surfaces. The AZR should include sufficient protections for the Airport's anticipated future configuration and associated OLS are protected.

The future certification OLS characteristics are outlined in **Table 3-2**. These characteristics are also illustrated in **Figure 3-4** for the existing runway configuration and **Figure 3-5** for the future runway configuration.

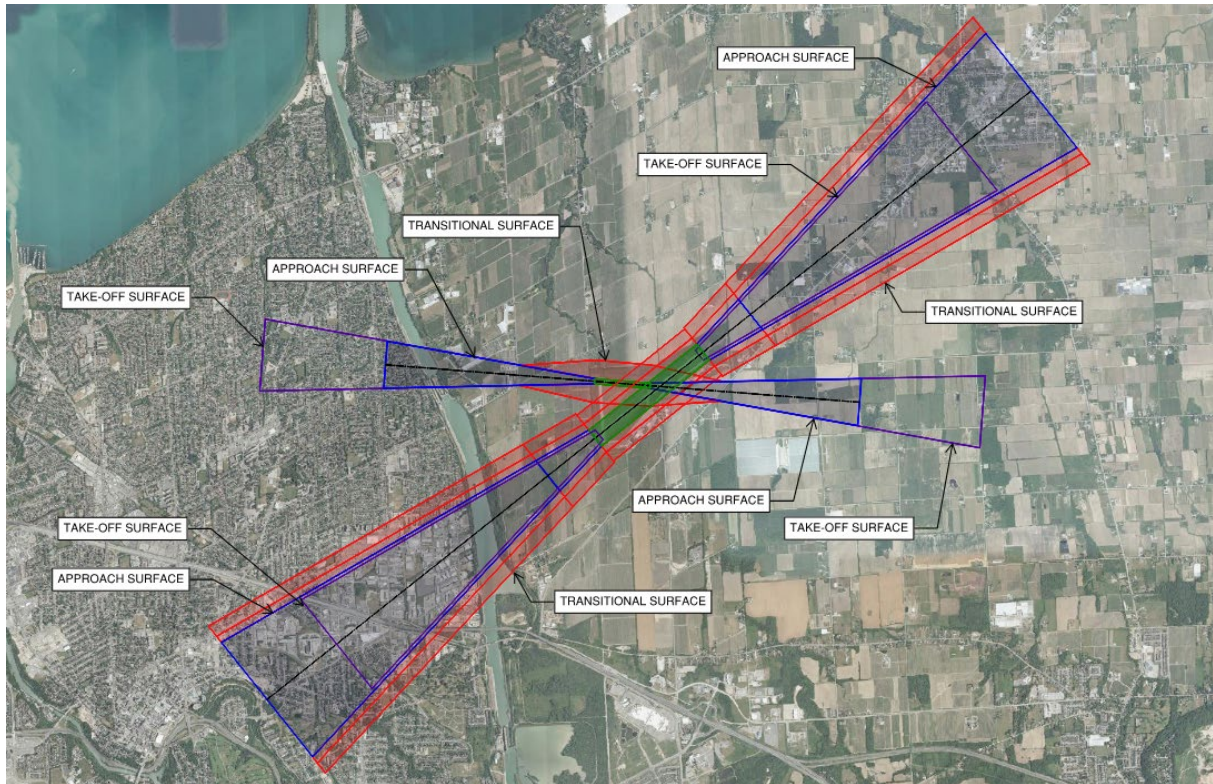


Figure 3-4 Future OLS based on Existing Runway Configuration

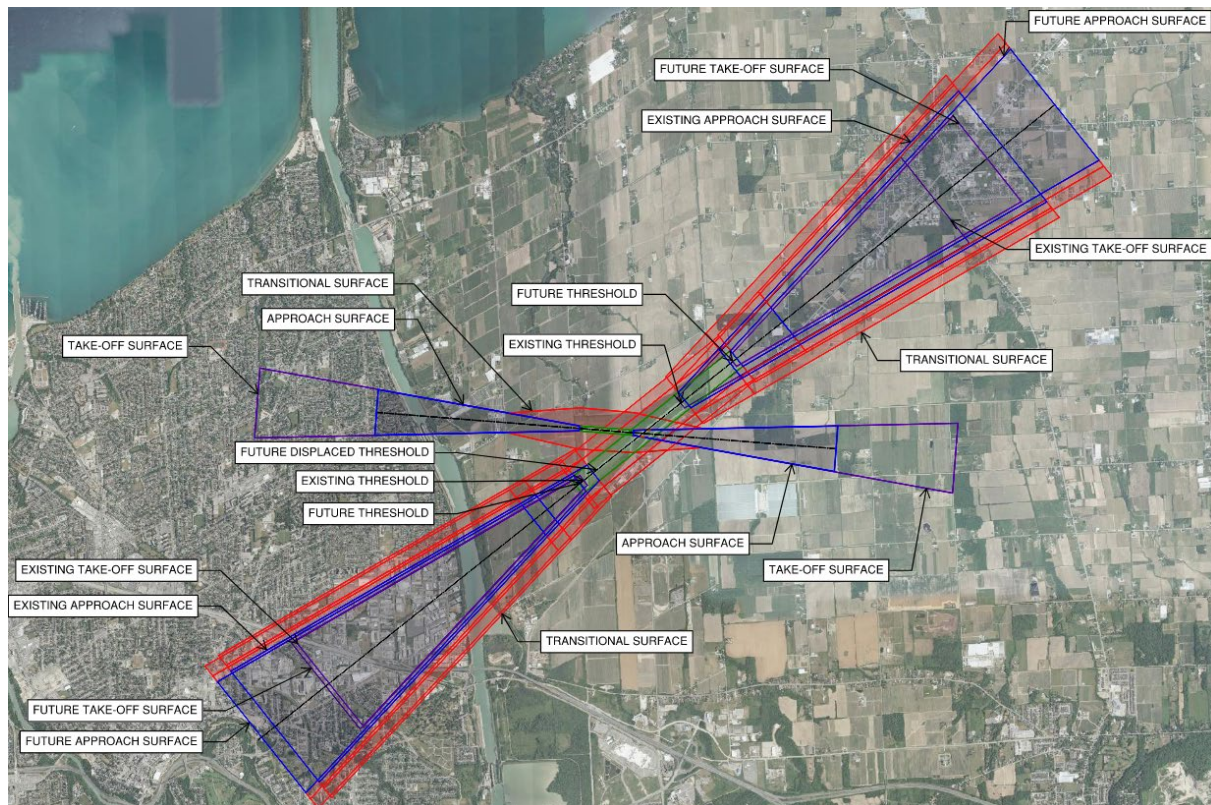


Figure 3-5 Future OLS based on Future Runway Configuration

Table 3-2: Future AOM OLS Characteristics by Runway

OLS Characteristics	Runway 06	Runway 24	Runway 11	Runway 29
Runway Strip				
Overall Width	244m	244m	60m	60m
Distance from Threshold	61m	61m	30m	30m
Approach Surface				
Inner Edge Length	244m	244m	60m	60m
Distance from Threshold	61m	61m	30m	30m
Divergence	15%	15%	10%	10%
First Section Length	720m	720m	2,500m	2,500m
First Section Slope	2.0%	2.0%	5.0%	5.0%
Second Section Length	4,280m	4,280m	N/A	N/A
Second Section Slope	2.9%	2.9%	N/A	N/A
Overall Length	5,000m	5,000m	2,500m	2,500m
Transitional Surface				
First Segment Slope	25%	25%	20.0%	20.0%
Second Segment Slope	14.3%	14.3%	N/A	N/A
Inner Transitional Surface				
Distance from Centreline	61	61	30	30
Slope First Segment	Vertical	Vertical	Vertical	Vertical
Slope Second Segment	16.7%	16.7%	N/A	N/A
Take-Off Surface				
Inner Edge Length	300m	60m	300m	91.44m
Divergence	15%	15%	10%	10%
Slope	2.5%	2.5%	5%	5%
Overall Length	4,000m	4,000m	4,000m	4,000m

4. IFP ANALYSIS

Identifying the gaps in the AZR protection of Instrument Flight Procedures (IFPs), and specifically IFR minima provided of such, has been a growing issue of national importance. In recent months, the process by which areas are identified along with corresponding maximum obstacle height limits, has been subject to collaborations between major airports, Transport Canada, NAV CANADA, and Avia NG along with our external design organization partner IDS-North America. Through these collaborations, the complexity of such an exercise has been highlighted and an approach for consideration of multiple approach procedures developed.

Avia NG has applied a hybrid approach to the identification of existing and future IFP obstacle clearance requirements and enabling 3D models to be utilized to assess areas.

In order to account for existing and future runway scenarios, IFPs were developed first for the existing runway and then for a future runway scenario accounting for the possible increase in runway length to between 7,500' and 7,861' with a displacement for Threshold 06.

In total 20 IFPs were developed and assessed.

For the existing runway configuration 06 and 24:

- Instrument Departure
- ILS (CAT I)
- LNAV
- LNAV/VNAV
- LPV

For the future runway configuration 06 and 24:

- Instrument Departure
- ILS (CAT I)
- LNAV
- LNAV/VNAV
- LPV

Assessments were conducted based on application of current TP 308 criteria and with consideration to the existing obstacle environment.

The overarching aim being to identify and preserve existing minima and to optimize the availability of airspace for future minima with opportunity to upgrade Runway 06-24 to an instrument precision classification, resulting an improved ability for aircraft to use the Airport in inclement weather and to support future use schedule air carriers. **Figure 4-1** illustrates the extent of the Obstacle Evaluation Surfaces for the Niagara District Airport.

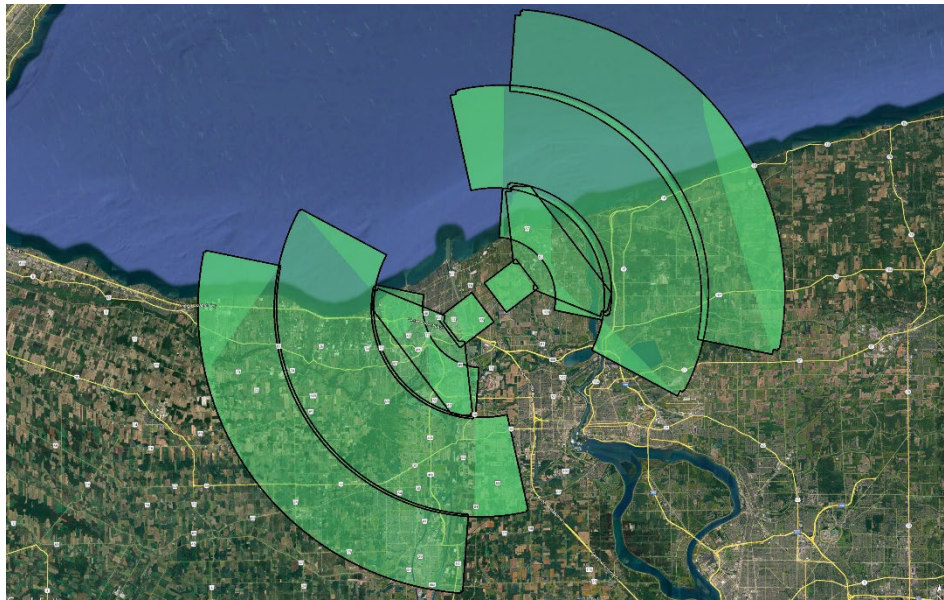


Figure 4-1 IFP Obstacle Evaluation Surfaces

5. FINDINGS

Based on, and with consideration to, the combination of aeronautical constraints identified within the preceding sections, an analysis of the key Areas of Focus has been completed along with a broader identification of AZR gaps. To that end, the following presents the maximum allowable obstacle elevations in metres Above Sea Level (ASL) and approximate heights above grade for each Area of Focus in order to prevent impact to the combination of existing and future OLS and IFPs. The constraints identified are preliminary and to identify constraints in greater detail, such as on a site-by-site basis, or to a specific grid covering a specific area, is beyond the scope of this current study. However, it may be recommended that additional study could form part of subsequent reviews and feed into the formal process of AZR amendment which can take several years to complete.

Figure 5-1 includes an overview of the existing AZR extent illustrated in blue and the recommended extent of the AZRs illustrated in bright green. **Figures 5-2** and **5-3** provides further zoomed-in views for additional context. The recommended extent of the AZR would restrict development height to ensure no conflict with the instrument flight procedures. The exact height over these areas is subject to further analysis. However, as part of the current scope, certain areas of focus were identified through consultation with the municipalities and estimated heights were identified. Refer to the subsection for more details.

Notably in **Figures 5-1** to **5-3** is the extent of the Recommended Extent of the AZR has been trimmed to avoid overlapping with the United States of America (USA) since the AZRs cannot extend into the USA.

The recommendations included consideration to obstacles of up to approximately 60 stories or 230m (750 ft.) above ground.

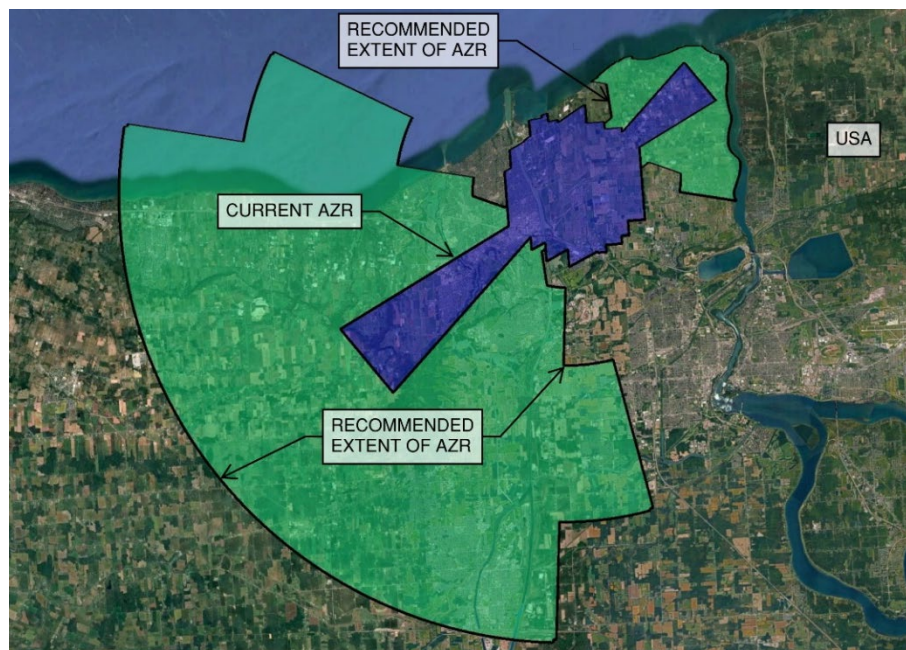


Figure 5-1: Recommended Extent of AZR - Overview Map

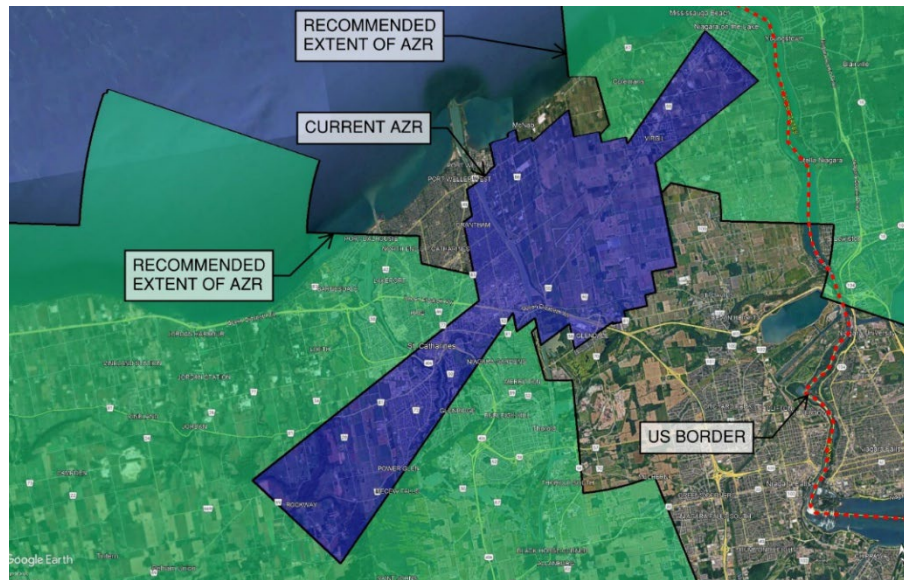


Figure 5-2: Recommended Extent of the AZR - Zoom In 1

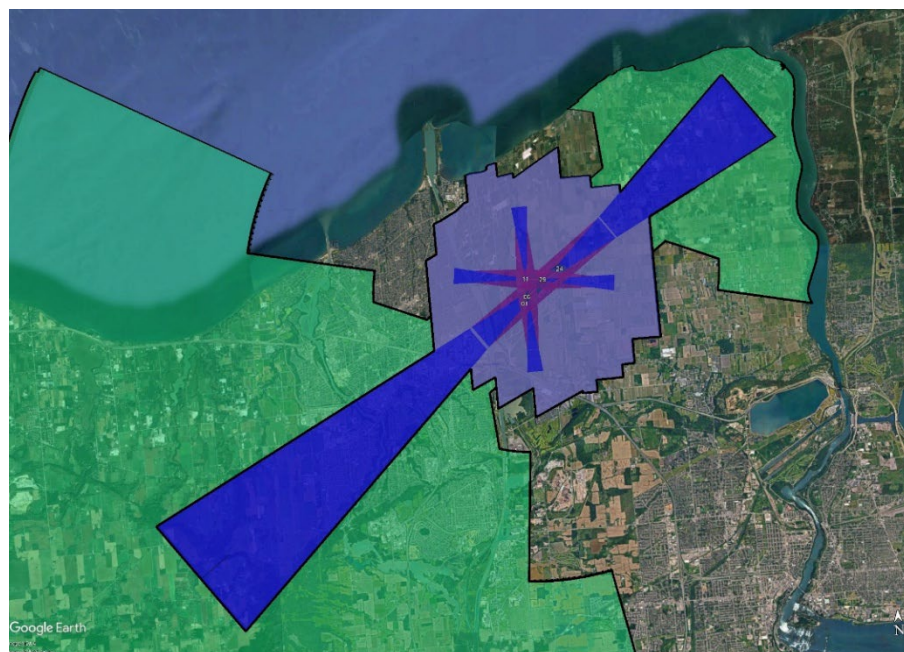


Figure 5-3: Recommended Extent of the AZR - Zoom In 2

5.1 FINDINGS BY AREA OF FOCUS

A total of eight (8) areas of focus were identified during consultation with the municipalities, including St. Catharines, Niagara-on-the-Lake and Niagara Falls. This section details the impact of the recommended AZR to these areas. However, it is important to note that land outside of these areas are still subject to the recommended height constraints, as illustrated in **Figure 5-1**. However, further detailed analysis is required to determine the proposed height constraints. Additionally, a review of the proposed twinning of the QEW Skyways bridge was conducted to determine the recommended AZR constraints over the site.

Findings within this section have been grouped by key Areas of Focus as identified by the Airport and their municipal partners.

5.1.1 CITY OF ST. CATHARINES

Queenston Street Intensification Area

- Majority of the lands are subject to current AZR constraints.
- Lands remain subject to the future OLS.
- Based on a review of the existing and future IFPs, the height constraints could be raised to approximately 198m ASL associated with preservation of existing and future IFP minima. LNAV has been identified as most critical over this area.
- Refer to **Figures 6-4** and **6-5** for the recommended height constraints over the Queenston Street Intensification Area.

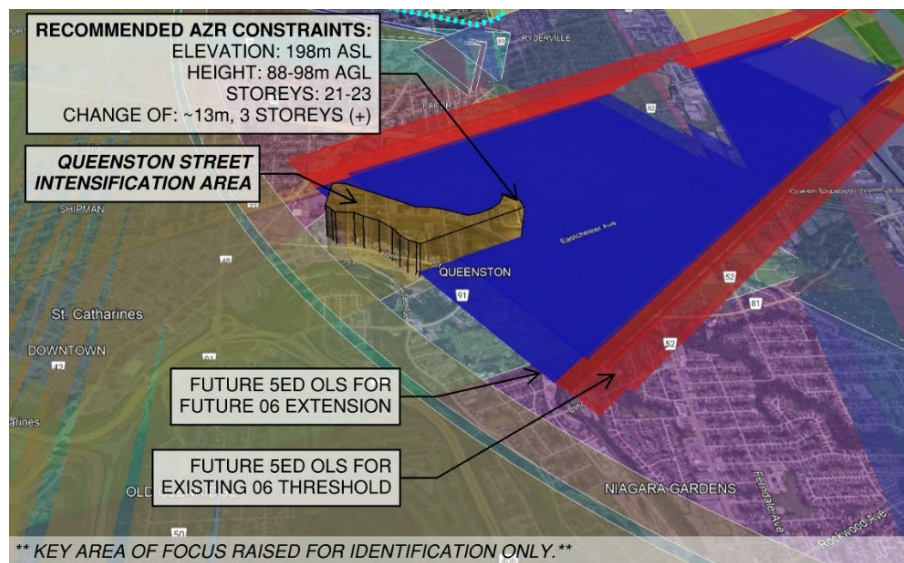


Figure 5-4: Queenston Street Intensification Area - View 1

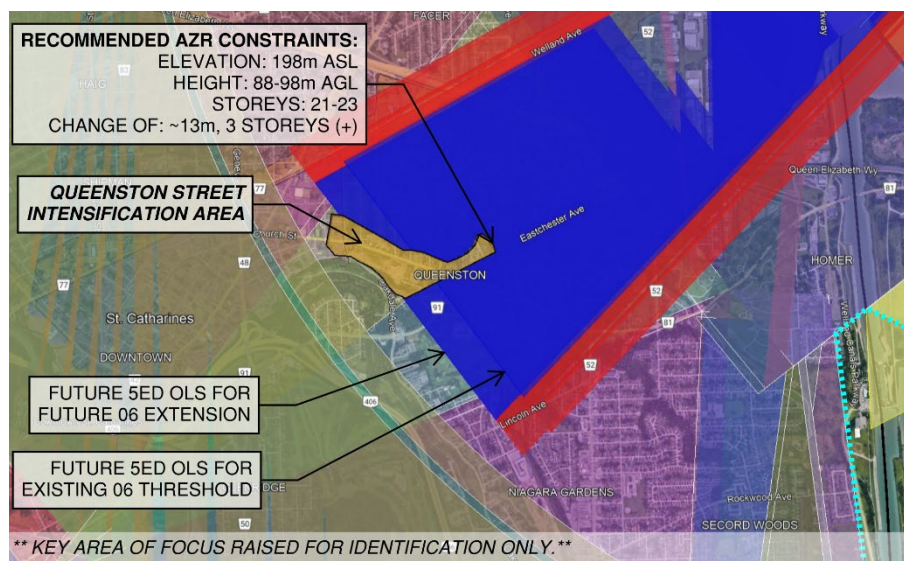


Figure 5-5: Queenston Street Intensification Area - View 2

Welland Avenue Intensification Area

- Refer to **Figures 5-6** and **5-7** for illustrative summary of the below findings.
- The majority of the area west of Niagara Street (Road 48) and along Niagara Street are not currently subject to AZR height constraints, except the area along Road 42, 180m north of Adam St.
- Area west of Niagara Street is not currently subject to existing and future OLS.
- Area west of Niagara Street would have a new height constraint of approximately 198m ASL associated with preservation of existing and future IFP minima. LNAV has been identified as most critical over this area.
- Area east of Niagara Street, north of Welland Avenue (Road 77) and west of the QEW:
 - is not subject to the current AZR;
 - would be subject to future OLS;
 - would have a new height constraint of approximately 198m ASL associated with preservation of existing and future IFP minima. LNAV has been identified as most critical over this area.
- Area east of the QEW:
 - is to remain subject to the existing AZR height constraints, which is the critical constraint in this area;
 - is not subject to the existing AZR would be further limited to 140m ASL;
 - remains subject to existing and future OLS; and
 - subject to IFP.

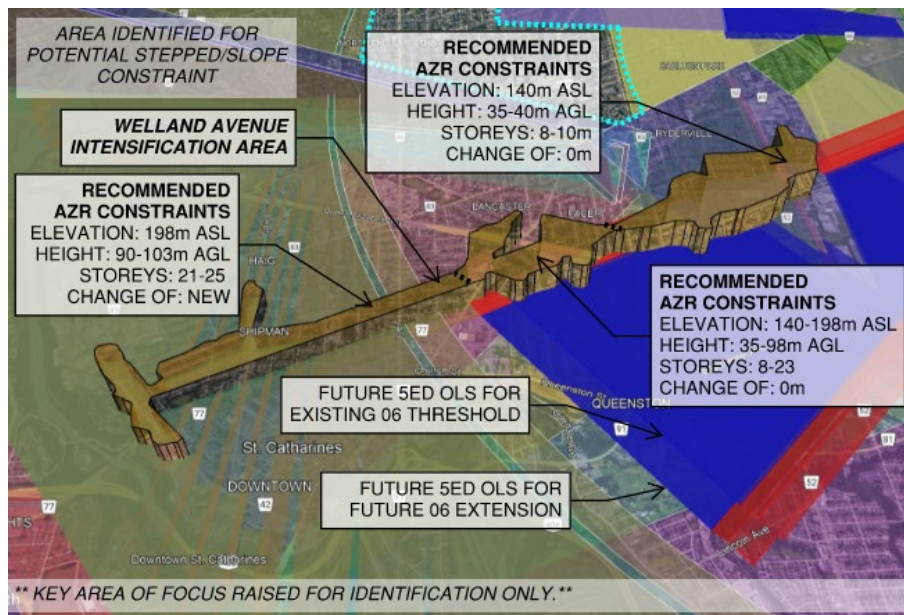


Figure 5-6: Welland Avenue Intensification Area - View 1

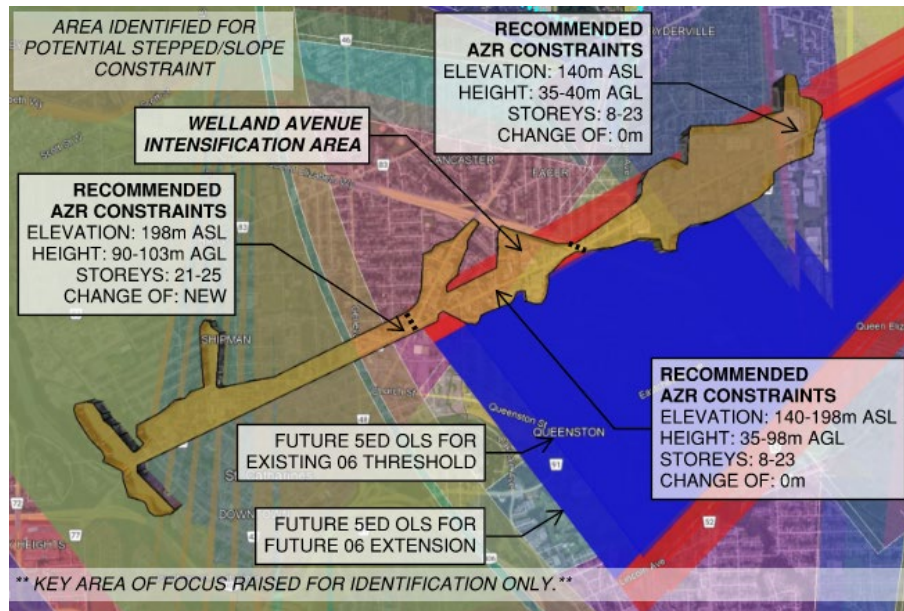


Figure 5-7: Welland Avenue Intensification Area - View 2

Go Transit Station Secondary Plan Area

- Majority of the lands are subject to current AZR constraints and would apply, except in section near Ridley Heights.
- Based on the review of the existing and future OLS requirements, additional heights constraints would not be necessary.
- Based on review of existing and future IFPs, additional height constraints would be needed to preserve optimal minima.
- The AZR height constraint over a portion of the area could be raised. Recommended height constraint for further investigation could vary from between approximately 230m to 270m ASL. Heights will vary across the area, generally increasing further from the Airport.
- Refer to **Figures 5-8** and **5-9** for illustration of the recommended AZR height constraints within the Go Transit Station Secondary Plan Area.

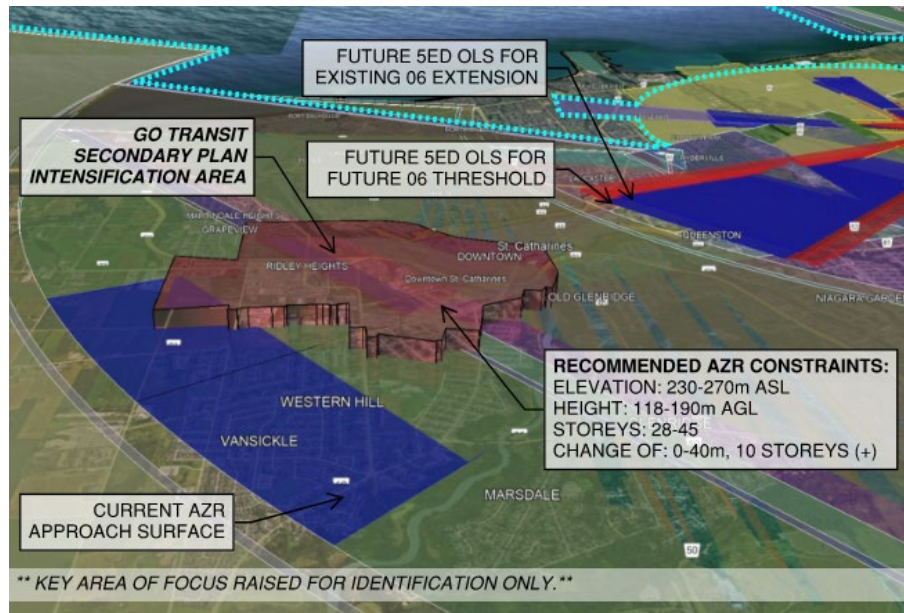


Figure 5-8: Go Transit Secondary Plan Intensification Area - View 1

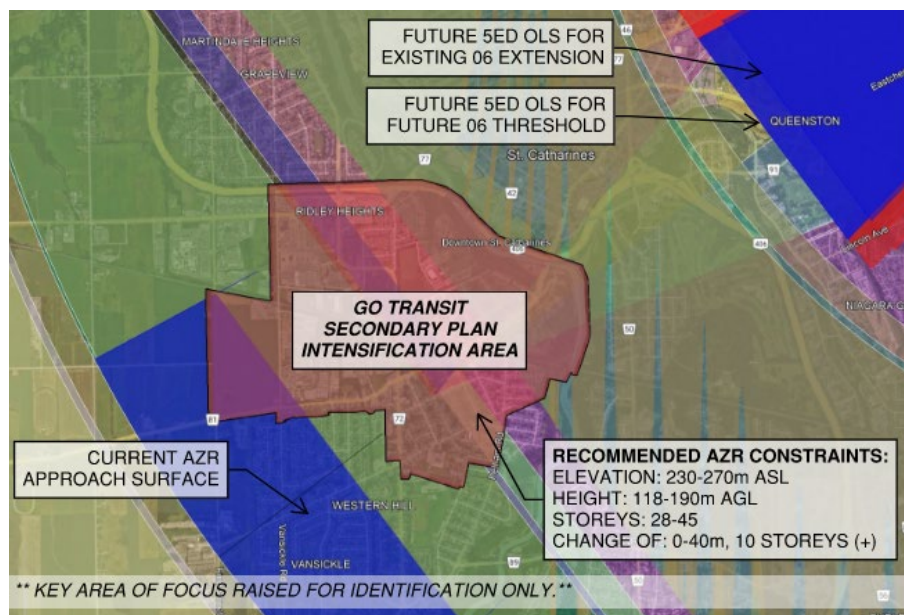


Figure 5-9: Go Transit Secondary Plan Intensification Area - View 2

Areas with No Municipal Height Limit

- While identified officially as “Areas with No Height Limit”, a portion of these areas remains today subject to the constraints of the existing AZR.
- Majority of the lands are subject to current AZR constraints and would apply, except on parcels or portions of parcels within approximately 80m of Welland Avenue.

- A portion of the northernmost corner of the area nearest Welland Avenue would be subject to OLS requirements for existing and extended runway scenarios.
- Based on review of existing and future IFPs, additional constraints would be needed to preserve minima. Recommend height constraints should be lowered to approximately 198m ASL. LNAV has been identified as most critical over this area.
- Refer to **Figures 5-10** and **5-11** for illustration of the recommended height constraints.

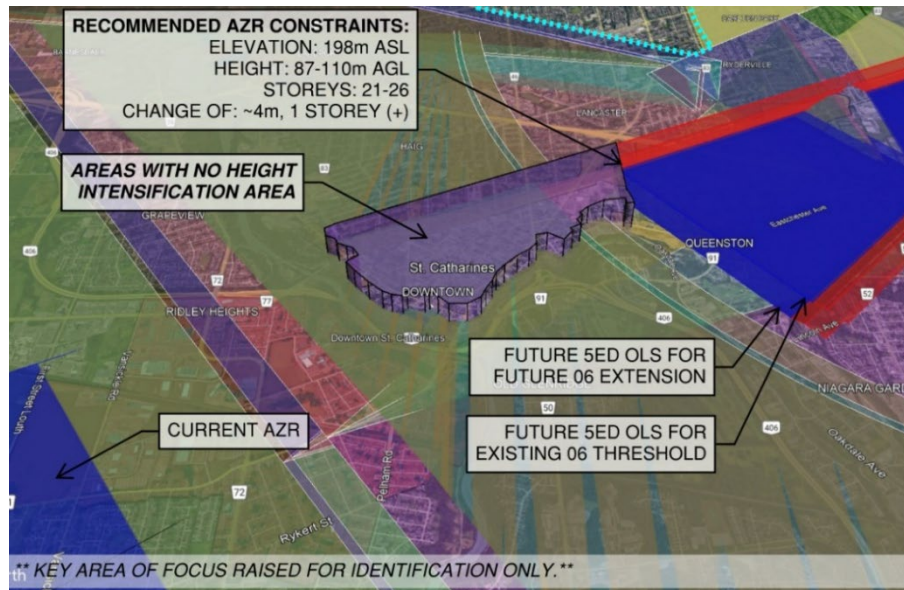


Figure 5-10: Areas with No Height Intensification Area - View 1

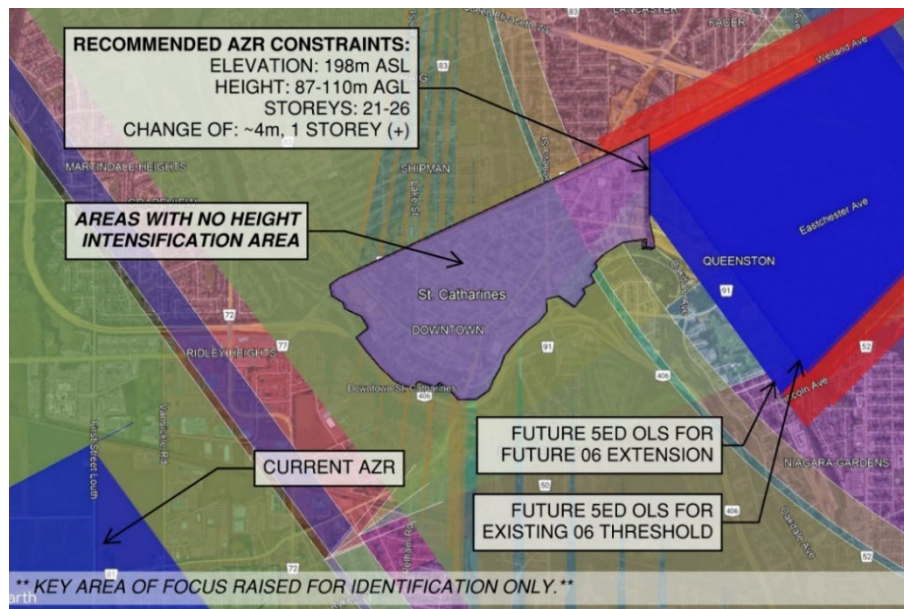


Figure 5-11: Areas with No Height Intensification Area - View 2

5.1.2 NIAGARA ON THE LAKE

Virgil

- Majority of the lands are subject to the current AZR.
- The southernmost corner is subject to existing OLS height constraints of 140m ASL.
- The majority of the lands are subject to future OLS height constraints associated with existing and future runway configurations.
- Based on review of existing and future IFPs, additional constraints would be needed to preserve minima.
- Refer to **Figures 5-12 and 5-13** for the recommend AZR height constraints of 140m ASL within Virgil.

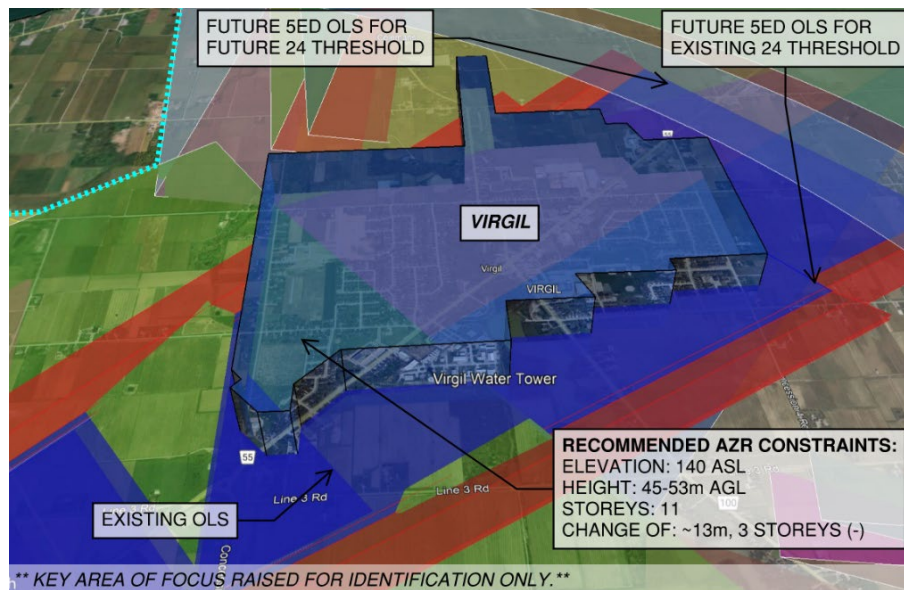


Figure 5-12: Virgil - View 1

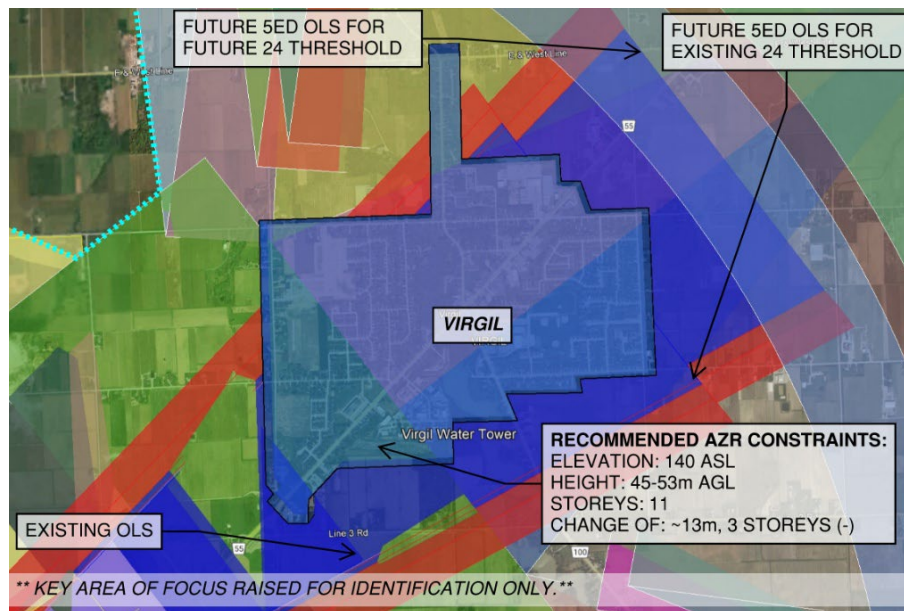


Figure 5-13: Virgil - View 2

Glendale

- The land is subject to current AZR height constraints of 140m ASL.
- The land is subject to existing certification OLS requirements.
- Glendale is not subject to future OLS requirements. However, it is recommended that the Airport consider ICAO recommendations and preserve an outer surface of at least 4,000m radius centres on the ARP. This outer surface is recommended to be preserved for protection of circling and circuit pattern traffic in accordance with recommendations made by ICAO.
- Refer to **Figures 5-14** and **5-15** for illustration for proposed modification of the AZR outer surface within Glendale.

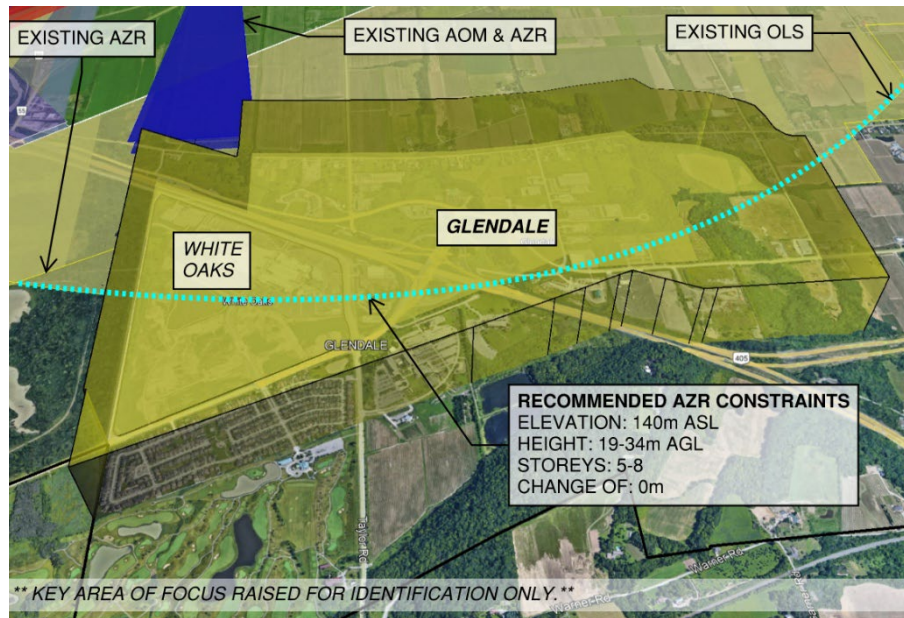


Figure 5-14: Glendale - View 1

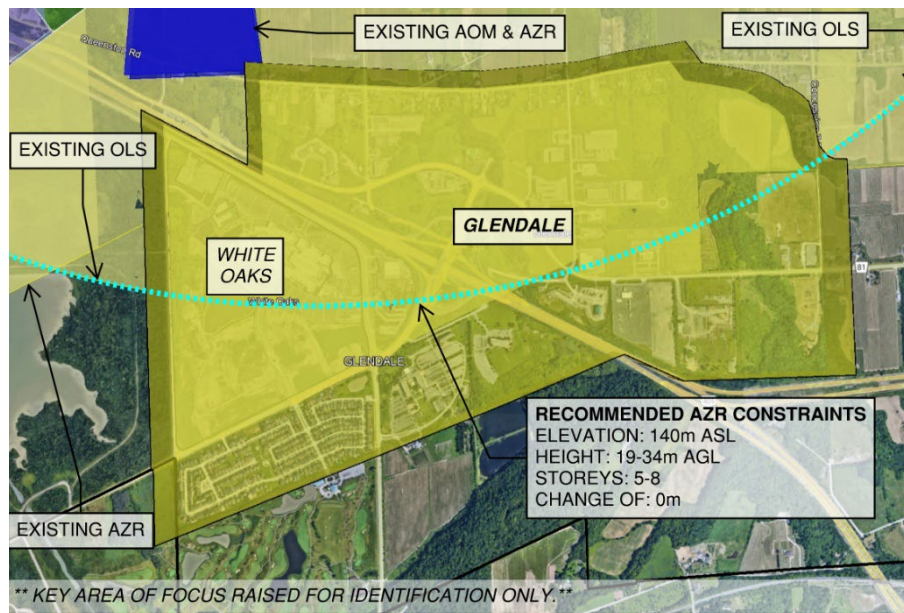


Figure 5-15: Glendale - View 2

Historic Old Town

- A portion of the lands are subject to the current AZR.
- The land is not subject to existing and future OLS.
- Based on a review of the existing and future IFPs, the height constraints could be implemented at approximately 240m ASL to preserve minima.
- Refer to **Figures 5-16** and **5-17** for illustration of the recommended height constraints.

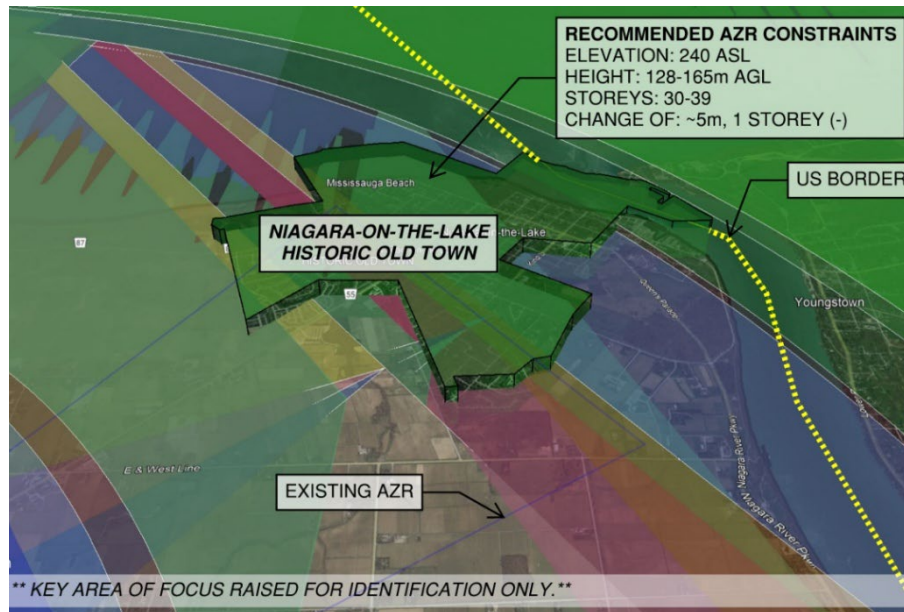


Figure 5-16: Niagara-on-the-Lake Historic Old Town - View 1

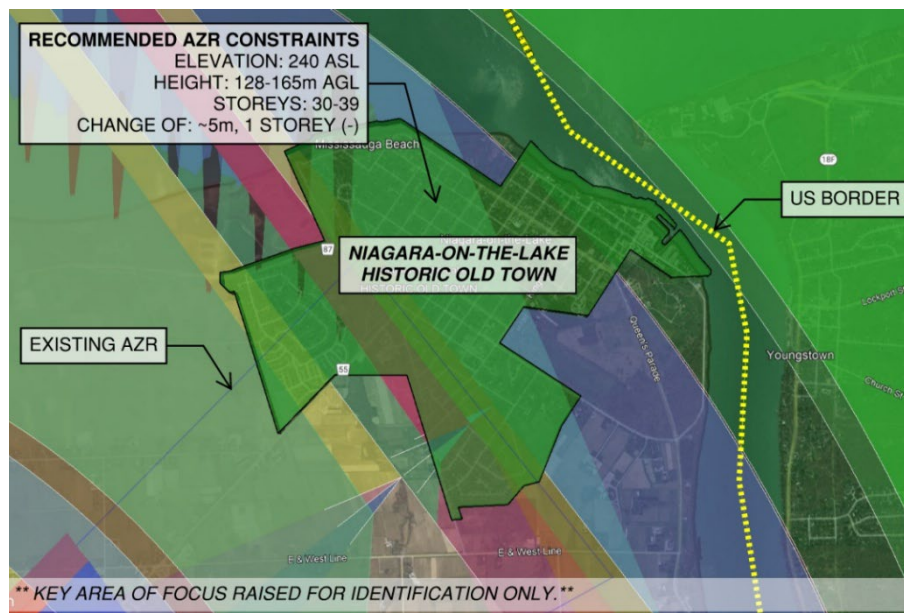


Figure 5-17: Niagara-on-the-Lake Historic Old Town - View 2

5.1.3 NIAGARA FALLS

- Area is not subject to the current AZR.

- Area falls outside of primary areas of concerns for IFP protections.
- Recommend monitoring area for likelihood of obstacles exceeding 330m ASL for potential impact to IFPs.
- Refer to **Figure 5-18** for illustration of Niagara Falls relative to the recommended extent of the AZR.

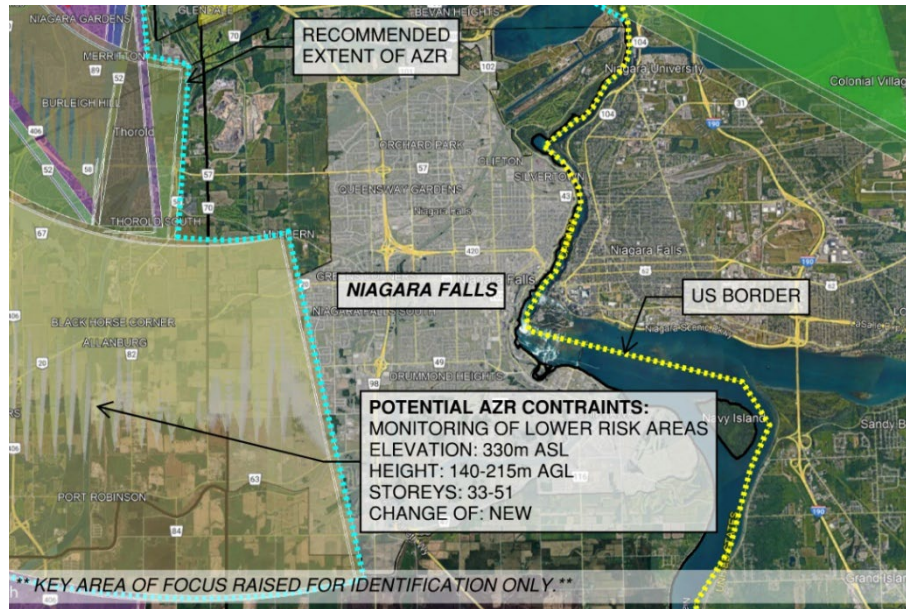


Figure 5-18: Niagara Falls

5.1.4 TWINNING OF THE EXISTING QEW SKYWAY BRIDGE

- The area is subject to the current AZR height constraints of at least 140m ASL, however due to the age of the bridge, existing intrusions to the AZR are considered to be legally nonconforming or “grandfathered”.
- The proposed bridge location, as presented to Avia NG, is within the limits of the existing OLS which has the same height restriction as the current AZR.
- A portion of the bridge would be subject to future OLS height constraints associated with existing and future runway configurations.
- Based on a review of the existing and future IFPs, as well as future OLS, the height constraints could be implemented at approximately 161m ASL to preserve minima. Lower constraints would be applicable to the western most portion of the bridge and should be subject to additional assessment.
- Refer to **Figure 5-19** for illustration of the QEW Bridge ‘Planning Box’ relative to the recommended extent of the AZR.

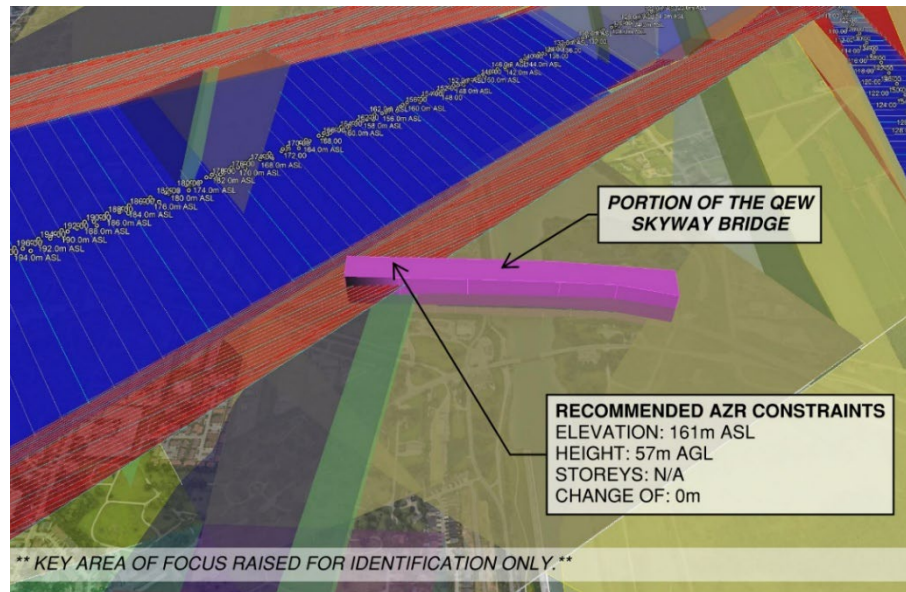


Figure 5-19: QEW Skyway Bridge

6. CONCLUSION AND RECOMMENDATIONS

This study has identified several areas outside the extent of the existing AZR that if left uncontrolled may pose threat to the preservation of existing and future airport operations as impacts to the Airport's OLS and IFPs could result future conflicting development.

A guiding principle for this study has been to uphold airport certification standards, preserve existing IFP minima, and to optimize the availability of airspace in support of future IFPs for both the existing and contemplated future runway extension scenarios.

Given the gaps in protection that have been identified, pursuing an amendment to the AZR on this basis is warranted, so long as support for the long-term preservation of the Airport as a general aviation and commercial use facility is secured.

The AZR should be updated to reflect the combination of height constraints as discussed within the findings in Section 5 and the criteria defined in Sections 2, 3 & 4. Additionally, contemporary clauses pertaining to prohibition of electronic and radio interference, and wildlife hazards should be incorporated.

A reduction in AZR protection is not recommended except where there is no regulatory, nor safety nor existing or future operational need for it. Furthermore, since the criteria that applies to the design of IFPs is subject to change and is known to change more frequently than other aviation standards, the implications of such need to be anticipated. The risk of a standards change impacting the Airport highlights the need to preserve a buffer of clearance between what is today the minimum and what is proposed for AZR amendment, allowing some room for changes that may occur over time. Similar can be said of the standards applicable to OLS.

The characteristics for future AZR should be based on addressing the gaps in protection that have been identified from this study and following an appropriate examination of risk of potential for conflicting land uses. The geographic area that IFPs cover is significant, and while protection in all areas may be desirable by some, this study is not to suggest that the entirety of airspace needed for IFP use be protected, but rather to recommend that the areas subject to real or perceived risk of conflict with future development be addressed.

Through further consultation with impacted municipalities, the maximum height of anticipated future development could be identified and the AZR extent be set based on that.

Following the conclusion of the Airport's Master Planning Process, should there be support conveyed for the preservation of level-of-service improvements and long-term development, a prudent next step would be to proceed with a request of the Minister to initialize the AZR update process.

