

PLANNING ANALYSIS AND RECOMMENDATIONS – WINNIPEG INTERNATIONAL AIRPORT

FINAL SUMMARY REPORT | August 30, 2021



HM AERO
AVIATION CONSULTING

Landmark
Planning & Design Inc.



**PLANNING ANALYSIS AND RECOMMENDATIONS –
WINNIPEG INTERNATIONAL AIRPORT**

Final Summary Report

Province of Manitoba
Manitoba Municipal Relations

August 30, 2021

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Revision History

Rev.	Date	Status	Notes
0	February 18, 2021	Draft	Issued for internal review to the Province of Manitoba.
1	February 25, 2021	Final	Issued for use by the Province of Manitoba. Revisions made based on internal comments.
2	August 30, 2021	Final	Issued for use by the Province of Manitoba. Revisions made based on technical changes to the Noise Exposure Forecast Study. Changes include updated Ultimate NEF contour map and land use analyses.

1 INTRODUCTION

In September 2020, the Province of Manitoba engaged HM Aero Inc. (HM Aero) and Landmark Planning & Design Inc. (Landmark Planning) to undertake a technical and planning analysis related to land uses in the vicinity of Winnipeg James Armstrong Richardson International Airport (Winnipeg International Airport). Based on the findings of the project team's Noise Exposure Forecast (NEF) Study¹, a Planning Analysis and Recommendations Report² was prepared which contains:

- A planning hierarchy review of relevant federal, provincial, and municipal guidelines and regulations pertaining to land use in the vicinity of Winnipeg International Airport;
- A case study analysis of airport-related planning regulations and guidelines in three Canadian municipalities;
- A review of supplementary noise mitigation measures;
- A land use planning analysis of the Ultimate-Term NEF scenario; and
- Planning recommendations and suggested amendments to federal, provincial, and municipal guidelines and regulations.

This Summary Report presents highlights and key findings of the Planning Analysis and Recommendations Report (Full Report).

2 PLANNING HIERARCHY REVIEW

The planning hierarchy review, as detailed in the Full Report, included a scan of all relevant regulations and guidelines that pertain to planning in the vicinity of airports at the Federal, Provincial, and Municipal levels. For brevity, this Summary Report will focus on the most pertinent regulations and guidelines.

2.1 Federal

The Federal guidelines, regulations, and approval processes addressed in the Full Report include:

- *TP1247 – Land Use in the Vicinity of Aerodromes (9th Edition)*;
- *Winnipeg International Airport Zoning Regulations (SOR/81-708)*;
- *Transport Canada's Aeronautical Assessment Process*; and
- *NAV CANADA's Land Use Program*.

TP1247 – Land Use in the Vicinity of Aerodromes is a guideline which is generally reflected at the Provincial and Municipal levels across Canada. The crux of the guideline is that between the 25 NEF to 30 NEF contours, there may be some annoyance caused by aircraft for noise sensitive land uses (e.g., residential uses). Accordingly, developers should be made aware of this and local authorities should consider acoustic insulation standards.

¹ HM Aero Inc., Landmark Planning & Design Inc. (2021, January 7). *Noise Exposure Forecast Study – Winnipeg International Airport (Final Report)*.

² HM Aero Inc., Landmark Planning & Design Inc. (2021, February 10). *Planning Analysis and Recommendations – Winnipeg International Airport (Final Report)*.

Above the 30 NEF contour, TP1247 errs on the side of caution by stating that residential construction or development between NEF 30 and NEF 35 should not be permitted unless the responsible authority is satisfied that:

- Appropriate acoustic insulation features have been considered in the building;
- A noise impact assessment study has been completed and shows that this construction or development is not incompatible with aircraft noise; and
- Notification mechanisms for developers and potential owners/tenants are in place.

Table 2-1 summarizes TP1247's guidelines in relation to the existing Airport Vicinity Protection Area (AVPA) policies.

Table 2-1: TP1247 Guidelines and AVPA Plan Regulation Comparison

NEF Range	TP1247	AVPA
25 NEF – 30 NEF	Multi-family uses allowed	Multi-family uses limited to 35 units/acre, may be allowed over 35 units/acre through a conditional use application
30 NEF – 35 NEF	Multi-family uses not recommended*	
35 NEF – 40 NEF	No multi-family uses*	No multi-family uses
* As per TP1247, local authorities can allow residential development in the >30 NEF contours with conditions including a sound study and acoustic insulation		

2.2 Provincial

The Provincial guidelines and regulations included in the Full Report include the:

- *Provincial Planning Regulation (81/2011);*
- *Inland Port Special Planning Area Regulation (48/2016); and*
- *City of Winnipeg Charter (S.M. 2002).*

The *Provincial Planning Regulation (PPR)* provides the planning framework for the Province and all local regulations must be generally consistent with this Regulation. The PPR currently contains high-level policy direction related to protecting the integrity of airports and the 24/7 operations of the Winnipeg International Airport.

The *City of Winnipeg Charter* in Section 269(1) sets the framework for the Airport Vicinity Planning Area which was established by the City of Winnipeg. The Charter also enables the potential for more detailed planning regulations regarding airport-adjacent land use planning, which could be implemented through the PPR or similar.

2.3 Municipal

The Municipal guidelines and regulations included in the Full Report include the:

- *OurWinnipeg Plan (67/2010);*
- *OurWinnipeg Complete Communities Direction Strategy (68/2010);*
- *Winnipeg Transportation Master Plan (October 2011);*
- *Winnipeg Airport Vicinity Development Plan (As Amended);*
- *Airport Vicinity Acoustics Insulation By-law No. 6419-94;*
- *City of Winnipeg Zoning By-law No. 200/2006;*

3 CASE STUDY ANALYSIS

The project team undertook a detailed case study analysis of three municipal planning regulations that include policies for development in the vicinity of major Canadian airports. The municipalities were selected to reflect conditions in which the airports were located in close proximity to built-up urban areas with diverse land uses, including:

- Richmond, British Columbia: *City of Richmond Official Community Plan (By-law 9000)*;
- Mississauga, Ontario: *Mississauga Official Plan*; and
- Calgary, Alberta: *Calgary International Airport Vicinity Protection Area Regulation (177/2009)*.

The case study locations provided a breadth of comparison to the Winnipeg context and included diverse approaches to land use planning. Both Richmond and Mississauga provide a regulatory framework which allows for infill development past the 35 NEF contour with stringent requirements for noise studies, acoustic insulation, and caveats registered on title. Calgary's regulations have historically taken a more restrictive approach than Winnipeg's. However, recent amendments have introduced provisions for limited infill and a review process is ongoing which proposes to substantially reduce the geographic extent of the NEF contours based on new projections prepared by a third-party aeronautical consultant.

A summary of case study findings is detailed in Table 3-1. When drawing comparisons from the Case Study Analysis to the local context in Winnipeg, the following are notable:

- Winnipeg's AVPA Plan is more restrictive compared to the plans of Richmond and Mississauga, but is more permissive when compared to Calgary;
- The utilization of Area I and Area II within the AVPA Plan to delineate policy areas is simple and easy to interpret;
- Additional mechanisms, such as registering caveats on title, entering into indemnity agreements, and notifying purchasers of airport noise considerations are tools that could be utilized in addition to land use restrictions in the Winnipeg context; and
- The noise mitigation requirements and calculations included in the Airport Vicinity Acoustics Insulation By-law appear complicated. This is particularly evident when compared to Richmond's approach of requiring an engineering report / sound study and setting decibel levels that must be achieved within dwellings.

Table 3-1: Summary of Case Study Findings

	Richmond	Mississauga	Calgary	Winnipeg
NEF Contour Year	2015	1996 and 2000 (composite)	N/A ⁵	1995
Land Use Restrictions	Yes	Yes	Yes	Yes
Planning Boundaries	Geographic Areas	Geographic Areas	NEF Contours	Geographic Areas
New Development Permitted in NEF Contour > 35	Yes, with conditions	Yes, with conditions	No	No
Sound Study/Insulation Requirements	Yes	Yes	No	Yes
Airport Review of Development Applications	N/A ⁶	Yes	Yes	Yes
Notes Registered on Title	Yes	Yes	No	No

⁵ It is unclear which year's NEF contours are used in the current regulation. However, the City of Calgary is undergoing a proposed amendment to adopt new NEF contours and a corresponding new AVPR area, as shown in Figure 3-11 – Calgary AVPR Existing and Proposed NEF Contours.

⁶ Authors were unable to confirm whether the Airport Authority reviews development applications within the AVPR.

4 SUPPLEMENTARY NOISE MITIGATION MEASURES

The project team undertook a best-practice review of supplementary noise mitigation measures, including building design standards and legal and notification measures. Building design and acoustic insulation standards are widely used as a requirement for development approvals in Canada, including in Winnipeg. There is not a universally applied or regulated mechanism for noise studies or acoustic insulation in Canada. The existing Winnipeg regulation is based on the Acoustic Insulation Factor system which dates to the 1970's, and there is indication from a literature review that this approach may be outdated.

Acoustic insulation regulations may be most effective as a straightforward requirement to achieve a maximum decibel level within a habitable structure. A noise study prepared by an engineer or qualified professional can demonstrate how a proposed dwelling achieves the maximum decibel level. Table 4-1 presents a sample from Winnipeg's *Airport Vicinity Acoustics Insulation By-law No. 6419-94* whereas Table 4-2 presents a sample from the Richmond Official Community Plan to demonstrate differing approaches to regulating acoustic insulation requirements.

Legal and notification mechanisms can include notes on title, caveats, and indemnity agreements. Both Richmond and Mississauga employ these mechanisms, and they are widely used in other jurisdictions across Canada and internationally. In Manitoba, a detailed legal review of the *Real Property Act* may be required to determine if, and which, amendments may be required to facilitate the widespread use of such mechanisms.

Table 4-1: Acoustic Insulation Factor Table from Winnipeg Airport Vicinity Acoustics Insulation By-law No. 6419-94

Acoustic Insulation Factor For Each Component Of The Exterior Envelope Of Rooms And Spaces Used For Sleeping																	
Number Of Components Forming Exterior Portion of Room Or Space Envelope	Noise Contour At Building Site																
	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	Over 40
1	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	43
2	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	46
3	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	48
4	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	49
5	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	50
6	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	51
Column 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18

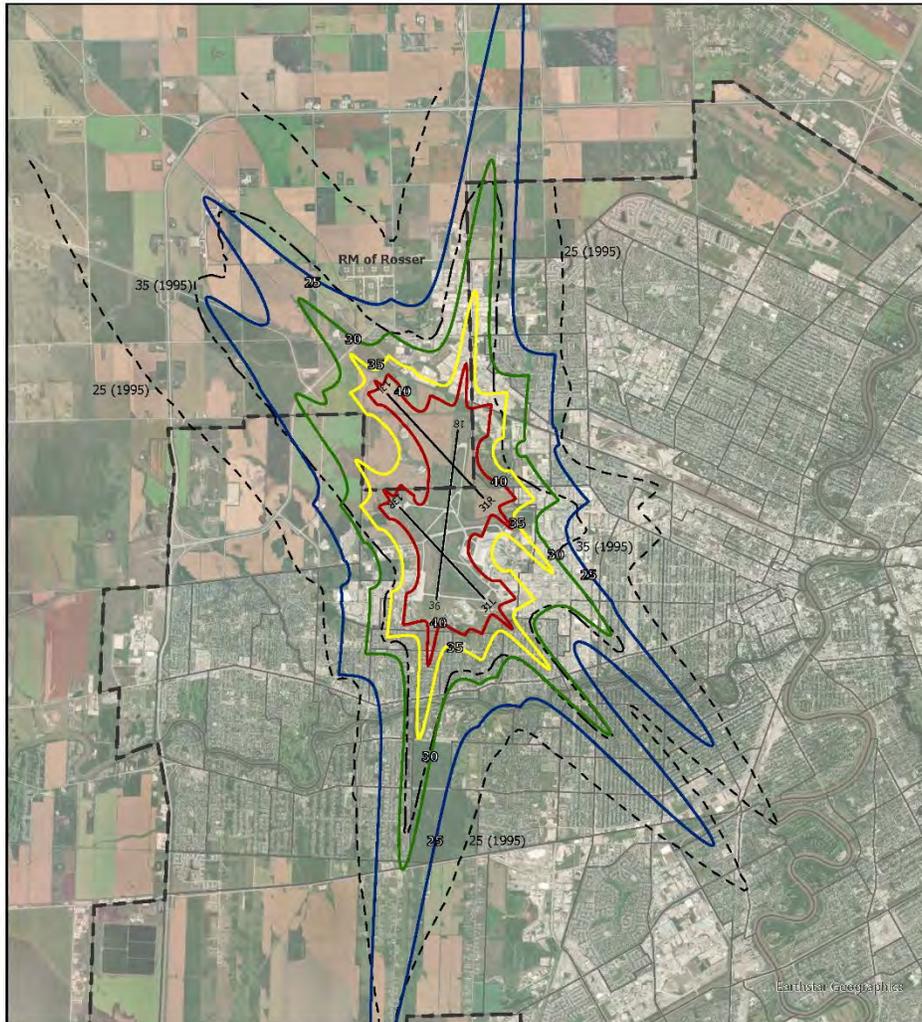
Table 4-2: Acoustic Insulation Requirement Table from City of Richmond OCP

Portions of Dwelling Units	Noise Levels (decibels)
Bedrooms	35 dB
Living, dining, and recreation rooms	40 dB
Kitchen, bath, hallways, and utility rooms	45 dB

5 NOISE EXPOSURE FORECAST AND LAND USE PLANNING

The land use analysis in this Summary Report makes use of the Ultimate-Term NEF contours from the 2021 Noise Exposure Forecast Study. Using the Ultimate-Term scenario for analysis represents the most conservative approach, as it includes a potential third runway and represents the maximum practical capacity of the Airport in a three-runway scenario. The Ultimate-Term conceptual NEF contours are presented as Figure 5-1, demonstrating a significant reduction in their geographic extent compared to the existing 1995 NEF contours.

Figure 5-1: Ultimate-Term Conceptual NEF Contours



NOISE EXPOSURE FORECAST STUDY - WINNIPEG INTERNATIONAL AIRPORT
ULTIMATE-TERM CONCEPTUAL CONTOURS

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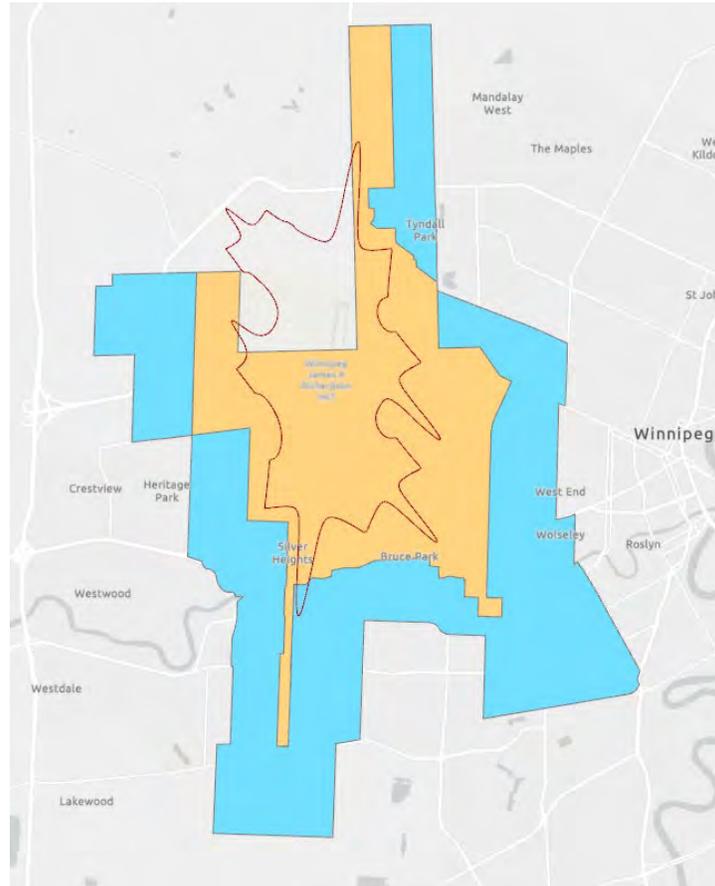
- NEF25 - - - 1995 NEF25
- NEF30 - - - 1995 NEF35
- NEF35 - - - City of Winnipeg Limits
- NEF40



As noted in Table 2-1, the 35 NEF contour generally forms the threshold for land use planning decisions according to both the guidelines of TP1247 and the AVPA Plan. Figure 5-2 demonstrates the Ultimate-Term 35 NEF contour in relation to the existing Area I and Area II boundaries of the AVPA Plan.

Figure 5-2: Ultimate-Term 35 NEF and Existing Area I Boundary

Red Line – Ultimate-Term 35 NEF
Orange Fill – Area I Policy Area; Blue Fill – Area II Policy Area



In the current context of the AVPA Plan, new geographic boundaries for Area I and Area II should be determined based on the updated NEF contours. The selection of the existing Area I and Area II boundaries was based on a series of factors, where NEF contours formed the primary selection criteria. After establishing the 1995 contours, more identifiable (and often conservative) boundary lines were selected for use in the current AVPA Plan. Any subsequent amendment to the AVPA Plan could undertake a similar process for establishing revised Area I and / or Area II boundaries based on the updated NEF contours. As shown in Table 5-1, approximately 7,000 acres of land are currently under a development restriction that does not allow for the addition of residential units (i.e., Area I), while approximately 8,900 additional acres are restricted by conditional use approval and noise standards (i.e., Area II), which may or may not prevent the addition of new residential units on a case-by-case basis. Table 5-3 provides data illustrating the amount of land by zoning category that falls within the NEF contours in the Ultimate-Term scenario. As might be expected based on the reduced geographic footprint of the Ultimate-Term NEF contours, updating the boundaries of Area I and Area II of the AVPA Plan based on new contours would result in less land being restricted.

As an example of the impacts of decreased restrictions, the change in commercially zoned lands can be examined. While there would be varying degrees of redevelopment potential associated with other zones (e.g., single-family residential zones), commercially zoned lands represent the highest likelihood for redevelopment potential. Table 5-2 shows that 317 acres of commercially zoned land is located within the 1995 30-35 NEF contours. In the Ultimate-Term scenario (Table 5-3), this total decreases to 225 acres. This comparison of commercial land appears more significant when the same analysis is applied to both the 35-40 NEF and >40 NEF contour ranges. Table 5-2 indicates that in the 1995 NEF contours, 215 acres are within this restricted area. Table 5-3 shows that in the Ultimate-Term scenario, this total decreases to 56 acres, of which only 4 acres are located above the 40 NEF contour.

Table 5-1: Land Uses by Zone – Existing Area I and Area II

Zone	Area I		Area II		Total Regulated Parcels	Total Regulated Acres
	Parcels	Acres	Parcels	Acres		
Commercial	350	557.3	382	372.5	32,727	15854.9
Multiple Family	50	29.7	150	176.5		
Single Family	6,425	1,006.6	17,577	2,535.8		
Two Family	59	15.8	6,186	585.0		
Industrial	615	4,076.5	443	775.2		
Other	126	1,291.1	364	4,433.0		
TOTAL	7,625	6,976.9	25,102	8,877.9		

Table 5-2: Land Uses by Zone - 1995 NEF Contours

1995	1995 25-30 NEF		1995 30-35 NEF		1995 35-40 NEF		1995 40+ NEF	
Zone	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres
Commercial	358	341.4	301	317.3	153	168.4	42	46.2
Multiple Family	199	130.1	94	75.7	22	20.1	3	2.0
Single Family	12,903	1,792.7	8,809	1,179.4	4,125	550.2	856	168.6
Two Family	3,634	347.1	1,247	115.9	9	0.9	2	0.1
Industrial	358	682.9	342	807.1	336	848.0	142	2,420.3
Other	372	3,013.8	209	1,542.4	73	701.6	52	431.9
TOTAL	17,824	6,308.0	11,002	4,037.9	4,718	2,289.1	1,097	3,069.2

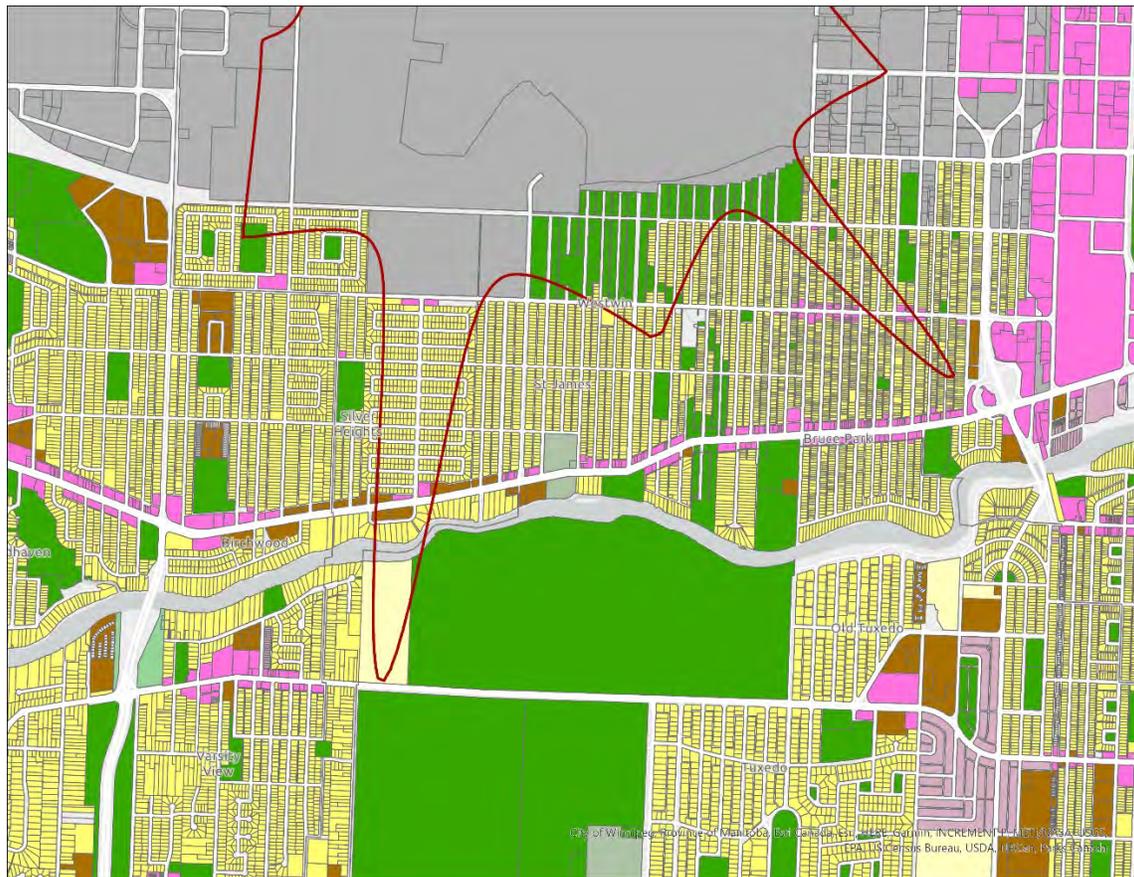
Table 5-3: Land Uses by Zone - Ultimate-Term NEF Contours

ULTIMATE	ULT 25-30NEF		ULT 30-35NEF		ULT 35-40NEF		ULT 40+NEF	
Zone	Parcels	Acres	Parcels	Acres	Parcels	Acres	Parcels	Acres
Commercial	295	280.1	176	224.8	27	52.1	5	3.9
Multiple Family	86	86.6	29	30.1	4	3.3	0	0.0
Single Family	10,048	1,296.5	4,809	655.7	1,183	214.7	29	43.8
Two Family	1,045	105.3	139	10.1	2	0.1	0	0.0
Industrial	406	820.1	293	1,019.4	109	847.8	35	1,399.3
Other	307	2,161.9	87	816.0	50	120.9	12	28.0
TOTAL	12,187	4,750.5	5,533	2,756.1	1,375	1,238.9	81	1,474.9

Using the Ultimate-Term NEF contours as the basis for new AVPA boundaries would result in new residential or mixed-use development being permitted (subject to appropriate zoning and noise protection regulations) in significant redevelopment areas, including: the Polo Park commercial area, most of the Portage Avenue 'strip' in the vicinity of the AVPA, and much of Ness Avenue in the vicinity of the AVPA. It is also noteworthy that the use of the Ultimate-Term NEF contours would result in a net gain in the amount of Employment Lands that would be protected by the AVPA. A detailed view of the area south of Winnipeg International Airport within the Ultimate-Term 35 NEF contour is detailed in Figure 5-3.

Figure 5-3: Lands south of Winnipeg International Airport within the Ultimate-Term 35 NEF Contour

Red Line – Ultimate-Term 35 NEF



6 PLANNING RECOMMENDATIONS

Based on the findings of the Full Report, there are several potential amendments to Federal, Provincial, and Municipal guidelines and regulations to consider. This Summary Report will focus on the most pertinent potential amendments at the Provincial and Municipal levels⁷.

6.1 Provincial Amendments and Areas for Consideration

A fundamental consideration of future planning is whether Manitoba pursues more detailed land use regulations at the Provincial level. The *City of Winnipeg Charter* makes provision for the Province to establish policies for the use of real property and for development in the AVPA. Any amendments or additional regulations at the Provincial level would necessitate subsequent amendments at the Municipal level.

If the above-noted approach is not pursued, the current Provincial regulations would still function in their current state if the AVPA Plan is amended with updated NEF contours and/or is replaced with new land use regulations.

Provincial Planning Regulation (81/2011)

Potential amendments or areas for consideration with respect to the *Provincial Planning Regulation* could include:

- As established in 269(1) of the *City of Winnipeg Charter*, including more detailed policy language to protect the integrity and operation of airports;
- Provide base planning requirements for airport land use compatibility, such as restricting residential development in the NEF 35 contour or greater and requiring a sound study for new noise-sensitive developments within the 25 NEF contour or greater. The specific details of these could be determined at the local level; and
- Require periodic updates of the NEF contours within a secondary plan on a set basis, similar to the requirement for updates to Development Plans.

Manitoba Real Property Act (C.C.S.M. c. R30)

Potential amendments or areas for consideration with respect to the *Manitoba Real Property Act* could include:

- Undertaking a detailed legal analysis of the Act and associated regulations to identify provisions that limit the use of caveats on title for aircraft noise; and
- Making amendments, as required, to facilitate the use of caveats on title.

6.2 Municipal Amendments and Areas for Consideration

Amendments to Municipal plans will be required if NEF contours and/or more detailed planning regulations are introduced at the Provincial level. At present, both *OurWinnipeg* and the *Complete Communities Direction Strategy* are generally consistent with Provincial regulations and are worded in a way that defers detailed regulations to the AVPA Plan.

⁷ For the sake of brevity, this Summary Report focuses on the most relevant regulations. Please consult the full 2021 Report for a detailed analysis.

If provincial regulations are not adopted or amended in a manner which precipitates local-level amendments, the AVPA Plan is due for a review and at minimum should be updated with NEF contours that reflect current conditions and future projections. Key principles of any potential amendments to these regulations should include:

- Ensuring that policies are straightforward in their interpretation and implementation;
- Including components to ensure public awareness of airport-related regulations and potential impacts of aircraft noise;
- Undertaking legal analysis to ensure provincial regulations (such as the *Real Property Act*) are amended as required to facilitate new policy directions and technical requirements;
- Completing detailed engineering analysis to ensure all technical components of future regulations, such as updates to the *Airport Vicinity Acoustics Insulation By-law*, are grounded in best practice and are technically feasible;
- Considering the consolidation of land use regulations, noise insulation requirements, and other supplementary mitigation measures into a single document for ease of use and implementation; and
- Undertaking a thorough stakeholder and public engagement process.

Winnipeg Airport Vicinity Development Plan (as amended)

If no provincial regulations are established, at a minimum, the NEF contours in the AVPA Plan should be updated based on the Province's selection of a scenario from the 2021 NEF Study. Any amendment process for the AVPA Plan should include:

- A public and stakeholder engagement exercise; and
- A detailed planning exercise to determine the new boundaries of Areas I and II, or an alternate approach to land use delineation.

Based on the review contained in this Report, the recommended planning approach for amending the AVPA Plan would be as follows:

- Consider consolidating all elements of the Plan (e.g., the acoustics by-law, zoning requirements, etc.) within a single secondary plan by-law for ease of use and interpretation;
- Maintain the current AVPA policy framework and the Area I and Area II structure;
- Update the policy maps to reflect the new NEF contours;
- Redraw the boundaries of Areas I and II to harmonize with new NEF contours;
- Consider using the 30 NEF contour rather than the 35 NEF contour to restrict all new residential development to reflect the reduced geographic footprint of the new contours;
- Include simpler policy rules for noise attenuation, such as a detailed policy direction concerning sound insulation and the requirement for an engineered sound study as a condition of building permit; and
- Incorporate legal notification elements (dependent on required provincial amendments) to require notices to be placed on title and for developers/purchasers to enter into agreements related to noise warnings.

Other elements to consider may include:

- Including mechanisms to allow for new residential and mixed-use development within Regional Mixed-Use Centres (e.g., Polo Park) and along Regional Mixed-Use Centres (e.g., Portage Avenue) as defined in the *OurWinnipeg Plan* and the *Complete Communities Direction Strategy*; and
- Requiring notification on real-estate and marketing materials for properties and projects within the Airport Area that may be impacted by aircraft noise (e.g., placing signage on sites, brochures for real estate and leasing agents, and easily accessible information on real estate databases).

Airport Vicinity Acoustics Insulation By-law No.6419-94

The current *Airport Vicinity Acoustics Insulation By-law* appears to be relatively complicated in its use and interpretation, and may be based on an outdated model based on the project team's literature review. Setting an interior noise limit in decibels to be achieved for new noise-sensitive construction could prove more straightforward and easier to implement. Potential amendments or areas for consideration could include:

- Mechanisms to ensure buildings are built to approved specifications;
- Requirements for heating/cooling and ventilation systems; and
- Construction and design guidelines or standards for public and private outdoor spaces, including private balconies, terraces, and outdoor amenity spaces.

Zoning By-law No. 200/2006 and Airport Vicinity Protection Area Planned Development Overlay

Potential amendments or areas for consideration with respect to the *Zoning By-law No. 200/2006 and Airport Vicinity Protection Area Planned Development Overlay* could include:

- Updating the Area I, Area II, and Planned Development Overlay maps;
- Revising the regulations within the Planned Development Overlay; and / or
- Removing the Planned Development Overlay completely and consolidating all regulations within the AVPA Plan or Development Plan.