

John C. Munro Hamilton International Airport Airport Master Plan Update

City of Hamilton
September 11th 2023



Avia NG Inc.

Avia NG Inc. is Canadian airport consulting firm specializing in airport planning, design, contract administration and construction supervision services for airport infrastructure projects.

Over 18 Active Airport Construction Projects
Over 100+ Active Airport Projects



We operate from four Canadian-based offices located in Calgary, Toronto, Kitchener and Southampton and serve airports, government and private clients throughout Canada and the Caribbean.



OUR TEAM

Our team of over 60 aviation professionals offers a broad range of experience with a combined 500+ years of airport consulting experience including over 250+ airport design and consulting assignments. Our projects range from simple to complex including rehabilitation, expansion, greenfield developments and airport master planning. Our mission is to provide our clients with timely and high-quality aviation consulting services through technical excellence, extensive industry experience, innovation, and long-term collaborative relationships.





WHAT WE DO

Master Planning and Land Use Planning
Engineering, Design, and Project Management
Contract Admin and Commissioning Services
AIAs and Airport Zoning Regulation Design
Airport Capacity and Demand Assessments
Nav Canada Land Use Applications
Plan of Construction Operations (PCO)
Owner's Technical Representative Services
Stakeholder and Public Consultations
Funding Applications and Due Diligence Reviews
SMS and Regulatory Compliance Audits



SELECT PROJECTS

John C. Munro Hamilton International Airport



Avia NG Project

Client: Hamilton International Airport Ltd.

- Services Rendered:
 - Runway 12-30, Taxiways Charlie and Golf Rehabilitation
 - Stakeholder Consultation
 - Project Management
 - Design, Construction Inspection (civil/electrical)
 - Project Cost: CAD \$25M
 - 2022/2023 Airport Master Plan Update
 - 2023 Airside Apron Expansion/Taxi Fillets

Toronto Pearson International Airport



Avia NG Project



Client: Greater Toronto Airport Authority

- Services Rendered:
 - 2021/22 Runway 06L/24R Reconstruction
 - Project Cost: CAD \$100M

Winnipeg James Armstrong Richardson International Airport



Avia NG Project

Client: Winnipeg Airport Authority

- Services Rendered:
 - 2019 – 2020 Runway 13-31 Rehabilitation
 - 2023 – Airport Master Plan
 - 2022-2023 – CAT II Runway 18-36 Reconstruction
 - Design/Construction Admin/Inspection
- Project Cost: CAD \$80M+



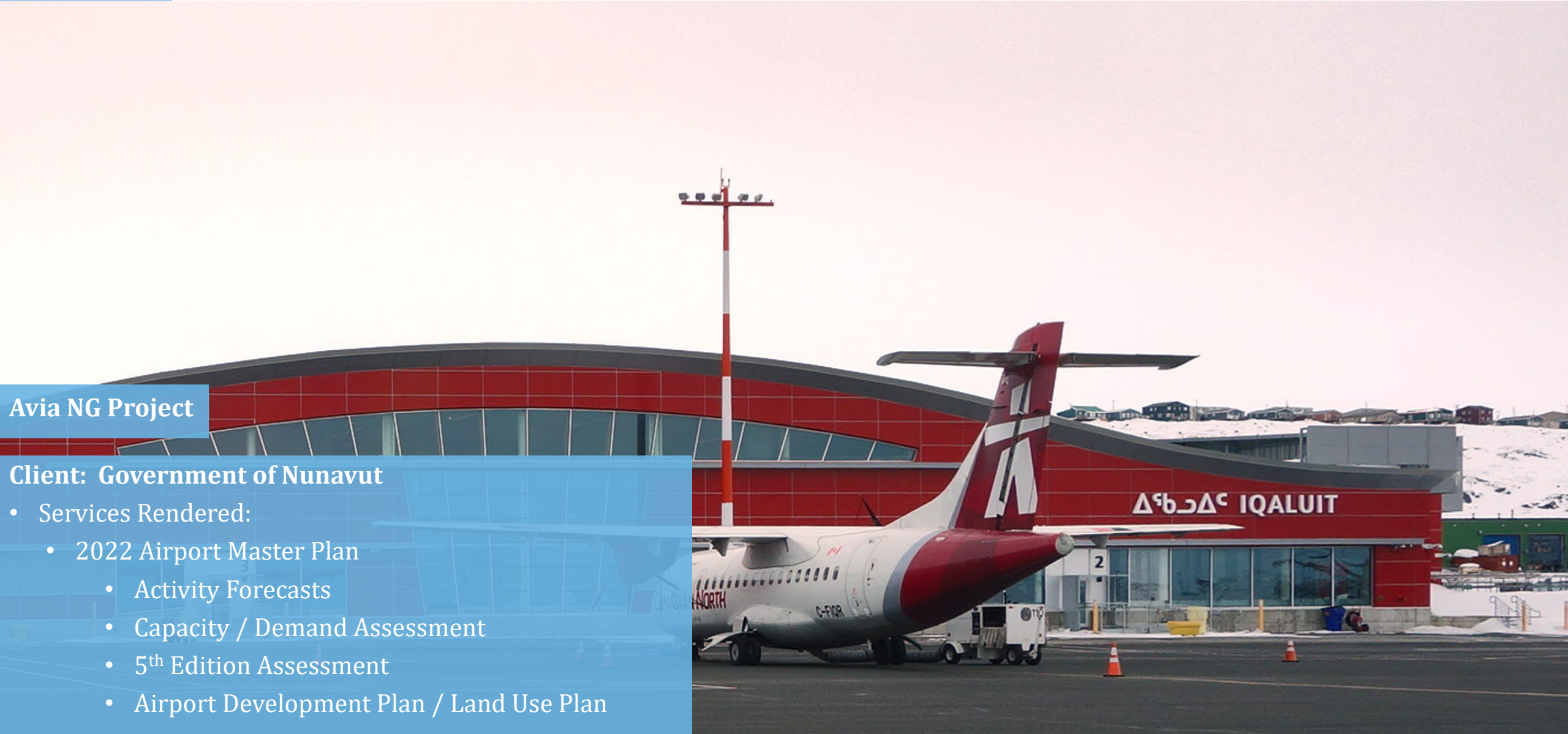
Iqaluit International Airport



Avia NG Project

Client: Government of Nunavut

- Services Rendered:
 - 2022 Airport Master Plan
 - Activity Forecasts
 - Capacity / Demand Assessment
 - 5th Edition Assessment
 - Airport Development Plan / Land Use Plan



What is an Airport Master Plan?

The Master Plan informs secondary plans and shorter-term strategic plan over the twenty-year horizon



A comprehensive study of an airport that provides a rational long-term vision



Protects for long-term operational and business objectives



Assists airport management in making informed strategic decisions

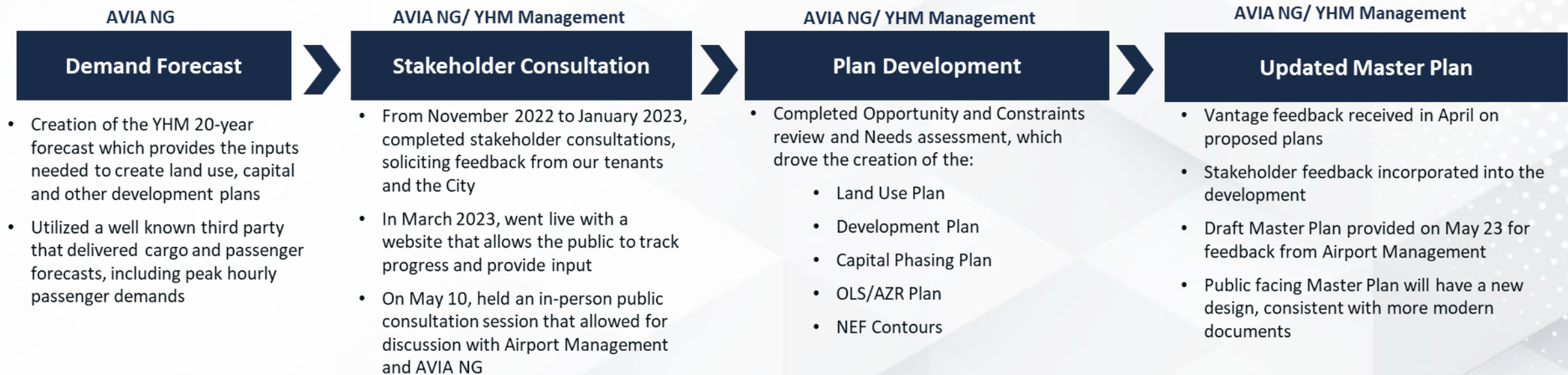


Informs airport stakeholders, tenants and government of the vision

NOTE: The Airport Master Plan is not a regulatory document, and the Airport is not bound to implement any of the recommendations. The implementation and phasing of recommendations will be assessed with respect to several criteria including operational necessity, financial capability and cost/benefit. The Airport Master Plan is a living document, and other plans may rely on it (i.e. Transportation Master Plan).

Master Plan Update – Process

Industry standard and accepted process utilized to update the Plan



Findings have shown:



Even with industry disruptors, growth is expected in pessimistic, baseline and optimistic scenarios

Growth is challenged by the lack of readily available, serviced airside land

Stakeholder and Public Consultation

Robust consultation process allowed for stakeholders and the community to provide input that was incorporated into the Plan

Stakeholder Consultation

- Beginning in November 2022, the Airport and consultants engaged with various airport stakeholders, including operators, tenants and government agencies, including the City of Hamilton.
- Earlier in 2022, all major cargo stakeholders participated in a cargo strategy session where feedback was provided, and this information was also used, with cargo carriers given the ability to update previous discussions if circumstances changed.

Public Consultation

- A 2043 Airport Master Plan project website was published on in March 2023 as part of the public consultation and outreach strategy.
 - The website updated the public on the progress of the Airport Master Plan and provided draft Airport Land Use Plan and Airport Development Plan.
 - Website allowed the public to provide comment and feedback – 33 responses were received.
- A public open house event was held on May 10, 2023, where the public and stakeholders were invited to review the draft Land Use Plan and Airport Development Plan and provide feedback.

Stakeholder and Public Consultation



Early pre-planning and stakeholder feedback is critical for a Master Plan

City Consultations and Workshop Sessions

- On **January 11, 2023** the Airport and consultants presented to representatives from the City of Hamilton the details of the update, including:
 - Process being followed;
 - Key project tasks;
 - Plans for stakeholder consultation and public outreach;
 - Plans for further City engagement and discussion;
 - Project schedule; and
 - Key components of the master plan.
- On **January 25, 2023** the Airport and consultants hosted an **all-day workshop with representatives from the City of Hamilton** aimed at obtaining inputs from the City that influenced the development of the master plan. The workshop included five (5) sessions covering the following topics:
 - Land Use – Surrounding land use and potential for changes, official plan and airport employment growth district plans.
 - Transportation – Landside access and transportation network.
 - Airside System – Airfield capacity and demand, existing constraints, triggers for improvements, Runway 06-24, and AZRs.
 - Environment – Sensitive areas on or adjacent to the Airport, storm water management considerations, aircraft deicing, and noise.
 - Utilities – Municipal infrastructure existing constraints, anticipated future upgrades, and future servicing requirements.

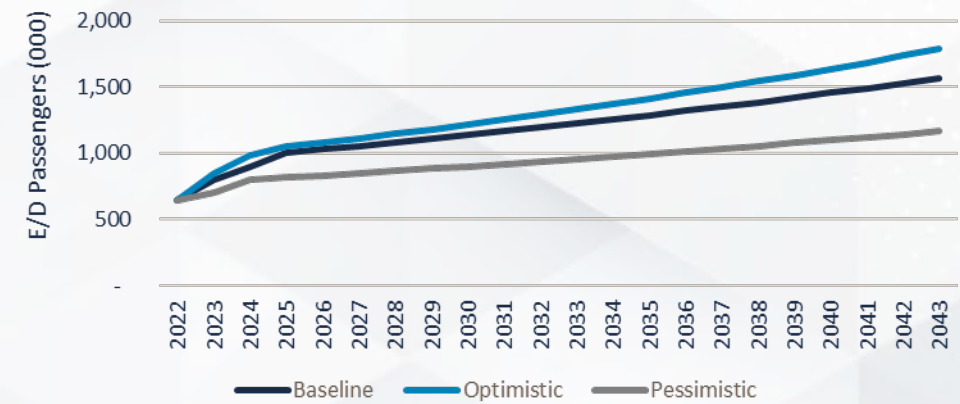
Forecasting for the Next 20 Years

Industry expert created many scenarios to guide our planning

Passenger Forecast

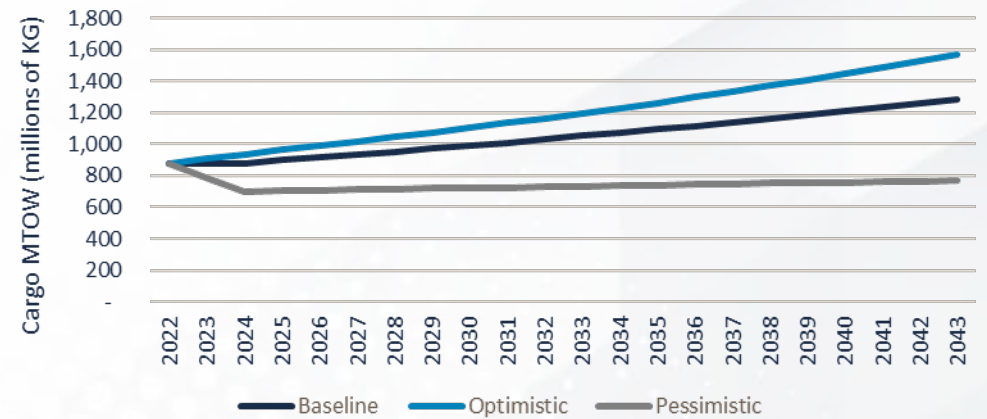
- Hamilton's fluctuating passenger base has become more stable over the past five non-pandemic years, with the optimism of growth
- Each scenario offers varying growth rates based on consumer behaviour
- Baseline passenger traffic (What drawings are based on) has been projected to grow at an average annual rate between 2.5-3% per year following the recovery from the pandemic.
- 2043 annual traffic levels are all over 1 million passengers (Baseline – 1.6M, Optimistic – 1.8M, Pessimistic – 1.1M)

Passenger Traffic Forecast - Master Plan

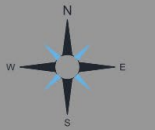


Cargo Forecast

Cargo Traffic Forecast - Master Plan



- Cargo traffic has been more stable over YHM's history
- Baseline cargo traffic has been projected to grow at an average annual rate of approximately 2% per year following the effects of the pandemic and stabilization of the cargo market.
- This activity will drive the majority of commercial land development
- Optimistic growth rates are between 2.5% to 3%, while pessimistic growth rates are 0.5% after a market decline

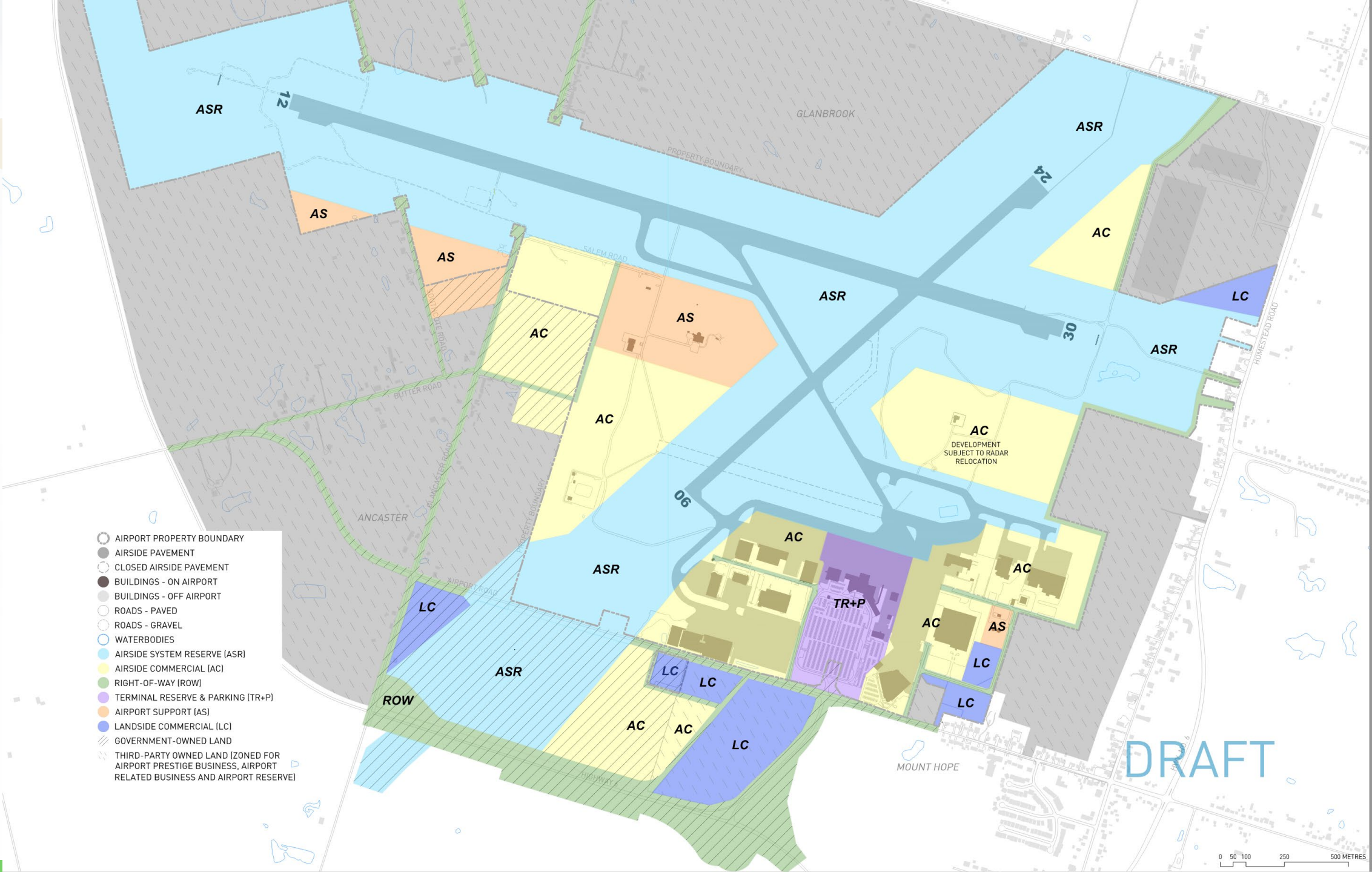


John C. Munro
HAMILTON
 INTERNATIONAL AIRPORT



RECOMMENDED AIRPORT
 LAND USE PLAN

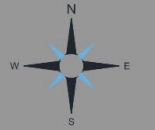
EXHIBIT 6-9



- AIRPORT PROPERTY BOUNDARY
- AIRSIDE PAVEMENT
- CLOSED AIRSIDE PAVEMENT
- BUILDINGS - ON AIRPORT
- BUILDINGS - OFF AIRPORT
- ROADS - PAVED
- ROADS - GRAVEL
- WATERBODIES
- AIRSIDE SYSTEM RESERVE (ASR)
- AIRSIDE COMMERCIAL (AC)
- RIGHT-OF-WAY (ROW)
- TERMINAL RESERVE & PARKING (TR+P)
- AIRPORT SUPPORT (AS)
- LANDSIDE COMMERCIAL (LC)
- GOVERNMENT-OWNED LAND
- THIRD-PARTY OWNED LAND (ZONED FOR AIRPORT PRESTIGE BUSINESS, AIRPORT RELATED BUSINESS AND AIRPORT RESERVE)

DRAFT



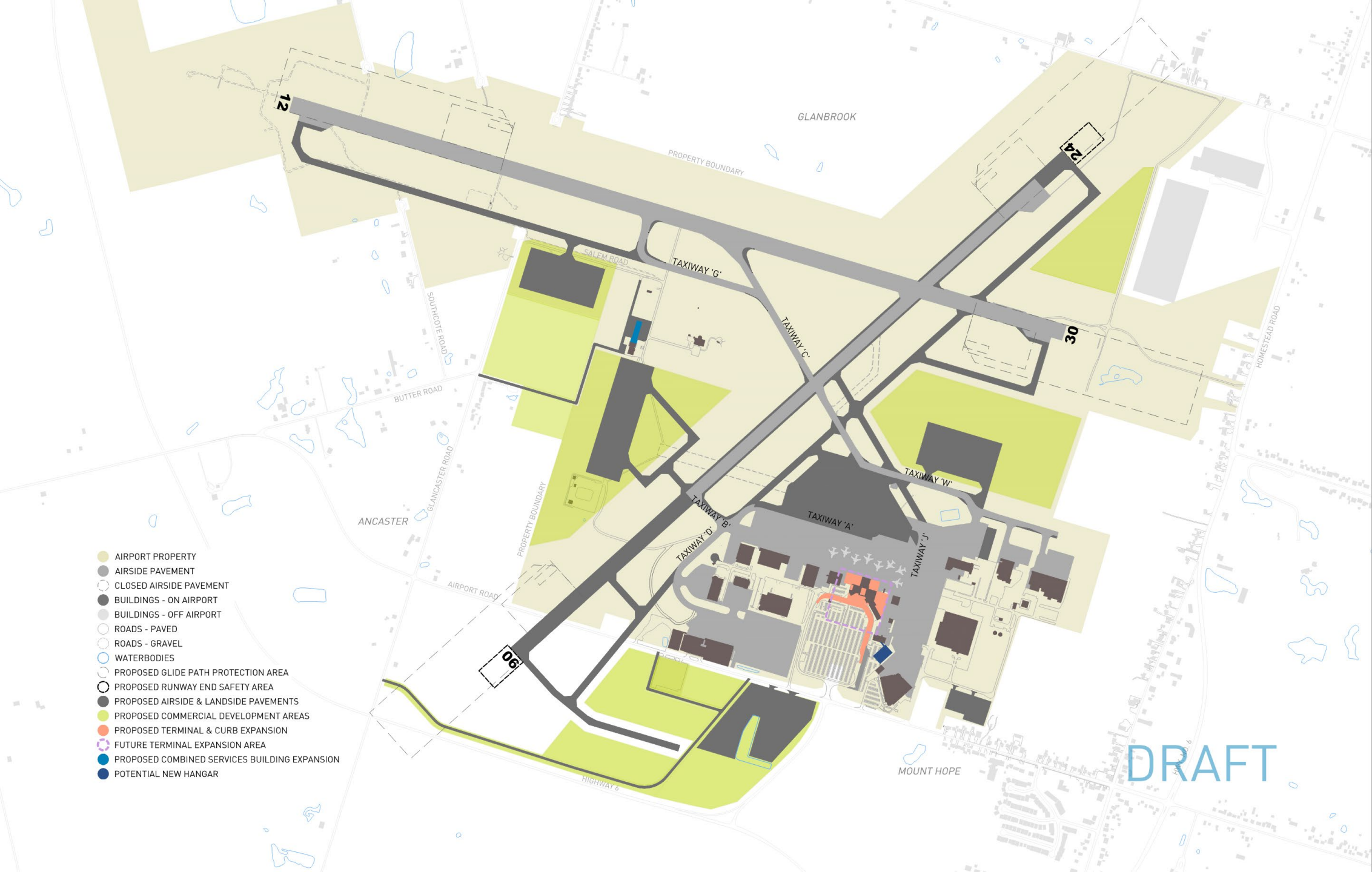


John C. Munro
HAMILTON
 INTERNATIONAL AIRPORT



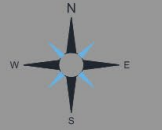
RECOMMENDED AIRPORT
 DEVELOPMENT PLAN

EXHIBIT 7-1



- AIRPORT PROPERTY
- AIRSIDE PAVEMENT
- CLOSED AIRSIDE PAVEMENT
- BUILDINGS - ON AIRPORT
- BUILDINGS - OFF AIRPORT
- ROADS - PAVED
- ROADS - GRAVEL
- WATERBODIES
- PROPOSED GLIDE PATH PROTECTION AREA
- PROPOSED RUNWAY END SAFETY AREA
- PROPOSED AIRSIDE & LANDSIDE PAVEMENTS
- PROPOSED COMMERCIAL DEVELOPMENT AREAS
- PROPOSED TERMINAL & CURB EXPANSION
- FUTURE TERMINAL EXPANSION AREA
- PROPOSED COMBINED SERVICES BUILDING EXPANSION
- POTENTIAL NEW HANGAR

DRAFT



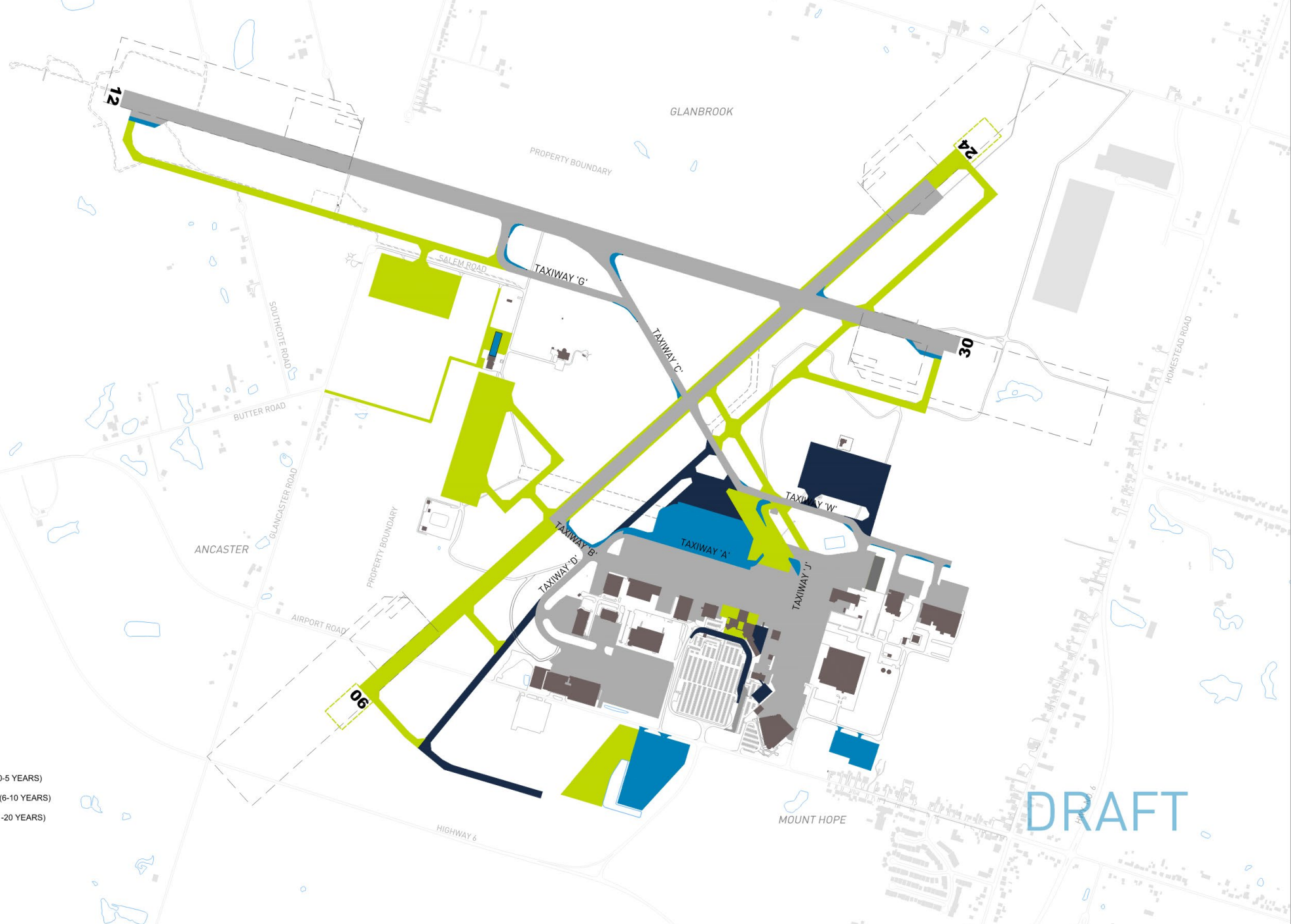
John C. Munro
HAMILTON
INTERNATIONAL AIRPORT

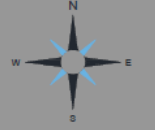


PROPOSED CAPITAL
PHASING PLAN

EXHIBIT 7-2

- SHORT TERM (0-5 YEARS)
- MEDIUM TERM (6-10 YEARS)
- LONG TERM (11-20 YEARS)

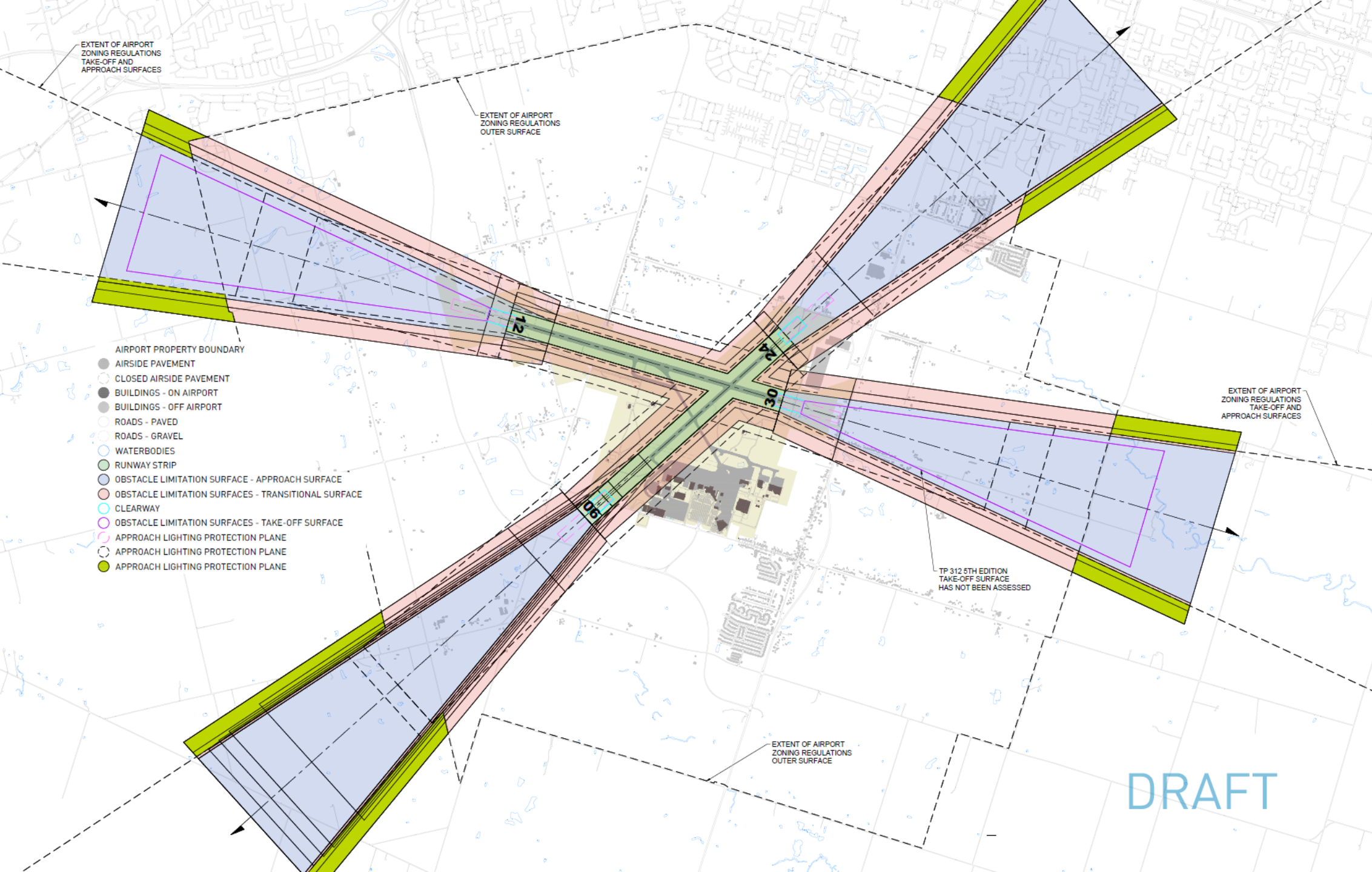




John C. Munro
HAMILTON
INTERNATIONAL AIRPORT



EXISTING AIRPORT
ZONING REGULATIONS
& FUTURE OBSTACLE
LIMITATION SURFACES



EXTENT OF AIRPORT
ZONING REGULATIONS
TAKE-OFF AND
APPROACH SURFACES

EXTENT OF AIRPORT
ZONING REGULATIONS
OUTER SURFACE

EXTENT OF AIRPORT
ZONING REGULATIONS
TAKE-OFF AND
APPROACH SURFACES

TP 312 5TH EDITION
TAKE-OFF SURFACE
HAS NOT BEEN ASSESSED

EXTENT OF AIRPORT
ZONING REGULATIONS
OUTER SURFACE

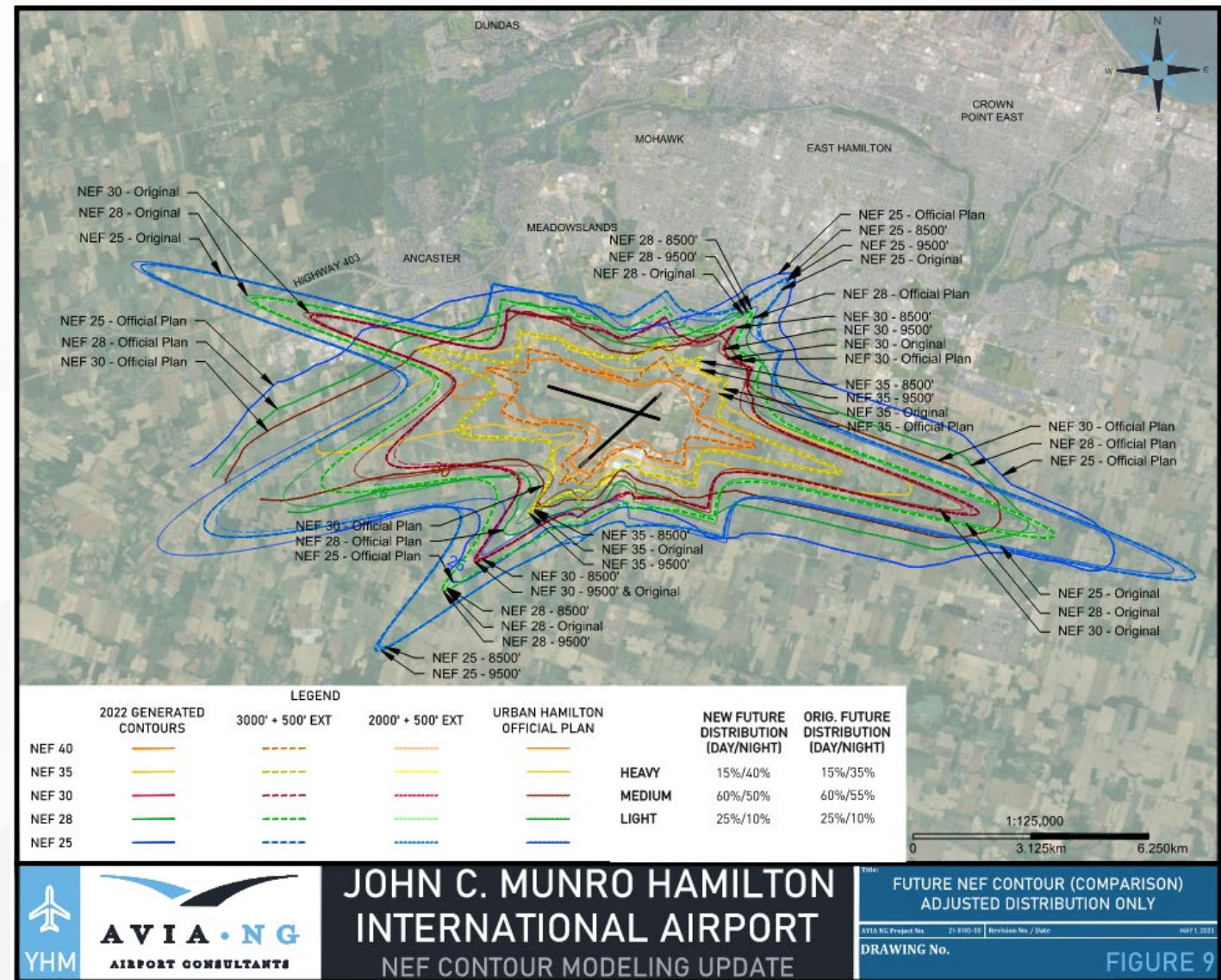
- AIRPORT PROPERTY BOUNDARY
- AIRSIDE PAVEMENT
- CLOSED AIRSIDE PAVEMENT
- BUILDINGS - ON AIRPORT
- BUILDINGS - OFF AIRPORT
- ROADS - PAVED
- ROADS - GRAVEL
- WATERBODIES
- RUNWAY STRIP
- OBSTACLE LIMITATION SURFACE - APPROACH SURFACE
- OBSTACLE LIMITATION SURFACES - TRANSITIONAL SURFACE
- CLEARWAY
- OBSTACLE LIMITATION SURFACES - TAKE-OFF SURFACE
- APPROACH LIGHTING PROTECTION PLANE
- APPROACH LIGHTING PROTECTION PLANE
- APPROACH LIGHTING PROTECTION PLANE

DRAFT

NEF Contours

Several variations exist depending on runway extension selected

1. Potential to extend runway 06/24 up to 9,500 ft in order to provide unrestricted B777 movement
2. Need to hold contours at the largest runway extension length, which now includes a 500 ft extension to the north (previously 9,000 ft in last master plan)
3. Will impact development in the area north of the Airport, requiring extended contours past previous City Official Plans
4. City would need to amend by-laws for changes in contours
5. Potential legal involvement as changes would likely be challenged



Master Plan Recommendations

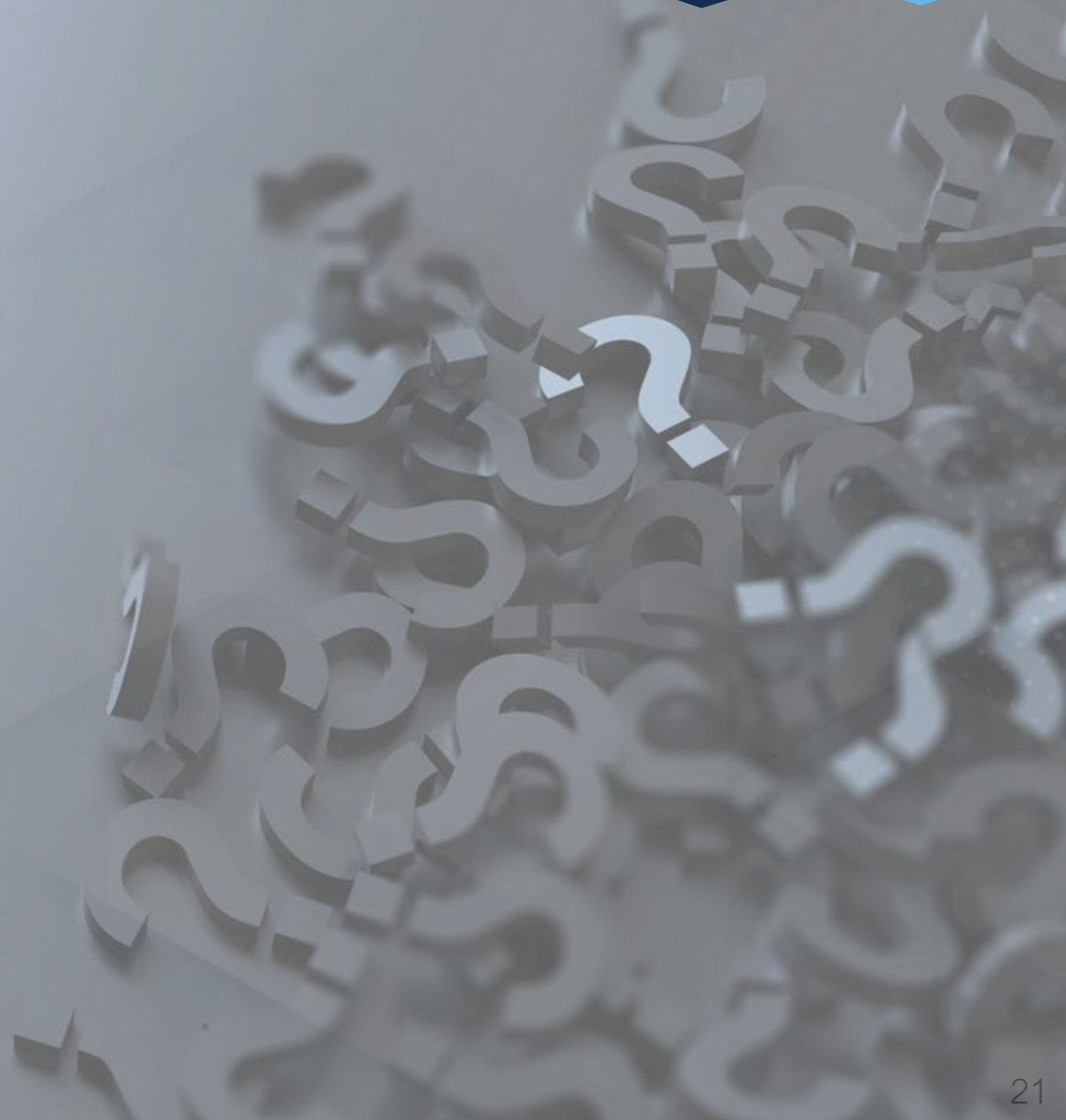
Future growth is dependent on additional land, which will lead to increased jobs, development charges, property taxes and economic impact

The following items are the key opportunities from the Master Plan:

- 1 Creation of Additional Serviced Land** – Land is at capacity, and multiple existing tenants have communicated the need to continue to grow their respective facilities on the Airport. Additional serviced land is required.
- 2 Radar Needs Assessment** – The existing radar needs to be replaced per Nav Canada [national replacement program](#). If required onsite, alternative locations are proposed to reduce impact on land that would otherwise be proposed for commercial development.
- 3 Capacity and Infrastructure Requirements** – Planned growth in cargo and passenger demand requires investments to be made in the short, medium and long-term.
- 4 Runway 06/24 Expansion** – Potential expansion would not add capacity, rather provide redundancy, with minimally improved overall system usability and current noise abatements and is not forecasted to be required based on traffic levels.
- 5 AZR Assessment** – Gaps in protection have been identified based on comparison to TP 312 5th Edition OLS requirements. Recommendation is to undertake further study of risks and mitigations, as well as cost v. benefit of updating the AZRs.



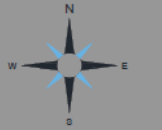
Questions?



Appendix

Airport Existing Conditions
Opportunities and Constraints
Additional NEF Contour Support
Airport Employment Growth District





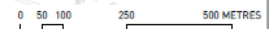
John C. Munro
HAMILTON
 INTERNATIONAL AIRPORT



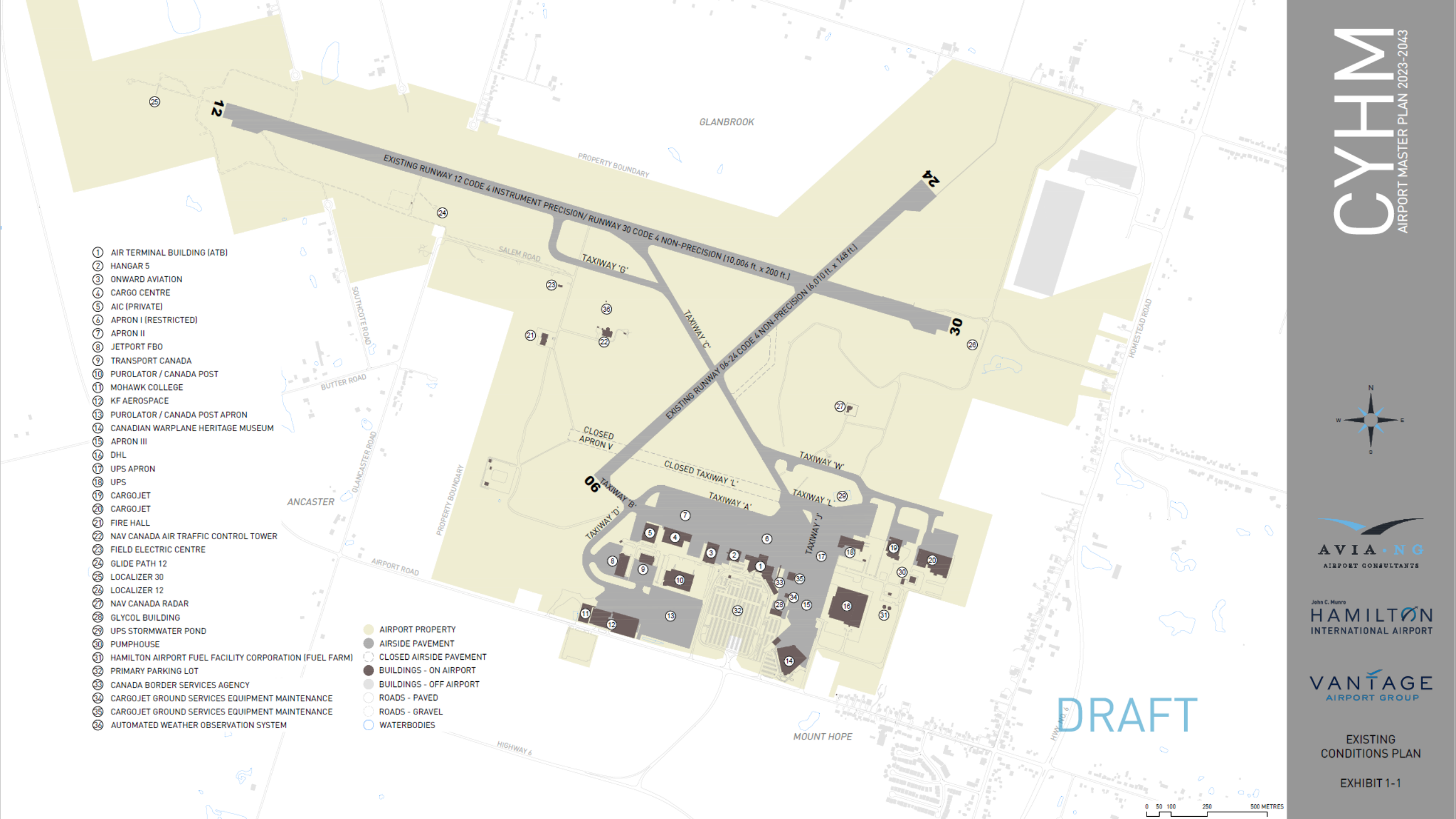
EXISTING
 CONDITIONS PLAN

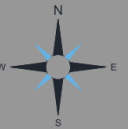
EXHIBIT 1-1

DRAFT



- ① AIR TERMINAL BUILDING (ATB)
 - ② HANGAR 5
 - ③ ONWARD AVIATION
 - ④ CARGO CENTRE
 - ⑤ AIC (PRIVATE)
 - ⑥ APRON I (RESTRICTED)
 - ⑦ APRON II
 - ⑧ JETPORT FBO
 - ⑨ TRANSPORT CANADA
 - ⑩ PUROLATOR / CANADA POST
 - ⑪ MOHAWK COLLEGE
 - ⑫ KF AEROSPACE
 - ⑬ PUROLATOR / CANADA POST APRON
 - ⑭ CANADIAN WARPLANE HERITAGE MUSEUM
 - ⑮ APRON III
 - ⑯ DHL
 - ⑰ UPS APRON
 - ⑱ UPS
 - ⑲ CARGOJET
 - ⑳ CARGOJET
 - ㉑ FIRE HALL
 - ㉒ NAV CANADA AIR TRAFFIC CONTROL TOWER
 - ㉓ FIELD ELECTRIC CENTRE
 - ㉔ GLIDE PATH 12
 - ㉕ LOCALIZER 30
 - ㉖ LOCALIZER 12
 - ㉗ NAV CANADA RADAR
 - ㉘ GLYCOL BUILDING
 - ㉙ UPS STORMWATER POND
 - ㉚ PUMPHOUSE
 - ㉛ HAMILTON AIRPORT FUEL FACILITY CORPORATION (FUEL FARM)
 - ㉜ PRIMARY PARKING LOT
 - ㉝ CANADA BORDER SERVICES AGENCY
 - ㉞ CARGOJET GROUND SERVICES EQUIPMENT MAINTENANCE
 - ㉟ CARGOJET GROUND SERVICES EQUIPMENT MAINTENANCE
 - ㊱ AUTOMATED WEATHER OBSERVATION SYSTEM
-
- AIRPORT PROPERTY
 - AIRSIDE PAVEMENT
 - CLOSED AIRSIDE PAVEMENT
 - BUILDINGS - ON AIRPORT
 - BUILDINGS - OFF AIRPORT
 - ROADS - PAVED
 - ROADS - GRAVEL
 - WATERBODIES



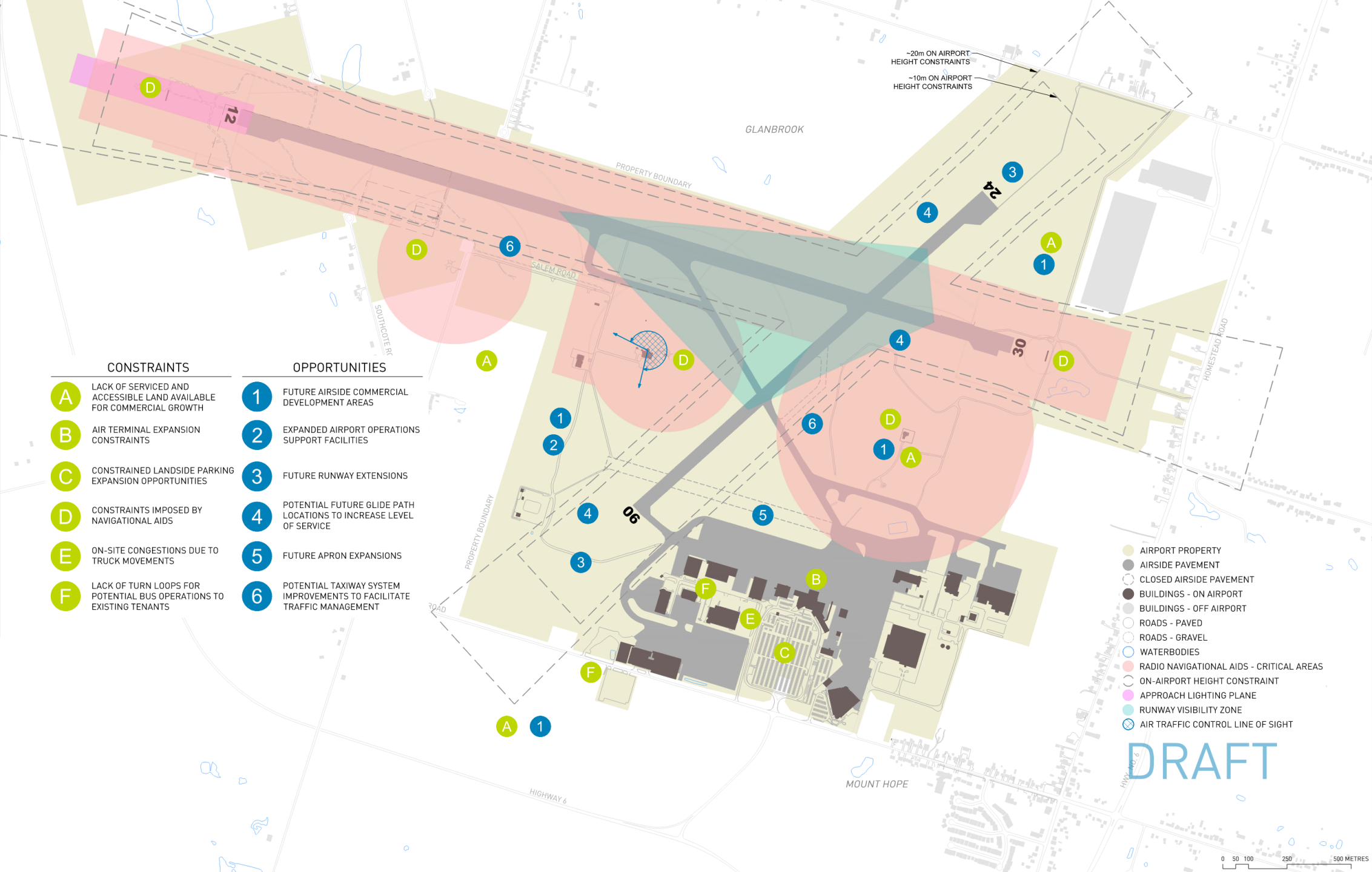


John C. Munro
HAMILTON
 INTERNATIONAL AIRPORT

VANTAGE
 AIRPORT GROUP

CONSTRAINTS AND OPPORTUNITIES

EXHIBIT 5-1



-20m ON AIRPORT HEIGHT CONSTRAINTS
 -10m ON AIRPORT HEIGHT CONSTRAINTS

CONSTRAINTS

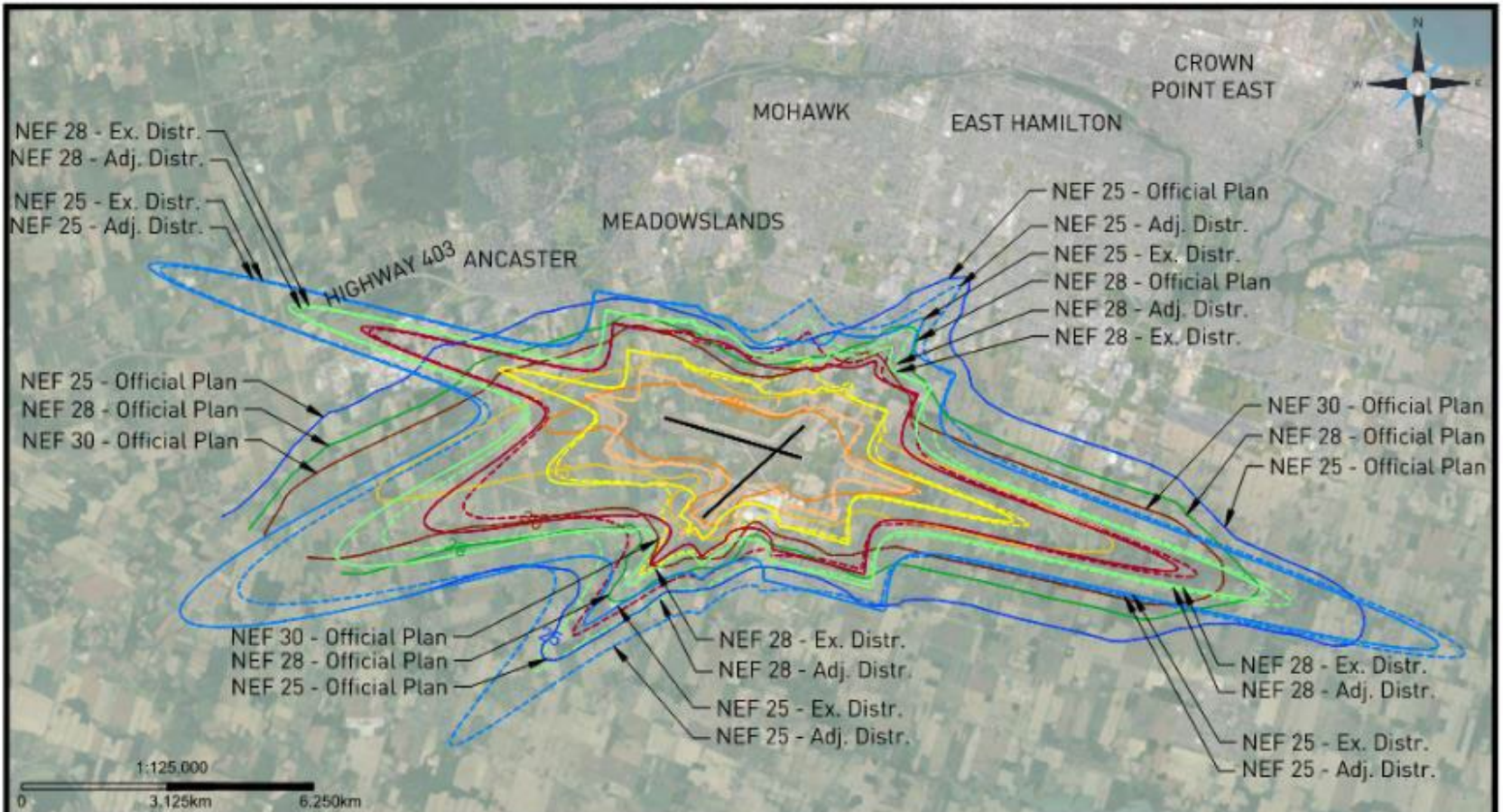
- A** LACK OF SERVICED AND ACCESSIBLE LAND AVAILABLE FOR COMMERCIAL GROWTH
- B** AIR TERMINAL EXPANSION CONSTRAINTS
- C** CONSTRAINED LANDSIDE PARKING EXPANSION OPPORTUNITIES
- D** CONSTRAINTS IMPOSED BY NAVIGATIONAL AIDS
- E** ON-SITE CONGESTIONS DUE TO TRUCK MOVEMENTS
- F** LACK OF TURN LOOPS FOR POTENTIAL BUS OPERATIONS TO EXISTING TENANTS

OPPORTUNITIES

- 1** FUTURE AIRSIDE COMMERCIAL DEVELOPMENT AREAS
- 2** EXPANDED AIRPORT OPERATIONS SUPPORT FACILITIES
- 3** FUTURE RUNWAY EXTENSIONS
- 4** POTENTIAL FUTURE GLIDE PATH LOCATIONS TO INCREASE LEVEL OF SERVICE
- 5** FUTURE APRON EXPANSIONS
- 6** POTENTIAL TAXIWAY SYSTEM IMPROVEMENTS TO FACILITATE TRAFFIC MANAGEMENT

- AIRPORT PROPERTY
- AIRSIDE PAVEMENT
- CLOSED AIRSIDE PAVEMENT
- BUILDINGS - ON AIRPORT
- BUILDINGS - OFF AIRPORT
- ROADS - PAVED
- ROADS - GRAVEL
- WATERBODIES
- RADIO NAVIGATIONAL AIDS - CRITICAL AREAS
- ON-AIRPORT HEIGHT CONSTRAINT
- APPROACH LIGHTING PLANE
- RUNWAY VISIBILITY ZONE
- AIR TRAFFIC CONTROL LINE OF SIGHT

DRAFT



LEGEND				
EXISTING RUNWAY DISTRIBUTION	ADJUSTED RUNWAY DISTRIBUTION	URBAN HAMILTON OFFICIAL PLAN	EXISTING DISTRIBUTION (DAY/NIGHT)	FUTURE DISTRIBUTION (DAY/NIGHT)
NEF 40			HEAVY	16%/34.5%
NEF 35			MEDIUM	42%/49%
NEF 30			LIGHT	43%/17%
NEF 28				25%/10%
NEF 25				

DRAFT

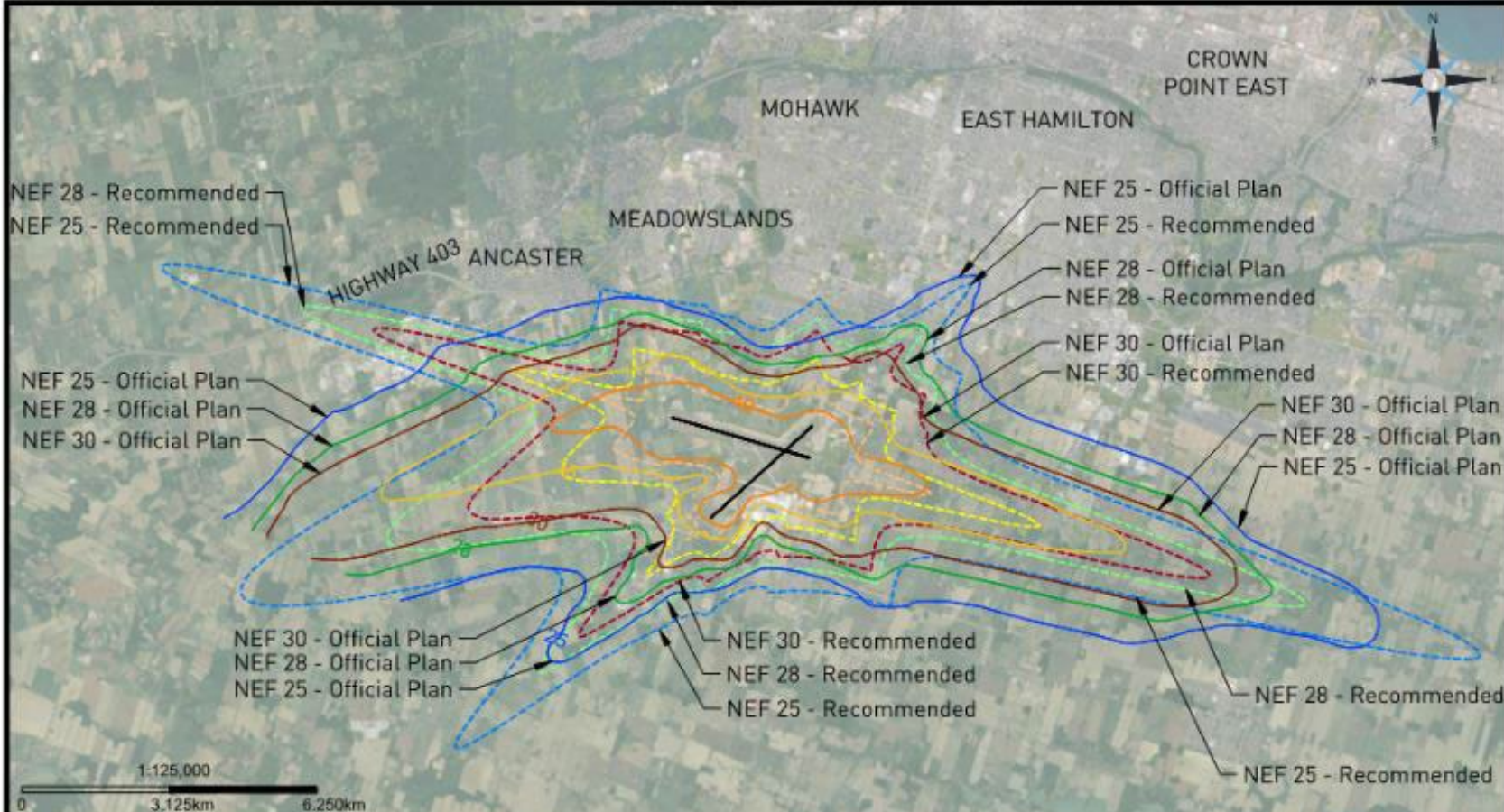
14875 Hamilton Ave., 9th Floor
 Mississauga, Ontario L4W 4Y4
 Tel: (905) 276-8888
 Fax: (905) 276-8889
 www.avia-ng.com

JOHN C. MUNRO HAMILTON INTERNATIONAL AIRPORT

NEF CONTOUR MODELING UPDATE

FUTURE NEF CONTOUR (9500')

AVIA·NG Project No.	2-000-01	Revision No. / Date	NAF 1, 2013
DRAWING No.	FIGURE 7		



LEGEND

	RECOMMENDED NEF CONTOURS	URBAN HAMILTON OFFICIAL PLAN
NEF 40		
NEF 35		
NEF 30		
NEF 28		
NEF 25		

DRAFT



JOHN C. MUNRO HAMILTON INTERNATIONAL AIRPORT
NEF CONTOUR MODELING UPDATE

FUTURE NEF CONTOUR (9500')

AVIA·NG Project No. 20-2820-01 Hamilton, Ont. / Date: MAY 1, 2023

DRAWING No. **FIGURE 7B**

AVIA·NG is a member of the AVIA·NG Group of Companies. For more information, please contact AVIA·NG at 1-800-387-4646.

Airport Employment Growth District

