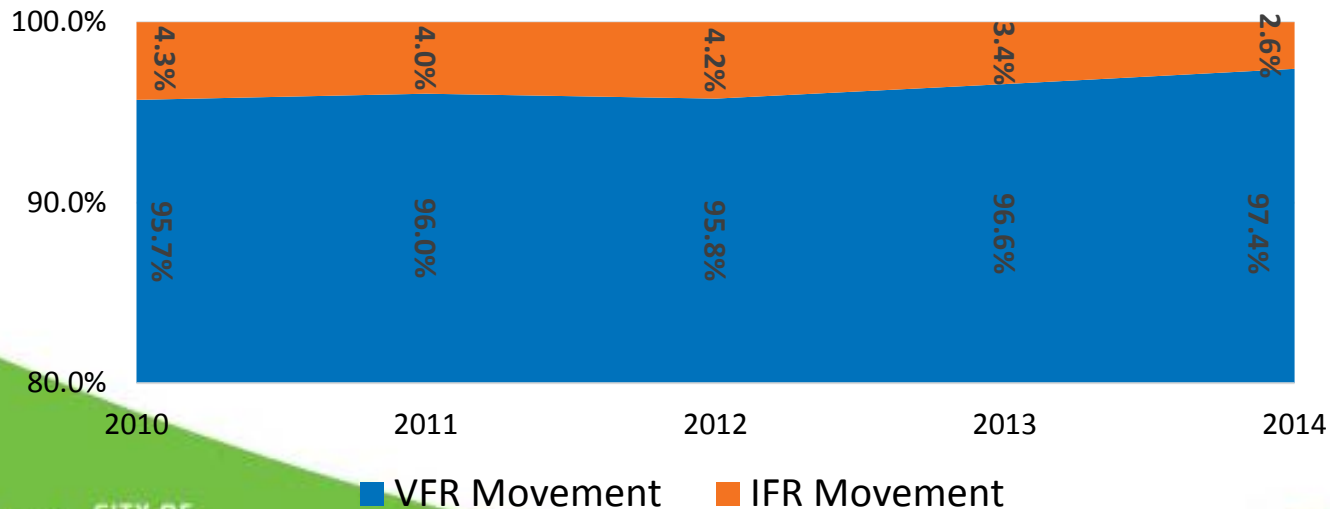




DEVELOPMENT ALTERNATIVES SUMMARY

VERNON REGIONAL AIRPORT ESTIMATED VFR and IFR MOVEMENT

Year	VFR Movement	IFR Movement	Total Movement	% Change
2010	10,805	486	11,291	
2011	10,688	441	11,129	-1.4%
2012	11,805	522	12,327	10.8%
2013	12,701	451	13,152	6.7%
2014	15,082	400	15,482	17.7%



AVIATION DEMAND FORECAST SUMMARY

Component	Actual	2020	2025	2030	2035	% Change
Vernon Population	38,861	40,804	42,844	44,986	47,235	21%
Land (m ²)	45,137	49,122	53,108	57,093	61,078	35.31%
Based Aircraft	130	142	154	166	178	36.9%
Tie-Downs	44	54	64	74	84	90.1%
Fuel Sales (litres)	535,825	577,709	623,774	674,516	730,496	36.3%
Movement	15,482	17,856.44	20,230.87	22,605.31	24,979.75	61.3%

DEVELOPMENT ALTERNATIVES

Option 1: Some Improvements Without Expansion

Option 2: Maximize Value Without Expansion

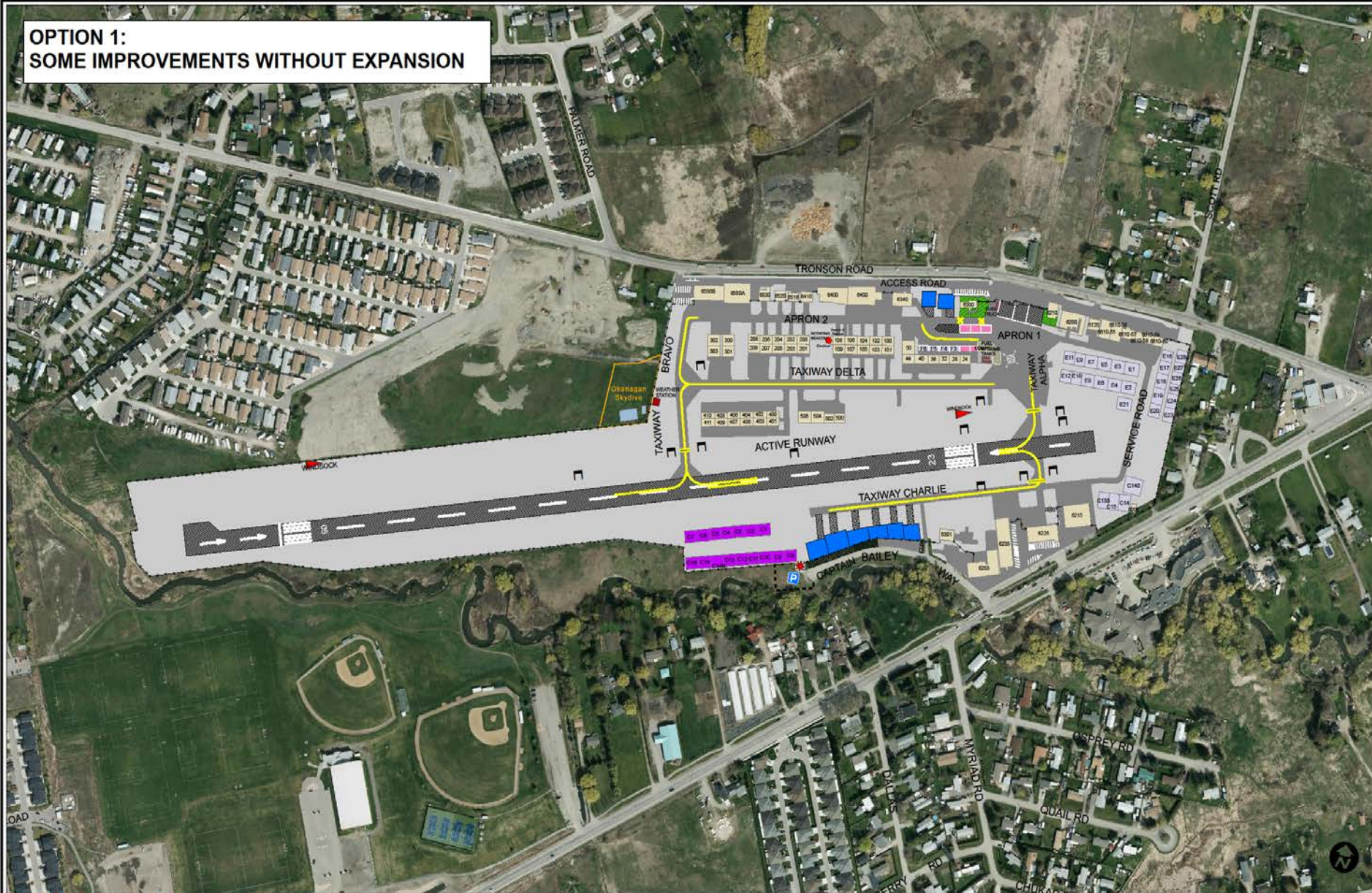
Option 2B: Maximize Value With Runway Extension

Option 3: Expansion With Runway Extension

**Draft Vernon Regional Airport Master Plan Recommended
Option: Expansion Without Runway Extension**

Project	Option 1: Some Improvements Without Expansion	Option 2: Maximize Value Without Expansion	Option 2B: Maximize Value Runway Extension	Option 3: Expansion With Runway Extension	Recommended Option: Expansion Without Runway Extension
Short Term: Phase IA September 2015 – September 2017 (TP312.4 Edition)					
Runway Extension to 4,000 ft.			5,254,700	5,254,700	
Total Phase IA (\$)			5,254,700	5,254,700	
Short Term: Phase I 2015 - 2020					
The Triangle Lands Reserve				1,000,000	1,000,000
Runway 23-05 Runway Surface Remediation	552,000	552,000	552,000	552,000	552,000
Apron 1 and 2 Surface Remediation and Maintenance	110,400	110,400	110,400	110,400	110,400
Apron 1 Expansion		170,000	170,000	576,000	576,000
Tie-Downs		32,000	32,000	42,000	42,000
Helipad		60,000	60,000	60,000	60,000
Visual Guidance Indicators (PAPI Relocation)		84,000			84,000
Obstruction Lighting	24,000	24,000	24,000	24,000	24,000
Terminal Building	15,000	60,000	60,000	60,000	60,000
Fencing and Gates	84,000	84,000	84,000	84,000	84,000
Aircraft Movement Monitoring System	18,000	18,000	18,000	18,000	18,000
Commercial and Industrial Hangar	Via private Development				
General Aviation Hangar	Via private Development				
Landscaping	15,000	\$96,000	\$96,000	96,000	96,000
Branding and Signage	36,000	\$36,000	\$36,000	36,000	36,000
Total Phase I (\$)	854,400	\$1,326,400	\$1,242,400	2,658,400	2,742,400
Mid Term: Phase II 2020 – 2025					
The Triangle Lands Reserve				1,000,000	1,000,000
Taxiway Surface Remediation	132,000	132,000	132,000	132,000	132,000
Taxiway Echo (CBW)		108,000	108,000	108,000	108,000
Apron 3 (CBW)		420,000	420,000	420,000	420,000
Airport Operational Shop and Vehicle Storage		70,200	70,200	70,200	70,200
Commercial and Industrial Hangar	Via private Development				
General Aviation Hangar	Via private Development				
Vehicle Parking Requirements	Via private Development				
Total Phase II (\$)	\$132,000	\$730,200	\$730,200	\$1,730,200	\$1,730,200
Long Term: Phase III 2025 – 2035					
The Triangle Lands Reserve				1,000,000	1,000,000
Apron 4				420,000	420,000
Commercial and Industrial Hangar	Via private Development				
General Aviation Hangar	Via private Development				
Vehicle Parking Requirements	Via private Development				
Total Phase III (\$)				\$1,420,000	\$1,420,000
Total Estimated Projects Cost (\$)	986,400	\$2,056,600	\$7,227,300	11,063,300	5,892,600

OPTION 1: SOME IMPROVEMENTS WITHOUT EXPANSION



Legend - Proposed Changes/Additions

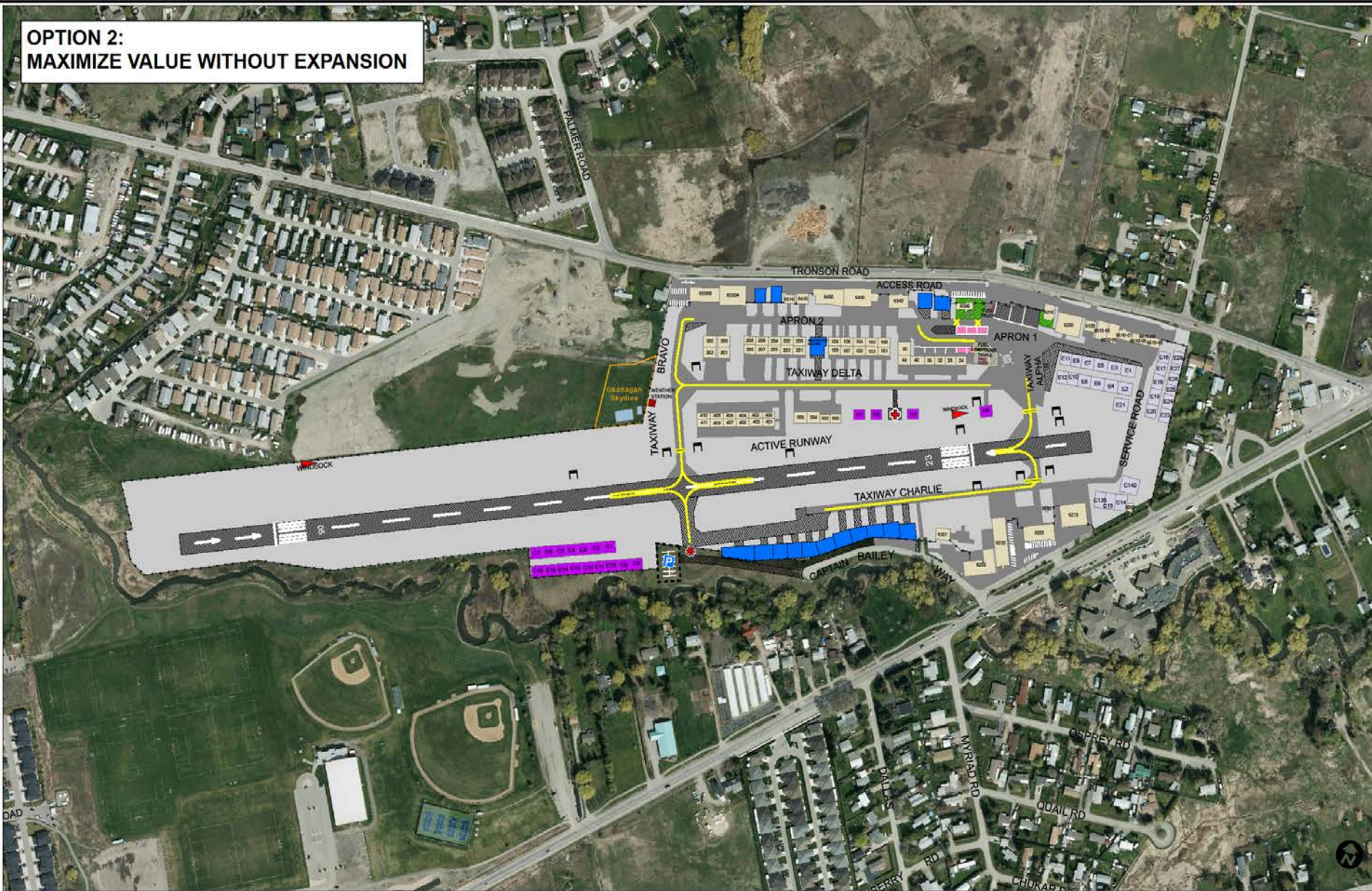
- PARKING
- NEW HANGAR
- SHORT TERM PARKING
- TIE-DOWN LEASE
- REHABILITATION AREA
- LANDSCAPE
- PAVED ASPHALT
- VIEWING PLATFORM

0 50 100 200 Meters

Date: 7/21/2015

NOTE: This data is for general information only and is provided on a "best effort" basis. The City of Vernon makes no warranty, representation, or implied, with the regard to the completeness, accuracy, or reliability of the data supplied. By purchasing or obtaining this data you agree to release any and all rights to other changes or errors that may appear on the City of Vernon as a result of any such representation, representation or warranty with the data.

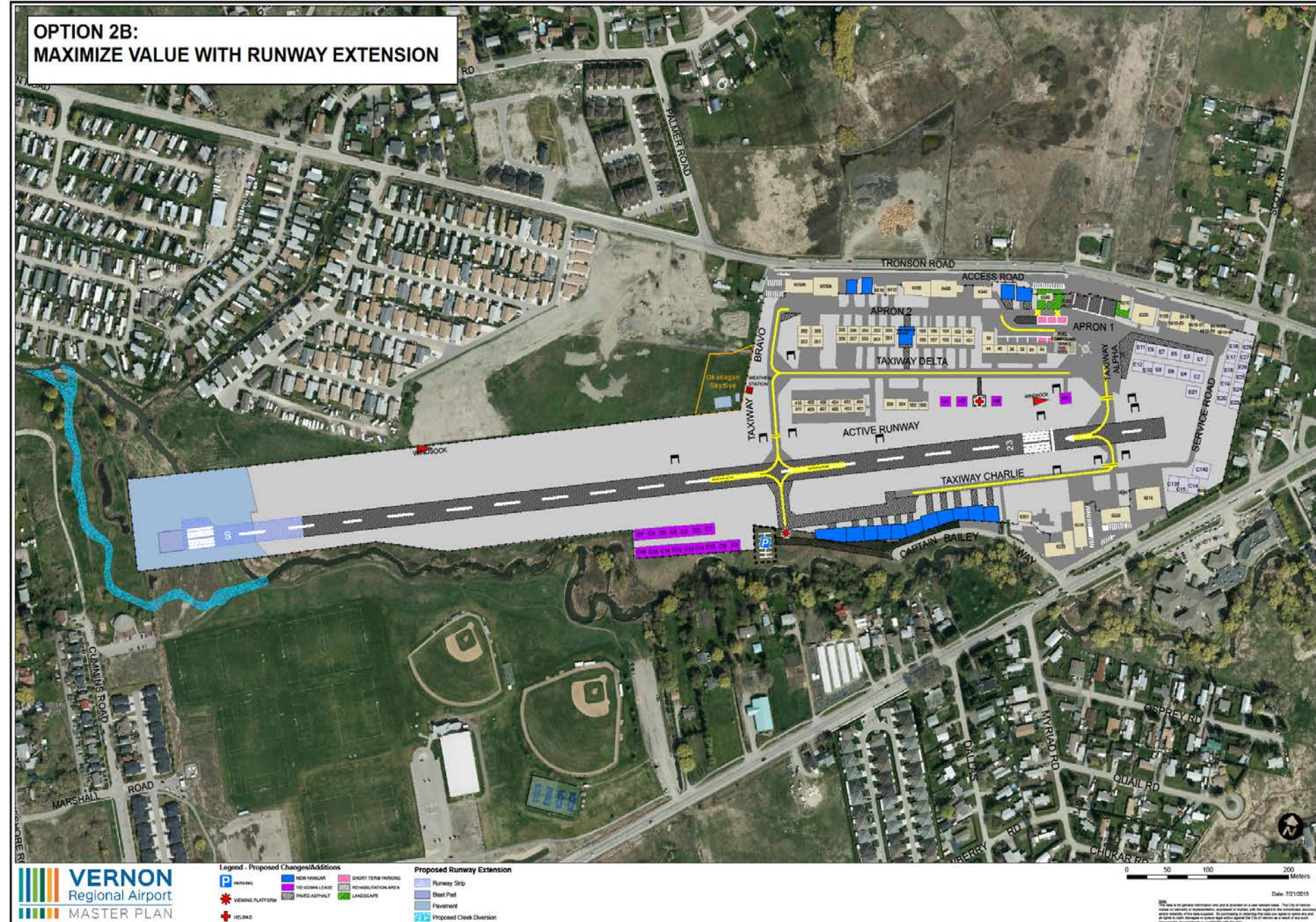
OPTION 2: MAXIMIZE VALUE WITHOUT EXPANSION



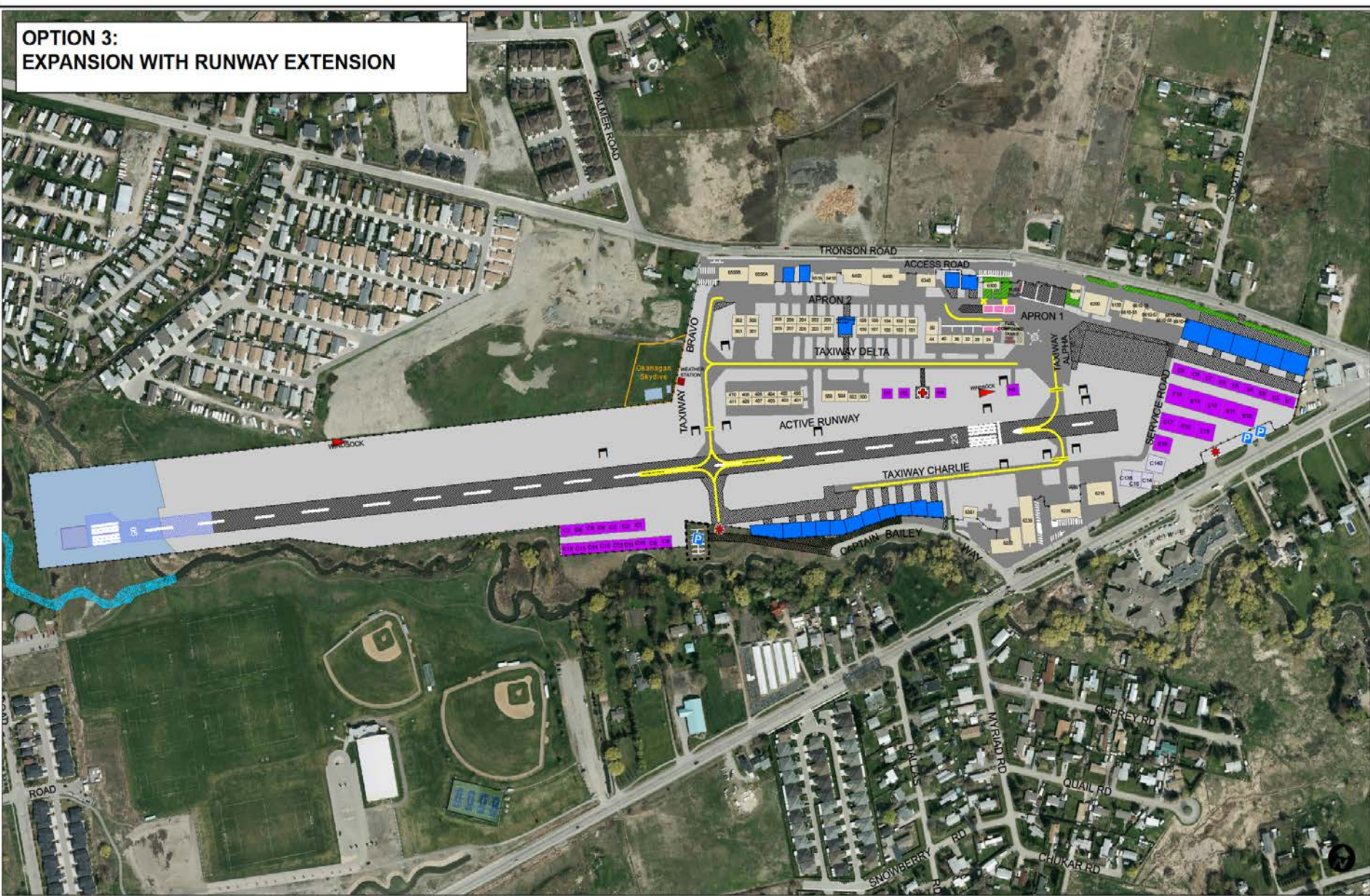
Legend - Proposed Changes/Additions

-  PARKING
-  NEW HANGAR
-  SHORT TERM PARKING
-  VIEWING PLATFORM
-  TIE-DOWN LEASE
-  REHABILITATION AREA
-  HELIPAD
-  PRIVATE ASPHALT
-  LANDSCAPE

OPTION 2B: MAXIMIZE VALUE WITH RUNWAY EXTENSION

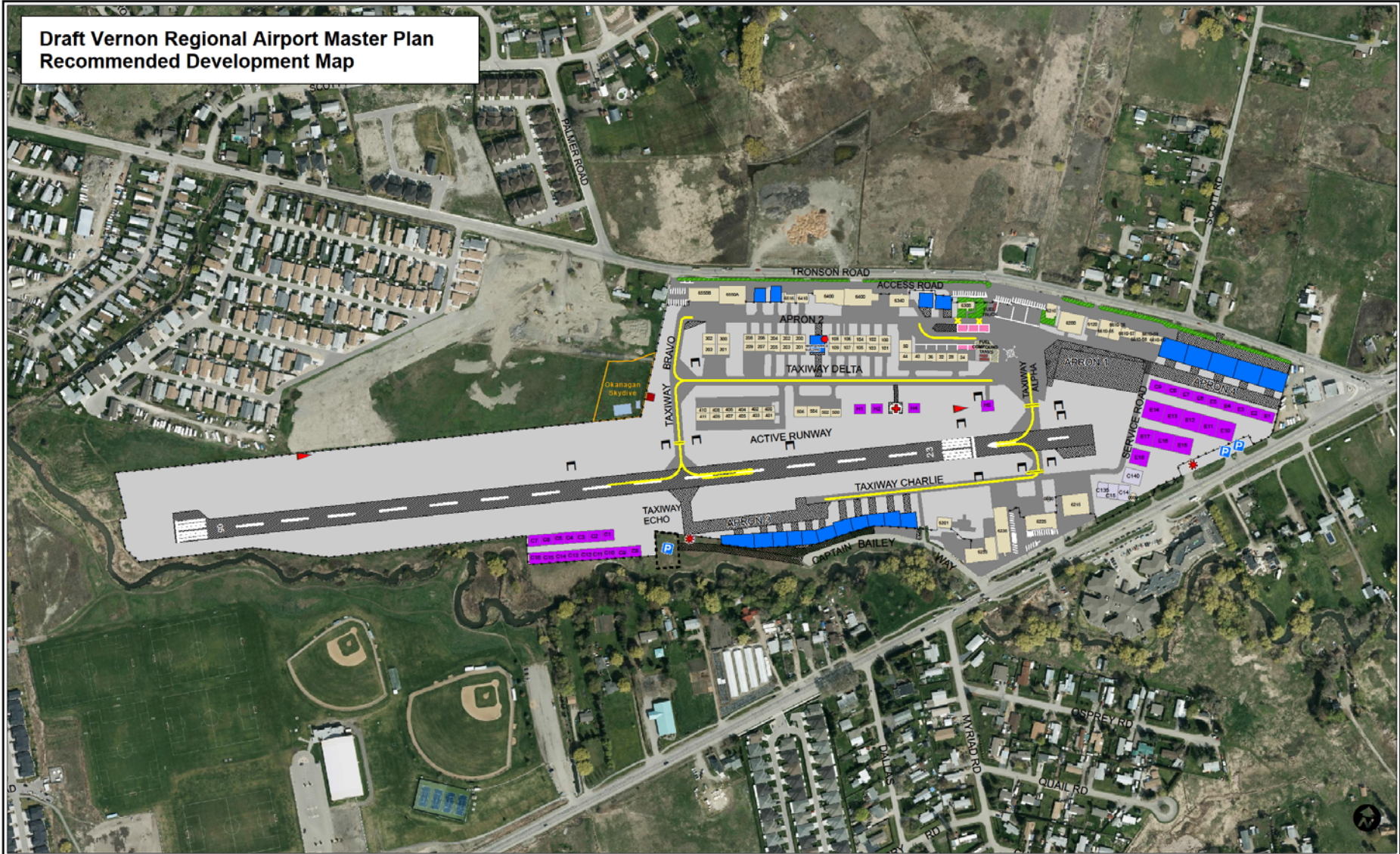


OPTION 3: EXPANSION WITH RUNWAY EXTENSION



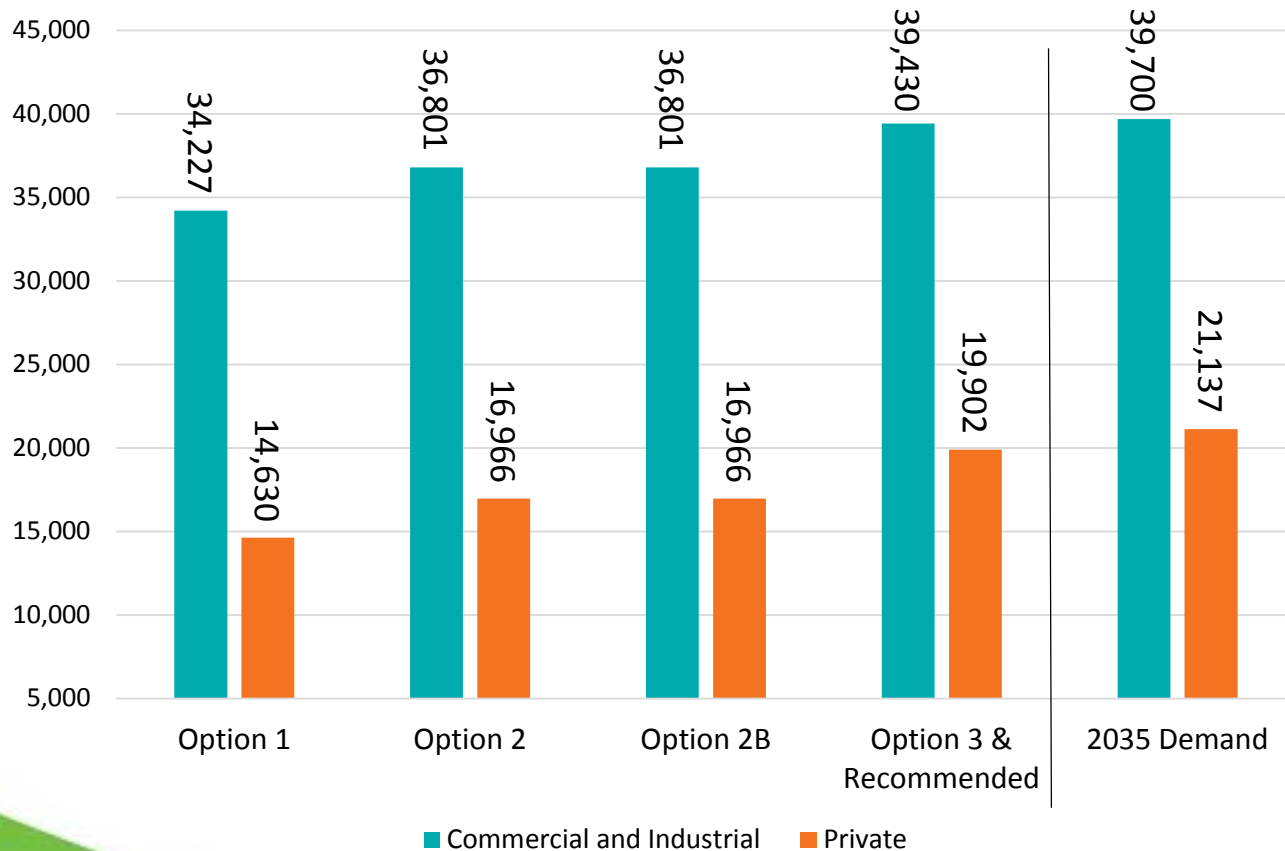
Legend - Proposed Changes/Additions			Proposed Runway Extension		
PARKING	NEW HANGAR	SHORT TERM PARKING	Runway Strip	Stand Pad	Pavement
VIEWING PLATFORM	TIE DOWN/LEASE	REHABILITATION AREA	PAVED ASPHALT	LANDSCAPE	Proposed Creek Diversion
HELIPAD					

Draft Vernon Regional Airport Master Plan Recommended Development Map



EVALUATION OF DEVELOPMENT ALTERNATIVES

COMMERCIAL/INDUSTRIAL AND PRIVATE HANGAR SPACE



PROJECTED AIRCRAFT MOVEMENT

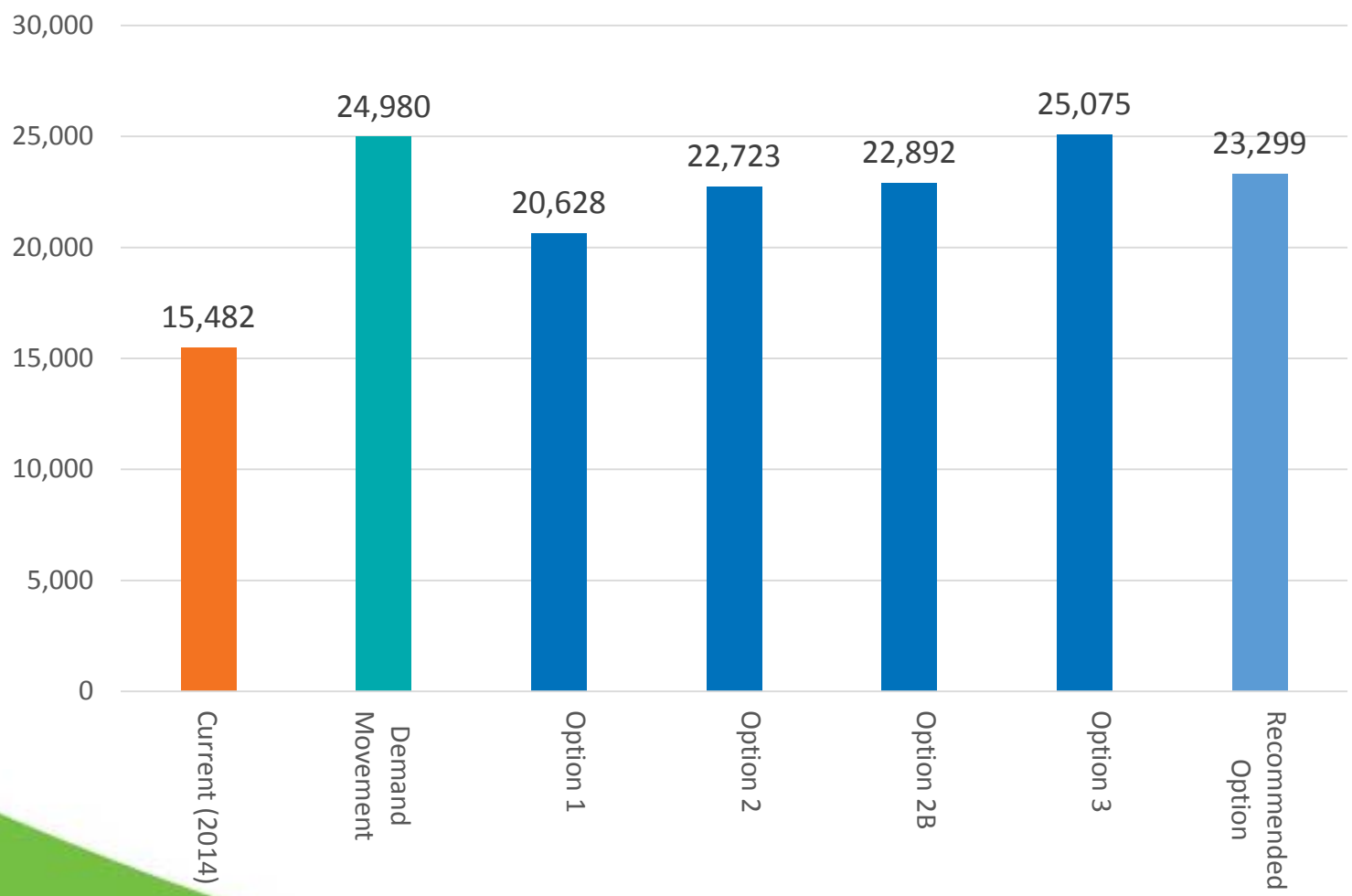
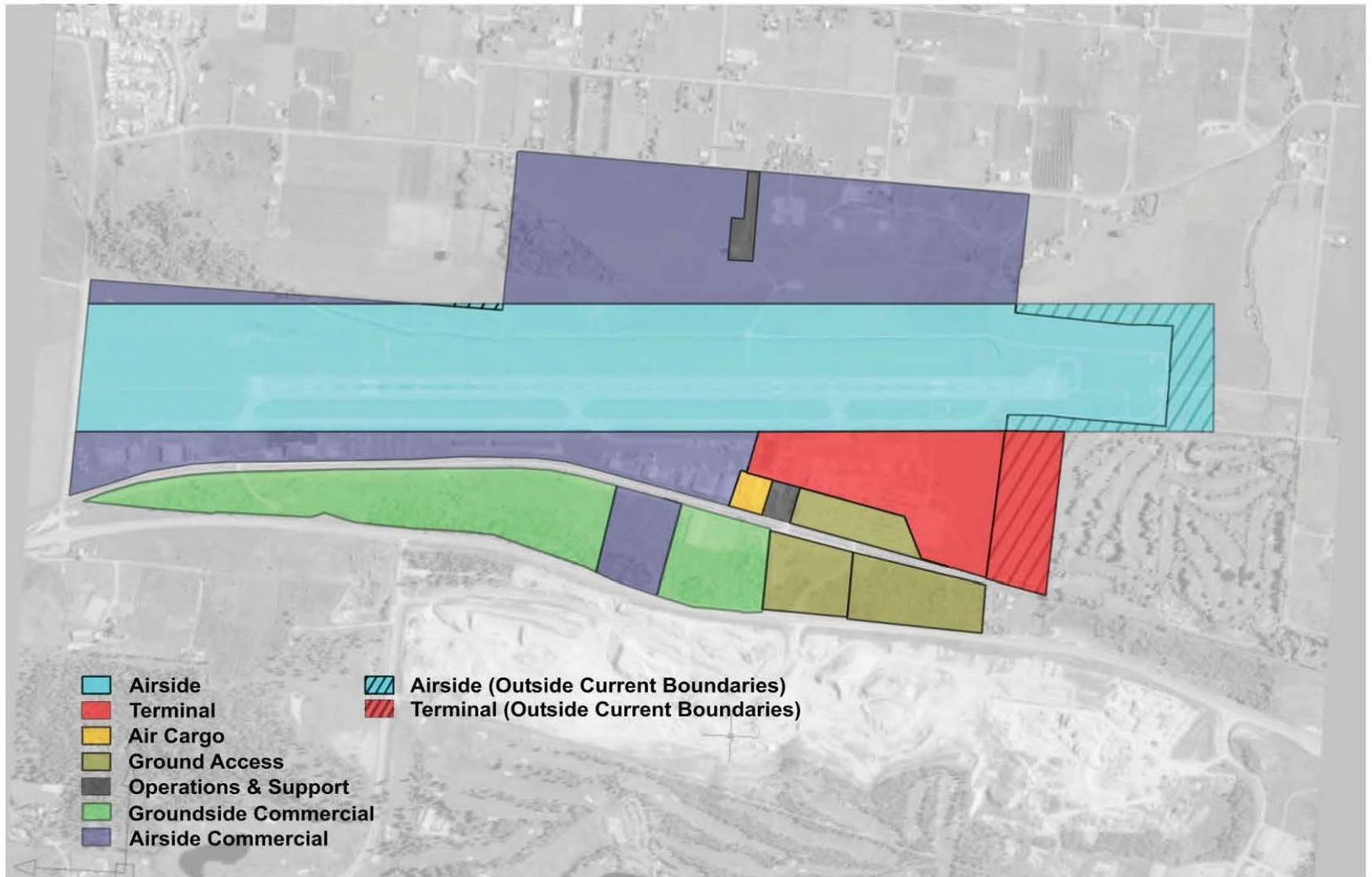


Figure 8-3: Kelowna International Airport: Proposed Land Use Plan



This aerial map displays a coastal region with a prominent red-shaded wedge-shaped area. The wedge is defined by red lines and contains numerical elevation data. The wedge points towards a body of water on the left. The surrounding area includes residential neighborhoods, green fields, and a road labeled 'Hwy 101'. A north arrow is in the bottom right corner.

The red-shaded area contains the following numerical data (elevation values):

- Along the left edge of the wedge (from top to bottom): 415, 410, 405, 400, 395, 390, 385, 380, 375, 370, 365, 360, 355, 350.
- Along the right edge of the wedge (from top to bottom): 415, 410, 405, 400, 395, 390, 385, 380, 375, 370, 365, 360, 355, 350.
- Inside the wedge, near the top right: 389.64, 385, 380, 375, 370, 365, 360, 355, 350.
- Below the wedge, near the center: 389.64 Elevation.

WEST BYPASS CITY DESIGN



VERNON REGIONAL AIRPORT ECONOMIC IMPACT



STUDY METHODOLOGY

Stage 1

Estimating YVK Current Economic Impact:

- ☐ 2014 Airport Employment Survey
- ☐ Aviation Stakeholder In-depth Interview and Survey

Stage 2

Data Collection:

- ☐ North Okanagan Employment, sectors revenues and wages
- ☐ Vernon's population projections and economic trends analysis
- ☐ Vernon Regional Airport growth scenarios

Stage 3

Economic Multipliers Measurement:

- ☐ The British Columbia Input-Output Model
- ☐ Employment, GDP and BC 2008 Output multipliers for Air, Rail Transportation and Support sectors were used
- ☐ Analyzing the economic impact of other airports in BC

VERNON REGIONAL AIRPORT CURRENT ECONOMIC IMPACT








Total Direct Employment	Full Time	Part Time	Total Wages and Benefits (\$ Millions)
97	78	19	\$6.5

ECONOMIC MULTIPLIERS

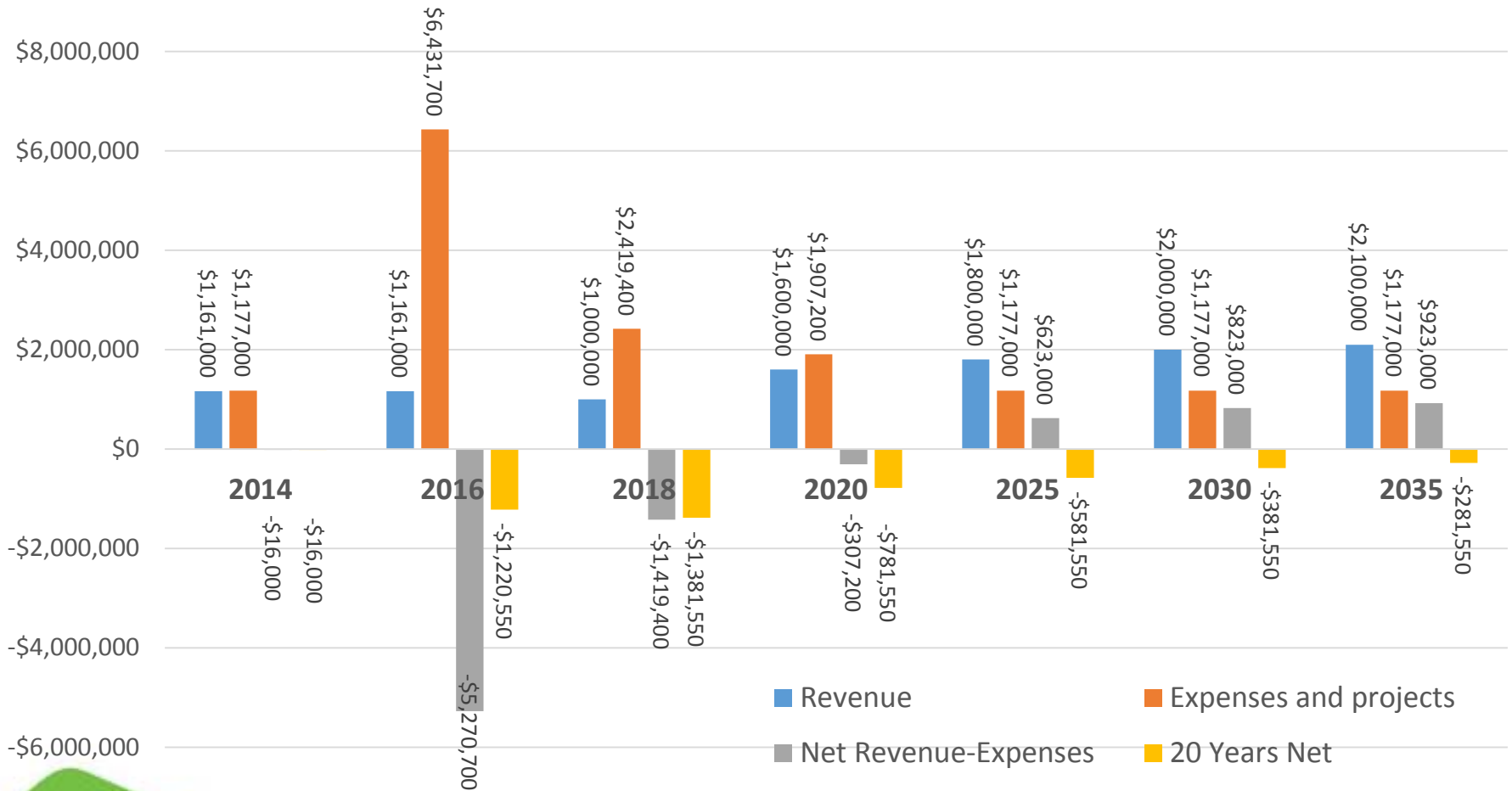
ECONOMIC ACTIVITY AT YVK, 2014

	Employment	Income (\$millions)	GDP (\$millions)
Direct	97	6.5	11.1
Indirect	361	13.2	26.4
Induced	325	11.9	20.0
Total	783	31.6	57.5

DEVELOPMENT ALTERNATIVES OUTPUT ANALYSIS 2035

	Estimated Cost + 25% Contingency (\$) 	Airport Land (Acre) 	Air Traffic (Movements) 	Economy (Employees) 	Economic Impact Income (\$) 
Current 2014		90	15,482	Direct: 97 Indirect: 361	Direct:\$6,459,518 Indirect: \$13,245,812
Option 1 Some Improvements Without Expansion	\$986,400	90 (0%)	20,628 (33.2%)	Direct: 97 (0%) Indirect: 361 (0%)	Direct:\$6,459,518 Indirect: \$13,245,812
Option 2 Maximize Value Without Expansion	\$2,056,600	92 (1.6%)	22,723 (46.8%)	Direct:104 (6.7%) Indirect: 387 (7.2%)	Direct:\$6,925,669 Indirect: \$14,199,804
Option 2B Maximize Value With Runway Extension	\$7,277,300	98 (8.2%)	22,892 (47.9%)	Direct: 106 (9.3%) Indirect: 395 (9.4%)	Direct:\$7,058,855 Indirect: \$14,493,340
Option 3 Expansion With Runway Extension	\$11,063,300	103 (16.4%)	25,075 (62.0%)	Direct: 114 (17.5%) Indirect: 424 (14.8%)	Direct:\$7,591,599 Indirect: \$15,557,408

RETURN on INVESTMENT 2015-2035: Option 2B



RETURN on INVESTMENT 2015-2035: RECOMMENDED OPTION



ECONOMIC MULTIPLIERS WITHOUT CORPORATE AVIATION

	Current		Without Current YVK Corporate Aviation Users	
	Employment	Income (\$millions)	Employment	Income (\$millions)
Direct	97	6.5	80	5.2
Indirect	361	13.2	297	10.5
Induced	325	11.9	268	9.5
Total	783	31.6	645	25

Vernon Regional Airport Fuel Sales by Type 2006-2014 (Liters)

Year	Avgas 100/LL	Jet Fuel	Total
2006	114,992	271,665	386,657
2007	133,263	290,736	423,999
2008	Missing data	318,110	Missing data
2010	153,509	345,876	499,385
2011	151,830	334,643	486,473
2012	165,283	404,093	569,376
2013	181,859	366,510	548,369
2014	220,479	354,044	574,523

RUNWAY EXTENSION PROJECT



AIRCRAFT DEMAND



Temperature	Gross	Runway Length Required	Runway Length Required (50ft Obstacle)
10° C	Max Loaded	930 ft.	1670 ft.
20° C	Max Loaded	1000 ft.	1790 ft.
30° C	Max Loaded	1075 ft.	1915 ft.



Operation Class	Temperature	Gross	Runway Required For Take-off	Runway Required For Landing
Private	15° C	Max Loaded	3,670 ft.	2,850 ft.
Private	30° C	Max Loaded	4,410 ft.	2,990 ft.
Commercial	15° C	Max Loaded	3,670 ft.	4,560 ft.
Commercial	30° C	Max Loaded	4,410 ft.	4,784 ft.



LEGEND

	BLUE/WHITE SYMMETRICAL EDGE LIGHT		NEW PAVEMENT
	RED/WHITE END LIGHT		NEW RUNWAY STRIP
	RED/WHITE PAPI		NEW BLAST PAD
	GREEN/WHITE RUNWAY EDGE LIGHT		
	GREEN/WHITE THRESHOLD LIGHT		

NOTES

1:2000
ISSUED FOR RFI/RFI

CLIENT



YWK - RUNWAY FEASIBILITY STUDY
VERNON, BRITISH COLUMBIA

RUNWAY 05-23 EXTENSION
OPTION 4

PROJECT NO: C31103234	DATE MD	DATE KA	DATE 0
OFFICE VANC	DATE May 13, 2014		

Figure 4B

GRANDFATHERING AT AIRPORTS

“TCCA intends to issue a national regulatory exemption to 302.07(1)(a)(ii) so that the airport may use the standards contained in TP312 4th edition, subject to the following conditions:

- (a) Final project plans, including the Plan of Operations during Construction, are submitted to TCCA for review before the **12 month** anniversary of the coming into force of TP312 5th edition; and
- (b) The works are completed in full, and affected areas fully operational within **24 months** of the coming into force of TP312 5th edition”.

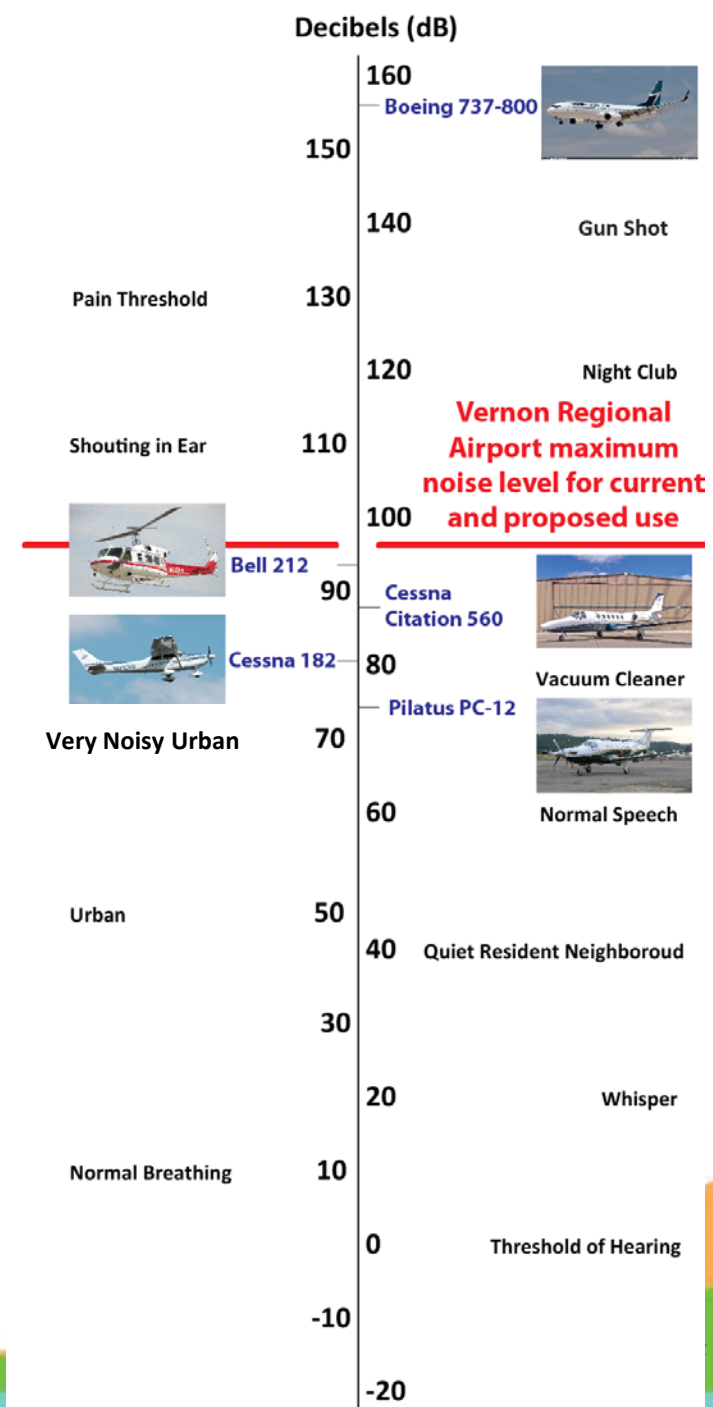


Process	2016												2017											
	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
Council's Resolution																								
RFP & Engineering Design																								
Transport Canada Review																								
Project Permitting (minimum timeframe)																								
Federal: Department of Fisheries and Oceans (DFO)																								
DFO Review																								
DFO Approval																								
Provincial:																								
Water Act Approval																								
Scientific Fish Collection Permits																								
Wildlife Act Permit																								
Smooth Archaeological Study																								
Pre-Construction Monitoring																								
Municipal:																								
Development Permit & RAR																								
Vernon Creek Realignment																								
Survey																								
Prep Area																								
Excavate New Channel																								
Habitat Prep																								
Isolate Channel																								
Construct By-pass and Divert Flow																								
Restoration																								
Post Monitoring																								
Runway Extension Work																								
Runway Construction																								

OKANAGAN INDIAN BAND I.R. 6



NOISE METRICS AND ACOUSTICAL OBJECTIVES



RUNWAY GROOVING FEASIBILITY



FINANCIAL REVIEW

PRINCIPLES INVOLVED

- ☐ Development does not impose an undue financial burden on existing taxpayers
- ☐ Limited funds for contingency purposes
- ☐ Statutory restrictions on assistance to business
- ☐ Statutory requirements for long term borrowing
- ☐ Statutory limitations on amounts and terms for short term borrowing

FUNDING SOURCES EVALUATION

Approaching from a Local Area Service perspective the costs between Public and Private costs were estimated

	Option 1: Some Improvements Without Expansion	Option 2: Maximize Value Without Expansion	Option 2B: Maximize Value Runway Extension	Option 3: Expansion With Runway Extension	Recommended Option: Expansion Without Runway Extension
Total Estimated Public Projects Cost (\$)	\$986,400	\$1,436,600	\$1,352,600	\$2,852,600	\$2,936,600
Total Estimated Private Projects Cost (\$)	\$0	\$620,000	\$5,874,700	\$8,210,700	\$2,956,000
Total (\$)	\$986,400	\$2,056,600	\$7,227,300	\$11,063,300	\$5,892,600

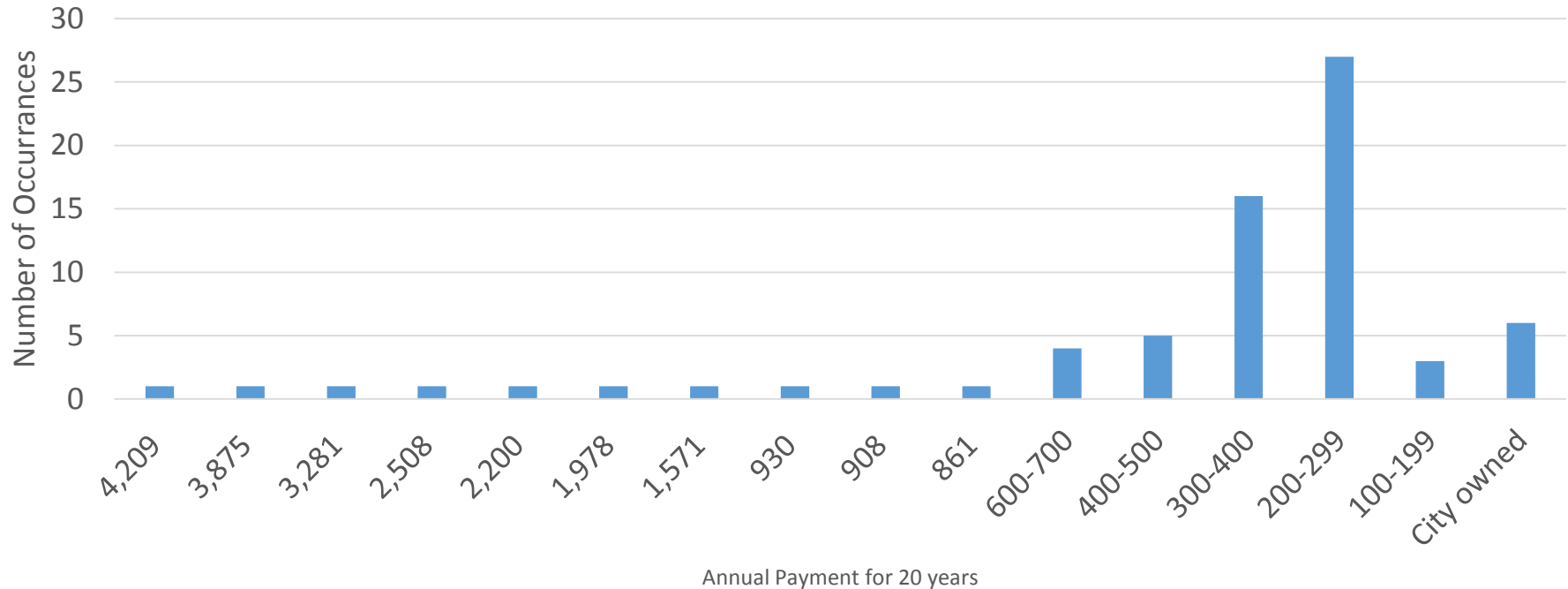
FUNDING SOURCES EVALUATION

- ☐ Estimates were prepared for each costing scenario
- ☐ Interest rates for MFA borrowing used 3%
- ☐ Term of 20 years was used for all scenarios for illustration
- ☐ Estimates have been prepared on Net Land and Improvements for cost allocation

• Option 2 Local Service area funding of development

- Borrowing \$ 620,000

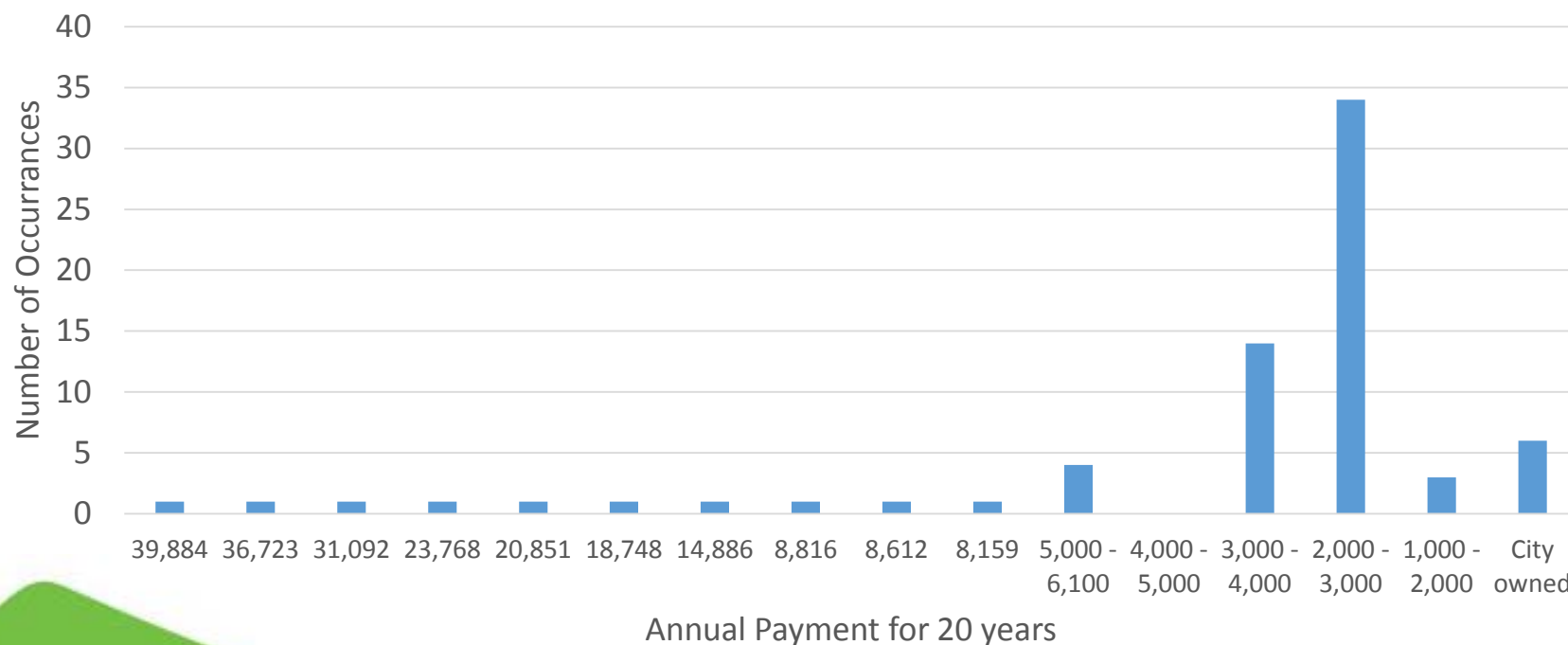
Annual Payments Option 2



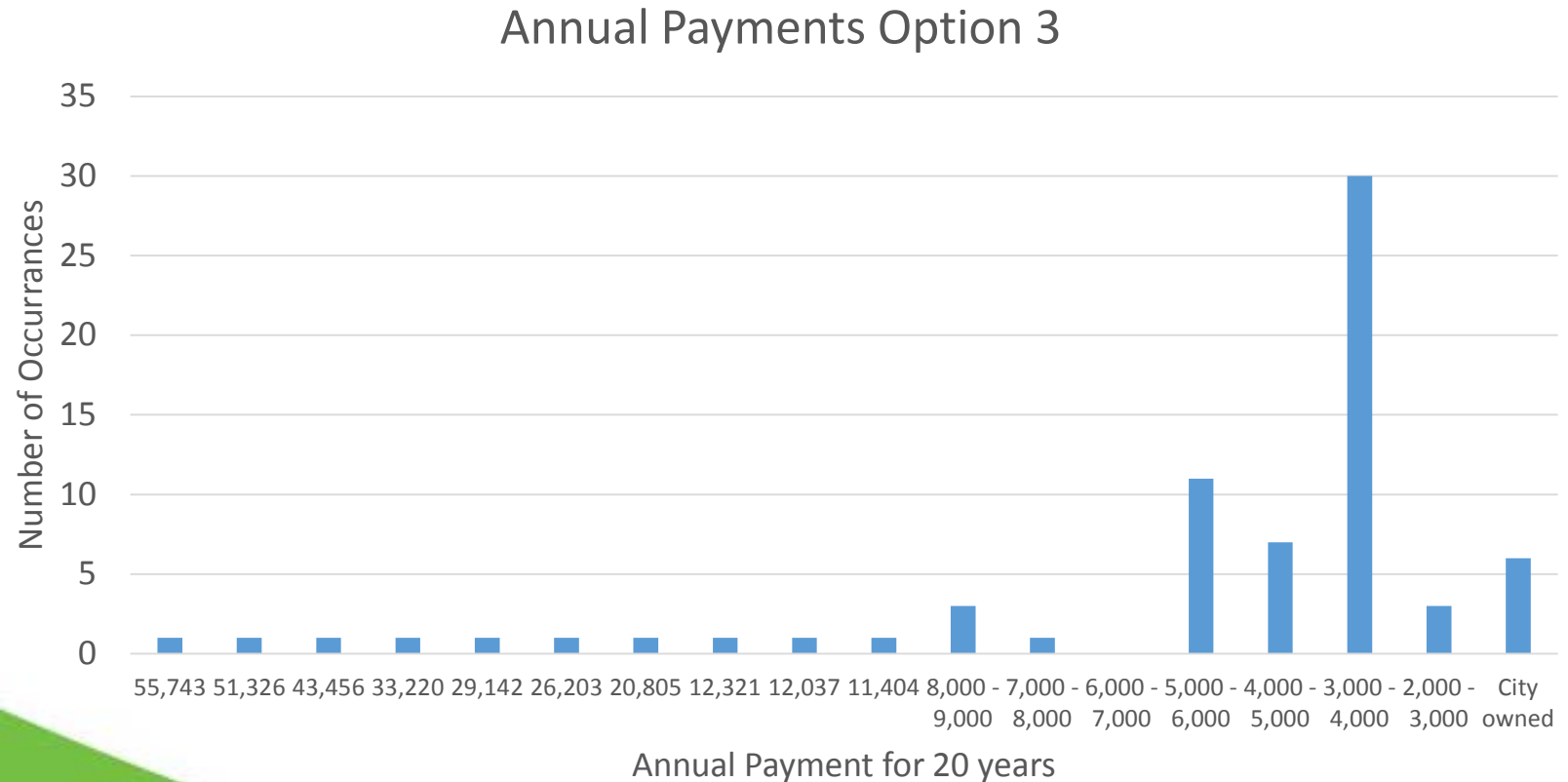
- Option 2B Local Service area funding of development

- Borrowing \$ 5,874,700

Annual Payments Option 2B

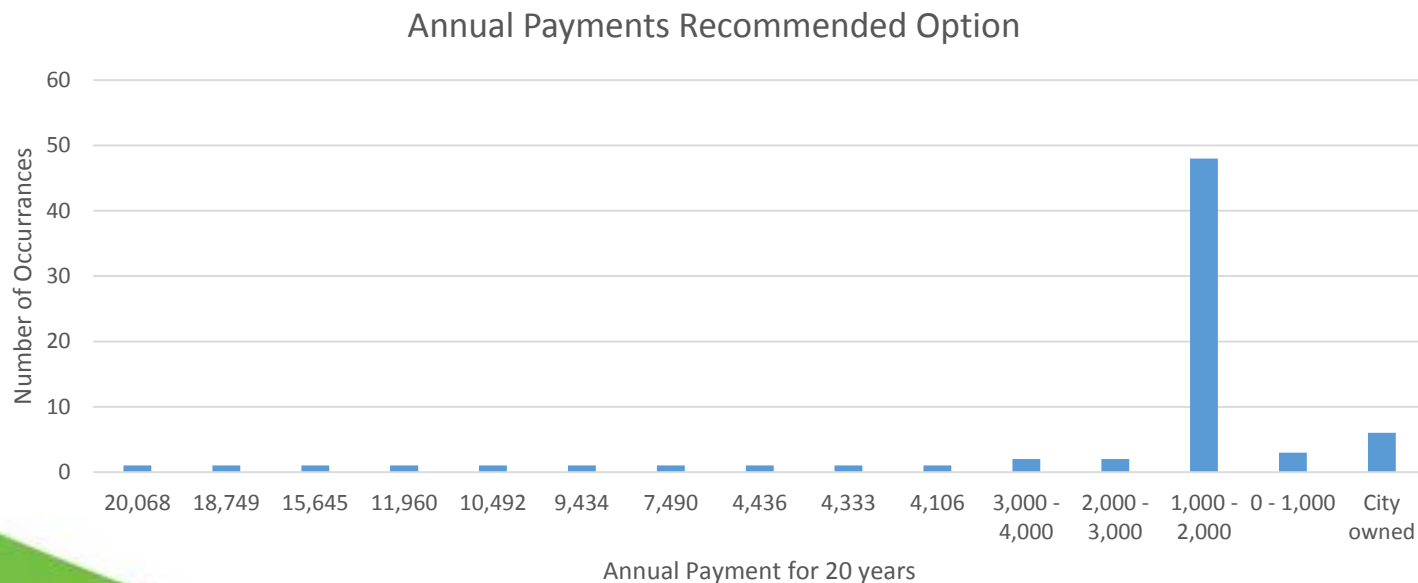


- Option 3 Local Service area funding of development
 - Borrowing \$ 8,210,700



FUNDING SOURCES EVALUATION

- Recommended Option Local Service area funding of development
Borrowing \$ 2,956,000



POTENTIAL FUNDING SOURCES

- ☐ Land Reserve
- ☐ Short Term Borrowing \$ 1,943,050 ^{5 year repayment}
- ☐ Taxation \$ 340,180 ^{represents 1% tax increase}
- ☐ Building Canada Fund – Small Communities Grant ~\$ 2,000,000
- ☐ BC Air Access Program ~\$ 500,000
- ☐ Other Grant Opportunities Unknown at this time
- ☐ Airport User Fees Already in place ^{Increases possible}
- ☐ Airport Development Fees Unknown- Bylaw changes required
- ☐ Fortis BC Legacy Reserve \$ 2,734,018 Est ^{at 2015 year end}
- ☐ Reserves

AIRPORT FEE COMPARISON

Aircraft: Cessna 172

Maximum take-off weight: 1,111kg

Seating: 4



Cessna 172 (1,111kg)	Landing Fee	Aircraft Parking		
		Day	Month	Year
Vernon	\$0.00	\$12.00		\$475.00
Salmon Arm	\$0.00	\$10.00	\$100.00	\$625.00
Penticton	\$0.00	\$6.11	\$49.06	\$310.24
Kamloops	\$0.00	\$9.07	\$72.98	\$446.64
Kelowna	\$0.00	\$14.00		\$275.00
Olivier	\$0.00			\$500.00
Castlegar	\$0.00	\$6.57	\$52.74	\$400.00
Terrace	\$0.00	\$10.00	\$100.00	
Quesnel	\$0.00	\$6.93	\$55.44	\$361.70
Smithers	\$0.00	\$8.02	\$64.54	\$444.21
Williams Lake	\$0.00	\$6.54	\$52.49	\$267.50
Average Fee	\$0.00	\$8.92	\$54.73	\$410.53

AIRPORT FEE COMPARISON

Aircraft: Cessna 560

Maximum take-off weight: 7,394kg

Seating: 8



Cessna 560 (7,394kg)	Landing Fee	Aircraft Parking		
		Day	Month	Year
Vernon	\$20.00	\$20.00		
Salmon Arm	\$75.00	\$20.00	\$150.00	\$1,500.00
Penticton	\$34.23	\$10.82	\$219.34	
Kamloops	\$35.42	\$16.08	\$326.57	\$591.94
Kelowna	\$44.66	\$14.00		\$575.00
Oliver	\$0.00	\$0.00	\$0.00	\$1,000.00
Castlegar	\$34.75	\$11.63	\$235.79	
Terrace	\$44.36	\$45.00		
Quesnel	\$33.05	\$6.93	\$55.44	\$434.28
Smithers	\$35.49	\$14.21	\$26.41	
Williams Lake	\$30.09	\$11.58	\$52.49	\$267.50
Average Fee	\$38.71	\$17.03	\$106.60	\$436.87

PLANNING PROCESS: NEXT STAGES

