

Ted Stevens Anchorage International Airport

2014 MASTER PLAN UPDATE

CHAPTER 5 - ALTERNATIVE DEVELOPMENT AND EVALUATION

FINAL
DECEMBER 2014

RS&H

IN ASSOCIATION WITH:
HDR
DOWL HKM
RIM Architects
ATAC



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TED STEVENS ANCHORAGE INTERNATIONAL AIRPORT MASTER PLAN UPDATE

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December 2014

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Prepared for:
Ted Stevens Anchorage International Airport
State of Alaska Department of Transportation & Public Facilities

Prepared by:



In association with:
HDR
DOWL HKM
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ATAC

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PREFACE

The Ted Stevens Anchorage International Airport (Airport) Master Plan Update (Master Plan Update) provides Airport management and the Alaska Department of Transportation & Public Facilities (DOT&PF) with a strategy to develop the Ted Stevens Anchorage International Airport. The intent of the Master Plan Update is to provide guidance that will enable Airport management to strategically position the Airport for the future by maximizing operational efficiency and business effectiveness, as well as by maximizing property availability for aeronautical development through efficient planning. While long-term development is considered in master planning efforts, the typical planning horizon for the Master Plan Update is 20 years.

The Federal Aviation Administration provides guidance for Master Plan development in *FAA Advisory Circular 150 / 5070-6B, Airport Master Plans*. Although not required, the Advisory Circular strongly recommends airports prepare a Master Plan. Funding for the Master Plan Update is provided primarily by the Federal Aviation Administration through an Airport Improvement Program grant.

A comprehensive Master Plan Update was last prepared in 2002 and a partial update was undertaken between 2006 and 2008. This Master Plan Update was initiated in June 2012 and concluded in December 2014. The DOT&PF entered into a contract with the firm RS&H to lead this effort. The Master Plan Update included a robust public and stakeholder involvement program.

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Chapter 5 Alternatives Development and Evaluation

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Acronyms and Abbreviations

AAAC	Airport Airline Affairs Committee
AAC	Aircraft Approach Category or Alaska Administrative Code
AACC	Anchorage Airport Communications Committee
AAD	Annual Average Day
AADT	Annual Average Daily Traffic
AAGR	Average Annual Growth Rate
AC	Advisory Circular
ACHP	Advisory Council on Historic Preservation
ACMI	Aircraft, Crew, Maintenance, and Insurance
ACMP	Anchorage Coastal Management Plan
ACRP	Airport Cooperative Research Program
ADAPT	Annual Delay and Activity Performance Times
ADEC	Alaska Department of Environmental Conservation
ADF	Aircraft Deicing Fluid
ADF&G	Alaska Department of Fish and Game
ADG	Airplane Design Group
ADNR, OHA	Alaska Department of Natural Resources, Office of History and Archaeology
ADOLWD	Alaska Department of Labor and Workforce Development
AEDC	Alaska Economic Development Corporation
AFSC	Anchorage Fueling and Service Company
AGL	Above Ground Line
AHPA	Alaska Historic Preservation Act
AHRS	Alaska Heritage Resource Survey
AIAS	Alaska International Airport System
AIDEA	Alaska Industrial Development and Export Authority
AIP	Airport Improvement Program
Airport	Ted Stevens Anchorage International Airport
AIT	Advanced Imaging Technology
AMATS	Anchorage Metropolitan Area Transportation Study
ANGB	Air National Guard Base
AOA	Air Operations Area
APDES	Alaska Pollutant Discharge Elimination System
APU	Auxiliary Power Units
ARC	Airport Reference Code
ARFF	Aircraft Rescue and Fire Fighting
AS	Alaska Statute

ASDA	Accelerate-Stop Distance Available
ASDE	Airport Surface Detection Equipment
ASIG	Aircraft Service International Group
ASPM	Aviation System Performance Metrics
ASR	Airport Surveillance Radar
ATCT	Airport Traffic Control Tower
AWMP	Anchorage Wetlands Management Plan
AWWU	Anchorage Water and Wastewater Utility
BAT	Best Available Technology
BGEPA	Bald and Golden Eagle Protection Act
BMPs	Best Management Practices
BRAC	Base Realignment and Closure
BRL	Building Restriction Line
CAA	Clean Air Act
CAD	Computer-aided Design
CATS	Compliance Activity Tracking System
CBIS	Checked Baggage Inspection System
CBP	Customs and Border Protection
CBRA	Checked Baggage Resolution Area
CCSF	Certified Cargo Screening Facility
CDS	Consolidated De-Icing Services
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CESQG	Conditionally Exempt Small Quantity Generator
CFC	Customer Facility Charge
CFR	Code of Federal Regulations, or Crash / Fire / Rescue
CIP	Capital Improvement Plan
CO	Carbon Monoxide
Coastal Trail	Tony Knowles Coastal Trail
COD	Chemical Oxygen Demand
CONRAC	Consolidated Rental Car Facility
CUPPS	Common Use Passenger Processing Systems
CZMA	Coastal Zone Management Act
DHS	Department of Homeland Security
DME	Distance Measuring Equipment
DNL	Day-night Average Sound Level
DO	Dissolved Oxygen

DOT	U.S. Department of Transportation
DOT&PF	Alaska Department of Transportation and Public Facilities
EAS	Essential Air Service
EDS	Explosive Detection System
EMS	Environmental Management System
EOC	Emergency Operations Center
EQA	Equivalent Aircraft
ETD	Explosive Trace Detection
FAA	Federal Aviation Administration
FAR	Federal Aviation Regulation
FBO	Fixed Base Operator
FCC	Federal Communications Commission
FEMA	Federal Emergency Management Agency
FIRMs	Flood Insurance Rate Maps
FIS	Federal Inspection Service
FMRA	FAA Modernization and Reform Act of 2012
FY	Fiscal Year
GA	General Aviation
GPS	Global Positioning System
GRE	Ground Run-Up Enclosure
GSE	Ground Service Equipment
HLB	Heritage Land Bank
IAS	International Aviation Services, Inc.
IATA	International Air Transport Association
IBC	International Building Code
IFR	Instrument Flight Rules
IFT	International Freight Terminal
ILS	Instrument Landing System
INM	Integrated Noise Model
ISER	Institute of Social and Economic Research (at the University of Alaska Anchorage)
JBER	Joint Base Elmendorf-Richardson
LDA	Landing Distance Available
LOC	Localizer
LOS	Level of Service
LUST	Leaking Underground Storage Tank
Master Plan Update	Ted Stevens Anchorage International Airport Master Plan Update

MEP	Mechanical, Electrical, and Plumbing
MOA	Municipality of Anchorage
MSA	Metropolitan Statistical Area
MSGP	Multi-Sector General Permit
MSL	Mean Sea Level
MTOW	Maximum Takeoff Weight
NAAQS	National Ambient Air Quality Standards
NAC	Northern Air Cargo
NADP	Noise Abatement Departure Profiles
NAMS	Northern Air Maintenance Services
NAVAID	Navigational Aid
NCP	Noise Compatibility Program
NDB	Non-directional Beacon
NEMs	Noise Exposure Maps
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPIAS	National Plan of Integrated Airport System
NPL	National Priorities List
NRHP	National Register of Historic Places
O&D	Origin and Destination
O&M	Operations and Maintenance
OAIASS	Optimize AIAS Strategy
OER	Operating Expense Ratio
OFA	Object Free Area
OFZ	Obstacle Free Zone
OSR	On-Screen Resolution
PAL	Planning Activity Level
PAPI	Precision Approach Path Indicator
PCC	Portland Cement Concrete
PCI	Pavement Condition Index
PDARS	Performance Data Analysis and Reporting System
PFC	Passenger Facility Charges
PM-10	Particulate Matter with a Diameter of 10 Microns or Less
PM-2.5	Particulate Matter with a Diameter of 2.5 Microns or Less
QTF	Quick-Turnaround Facility

RCRA	Resource Conservation and Recovery Act
RDC	Runway Design Code
RNAV	Area Navigation
ROFA	Runway Object Free Area
RON	Remain Overnight
RPZ	Runway Protection Zone
RSA	Runway Safety Area
RSIP	Residential Sound Insulation Program
RTR	Remote Transmitter Receiver
SCS	Sterile Corridor System
SHPO	State Historic Preservation Office(r)
SIDA	Security Identification Display Area
SIP	State Implementation Plan
SSCP	Security Screening Checkpoint
STEP	South Terminal Expansion Project
SWPPP	Stormwater Pollution Prevention Plan
TACAN	Tactical Air Navigation
TDG	Taxiway Design Group
TERPS	Terminal Instrument Procedures
TODA	Takeoff Distance Available
TORA	Takeoff Run Available
TRACON	Terminal Radar Approach Control
TSA	Transportation Security Administration
UPS	United Parcel Service
USDA-WS	U.S. Department of Agriculture - Wildlife Services
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USPS	United States Postal Service
VASI	Visual Approach Slope Indicator
VFR	Visual Flight Rules
VOCs	Volatile Organic Compounds
VOR	Very High Frequency Omnidirectional Range
WAAS	Wide Area Augmentation Systems
WADP	West Anchorage District Plan
WBI	Whole Body Imaging
WHA	Wildlife Hazard Assessment
WHMP	Wildlife Hazard Management Plan

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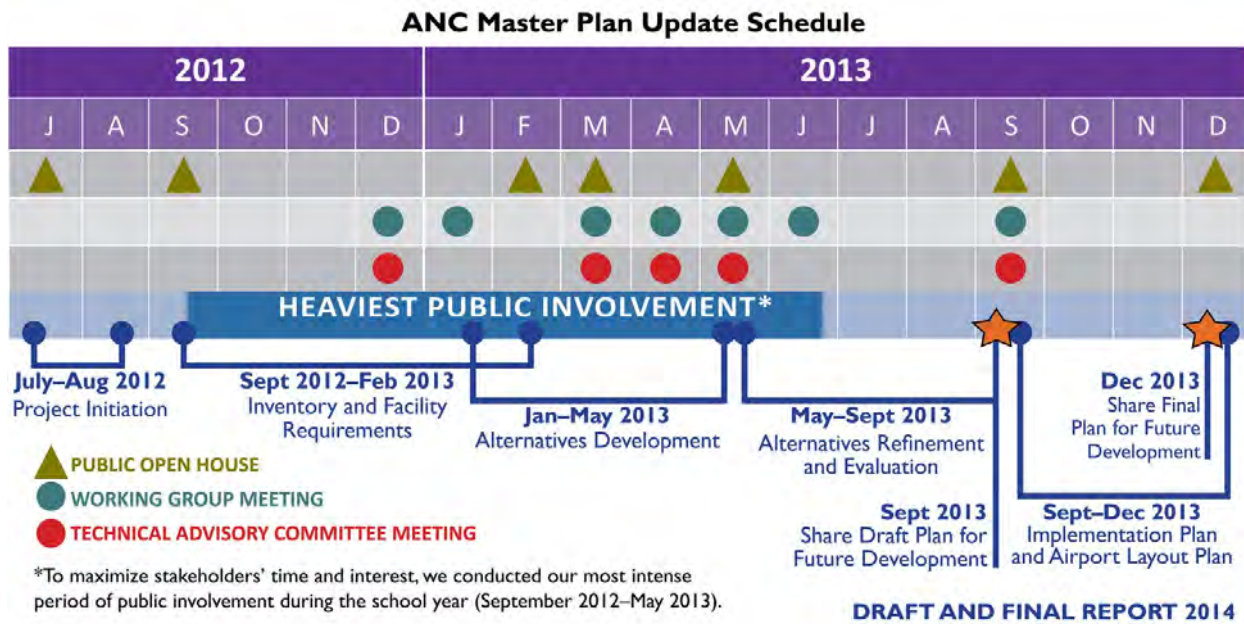
CHAPTER 5 ALTERNATIVES DEVELOPMENT AND EVALUATION

SECTION 1 INTRODUCTION

Following the determination of the forecast of aviation activity and facility requirements for the Ted Stevens Anchorage International Airport (Airport), a variety of concepts were developed that could potentially meet the forecast demand and facility requirements. These concepts were discussed among Airport staff, tenants, and other stakeholders, including members of the public. The best concept elements were combined into a set of distinct comprehensive alternatives. Through a formal evaluation process of the alternatives based on previously established criteria and informed by various technical analysis efforts, a future development plan was recommended. The concept and alternatives development, relevant technical analysis results, evaluation, and recommended plan are documented in this **Chapter 5, Alternatives Development and Evaluation**.

As presented in **Figure 5.1**, a series of meetings was held throughout the Ted Stevens Anchorage International Airport Master Plan Update (Master Plan Update) process to gather stakeholder feedback and public recommendations for consideration in identifying and refining potential plans for future Airport development. A total of seven Public Open House meetings, seven Working Group meetings, and five Technical Advisory Committee meetings were held between July 2012 and December 2013. In addition, a variety of other outreach methods were conducted, including individual stakeholder meetings, listening posts, presentations, attendance at Community Council meetings, and a public workshop. Each meeting included brief project updates or provided overall project information to various stakeholders.

Figure 5.1
 Master Plan Update Schedule



Source: HDR, 2014.

SECTION 2

AIRPORT DEVELOPMENT CONSTRAINTS AND OPPORTUNITIES

This section summarizes key constraints to and opportunities for Ted Stevens Anchorage International Airport (Airport) development, based on stakeholder input and an analysis of the Airport environment. Constraints represent issues that may limit Airport development, while opportunities represent factors that may support Airport development. The summarized Airport development constraints and opportunities are illustrated in Figure 5.2. The identified constraints and opportunities were used to determine, from a policy perspective, what on- and off-Airport lands may be suitable for future Airport development.

Constraints include, but are not limited to, the Airport's real property boundary, limited potential for property acquisition, and social, political, and environmental constraints. The Airport's physical environment presents several constraints.

- The uneven terrain on the west side of the Airport may present a challenge for future development, which would likely require grading of the terrain.
- Public vehicular access to the Airport is currently provided primarily via International Airport Road and, to a limited extent, Northern Lights Boulevard. Supporting growth on the west side of the Airport would require resolving roadway access in a cost-effective and convenient manner.
- The Airport boundary is the limit to which the Airport can expand without the acquisition of additional land. The boundary also includes the financial, political, and social implications of expanding the Airport's physical boundary.
- Off-airport land uses adjacent to the Airport include noise-sensitive residential areas to the east, south, and southeast.
- Off-airport land uses adjacent to the Airport to the west and southwest are used for recreational purposes. These land areas may also contain environmental conditions that are protected or restricted by federal, state, or local regulations and that may require mitigation of an imposed impact.

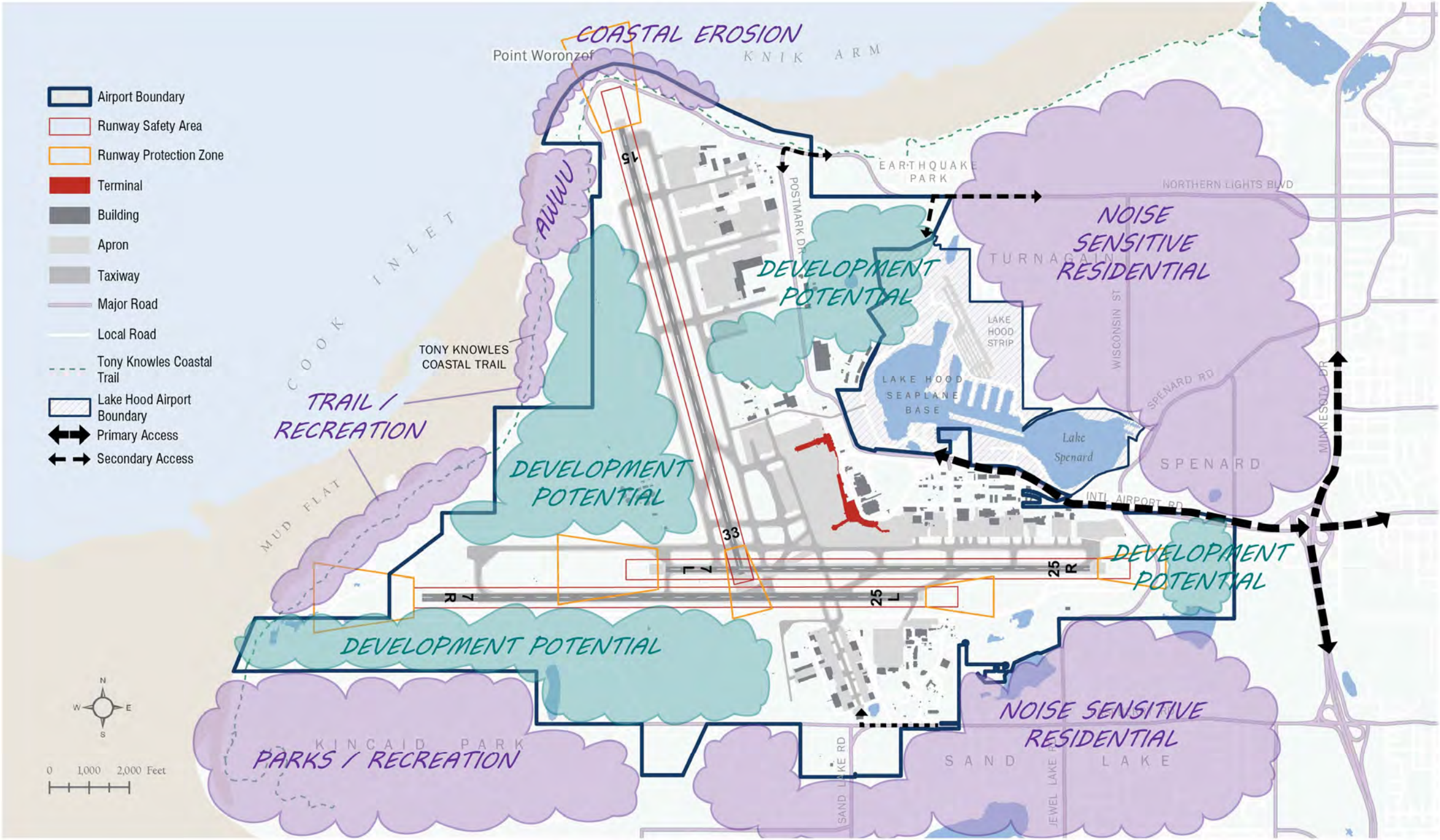
Opportunities represent enabling factors that may support future Airport development. Opportunities largely include undeveloped portions of Airport's real property.

- The West Airpark represents a land development opportunity since it is the largest swath of vacant land currently within the Airport boundary. The area west of the Airport may be best suited for potential future airside development.
- Other undeveloped areas are located in the North Airpark (including the area east of Postmark Drive) and areas of the

South Airpark (including the Kulis Business Park and southwest portion of the Airport).

- The recently obtained land in the South Airpark that was previously owned by the Federal Communications Commission also presents an opportunity for potential future Airport development. This area is perhaps equally suited for potential future airside or tenant development since there is adequate landside access.
- The area east of Runway 7L-25R is also an opportunity, perhaps best suited for potential future tenant development.
- The North Terminal site represents an area that could be redeveloped to accommodate demand or enhance revenue. The North Terminal facility is aging, and its continued use as a passenger terminal complex is questionable.
- Leaseholds currently serving non-aeronautical functions in prime aeronautical locations have also been identified as opportunities for redevelopment with an aeronautical function. This is especially the case for those leaseholds with near-term expiration dates.

Figure 5.2 Opportunities and Constraints



Source: RS&H, HDR, 2013.

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SECTION 3

CONCEPTS AND ALTERNATIVES DEVELOPMENT METHODOLOGY

This section describes the planning process used for concept development, concept screening, and alternatives development.

3.1 CONCEPT DEVELOPMENT

In order to adequately analyze the Ted Stevens Anchorage International Airport's (Airport's) various functional areas and create development options that address the constraints and opportunities identified earlier in the planning process, the Ted Stevens Anchorage International Airport Master Plan Update (Master Plan Update) team developed various concepts to explore options for potential Airport development. The goal of each concept development was to satisfy the needs identified in the facility requirements analysis and to meet the Master Plan Update Goals and Objectives outlined in **Chapter 1**, Goals and Objectives.

Concepts were identified for each of three functional areas: airfield, terminal, and land use. Initial concept design was intended to identify specific solutions to problems that were identified, take advantage of opportunities, or address known issues. Subsequent analysis considered each concept's impact on other Airport components.

The Airfield Concepts focus on three categories of concepts. The first concept category, Airfield Standards Concepts, addresses shortcomings in airfield design standards as identified by the Federal Aviation Administration (FAA). The second concept category, Airfield Optimization Concepts, addresses efficiency of the Airport through operational changes with minimal infrastructure development. The third concept category addresses capacity constraints identified in **Chapter 3**, Forecast Summary, and **Chapter 4**, Facility Requirements.

The Terminal Concepts focus on the physical terminal building layout to accommodate current and forecast use, as well as to renovate all or part of the North Terminal to correct building life-cycle issues that have arisen over the years.

The Land Use Concepts focus on developing the North, South, East, and West Airparks to accommodate facility requirements. Land Use Concepts attempt to identify the highest and best use for Airport lands while still maintaining the Airport as a good neighbor to adjacent communities.

Comments from public stakeholders, including Airport tenants and the general public, were considered during concept development.

3.2 CONCEPT SCREENING

Each of the Airport concepts was screened to identify elements that should undergo refinement and further analysis to vet their viability and feasibility. Concepts deemed unable to meet facility requirements and the Master Plan Update Goals and Objectives were removed from further consideration.

In spring 2013, Airport staff and the Master Plan Update team screened the Airport Concepts through a series of meetings with Airport staff. These meetings were instrumental in narrowing down airfield enhancement options, and selecting concepts and elements that would be brought into the comprehensive alternatives. Comments and issues identified by stakeholders such as Airport tenants and the general public were considered throughout the concept screening process.

3.3 ALTERNATIVES DEVELOPMENT

Comprehensive Airport Alternatives were developed from the Airfield, Terminal, and Airpark Concept elements that were selected for refinement and further analysis. One alternative minimized development at the Airport to those improvements required by the FAA. The remaining alternatives accommodated forecast demand and facility requirements while considering the Master Plan Update Goals and Objectives. Constraints and opportunities as well as input from public stakeholders, including Airport tenants and the general public, also influenced the development of alternatives.

SECTION 4

AIRFIELD CONCEPTS DEVELOPMENT AND SCREENING

4.1 INTRODUCTION

The Airfield Concepts process for Ted Stevens Anchorage International Airport (Airport) focused on developing airfield facilities, particularly runways and taxiways. Three categories of concepts were created. The first was a set of four Airfield Standards Concepts. The second was a set of two Airfield Optimization Concepts that enhance Airport efficiency through operational changes and with minimal infrastructure development. The third was a set of six Airfield Capacity Concepts for increasing efficiency through increasing capacity of the airspace and airfield.

4.2 AIRFIELD STANDARDS CONCEPTS

The Airfield Standards Concepts reflect alterations that required planning in order to adjust some elements of the airfield to comply with Federal Aviation Administration (FAA) airport design standards as outlined in *FAA Advisory Circular (AC) 150 / 5300-13A, Airport Design (AC 150 / 5300-13A)*. Meeting these standards is recommended and, in some cases, required by the FAA. Compliance with airport design standards and best practices allows the Airport to maintain the high level of safety expected by Airport users. The Airfield Standards Concepts are not designed to accommodate growth in traffic, and represent minimal investment in new infrastructure. The four airfield standards concepts address those non-standard conditions, as described in **Section 2.4 of Chapter 4, Facility Requirements**, that may require a large capital expenditure to resolve or those not already resolved through modification of standards.

4.2.1 AIRFIELD STANDARDS CONCEPT 1

The primary elements of Airfield Standards Concept 1 involve the widening of Runway 15-33, decoupling of the Runway 15-33 Runway Safety Area (RSA) from the Runway 7R-25L RSA, and the realignment of several taxiways between the east / west parallel runways. Airfield Standards Concept 1 is illustrated in **Figure 5.3**.

Runway 15-33 Widening

Widening Runway 15-33 from 150 feet to 200 feet would meet the standards for runway width for Airplane Design Group (ADG)-VI aircraft as prescribed by AC 150 / 5300-13A.

Runway 15-33 Runway Safety Area Decoupling

AC 150 / 5300-13A also recommends that overlapping RSAs be avoided and that runway centerline-to-centerline separation take into account the full dimensional requirements of the RSAs. That is, runways should

be oriented and spaced to limit interaction of the RSAs. The FAA notes that the chance of a runway incursion incident is increased in cases where the RSA of one runway overlaps onto the pavement of a second runway. Decoupling the Runway 15-33 RSA is intended to meet airfield design standards by removing the overlapping RSAs with Runway 7L-25R and 7R-25L.

In summer 2014, during the Master Plan Update process, the Runway 33 extension was eliminated, thereby changing the Runway 15-33 length from 11,584 feet to 10,960 feet. The Runway 33 end was shifted 624 feet north and is now located just south of the southern edge of Taxiway K. The Runway 33 displaced threshold location did not change. The Runway 15 pavement end and displaced threshold did not change. Shifting the Runway 33 end north did not impact the normal departure procedures; aircraft continue to depart from Runway 33 via Taxiway K. The full-strength pavement south of the new Runway 33 end was converted to a blast pad. As a result of this project, the Runway 15-33 RSA no longer overlaps the Runway 7L-25R pavement. However, the Runway 15-33 RSA still overlaps with the Runway 7L-25R RSA. The usable runway length was adjusted with the use of declared distances, as described in Table 5.1.

Table 5.1
Existing Runway 15-33 Declared Distances (in feet)

	Existing Runway Length	TORA	TODA	ASDA	LDA
Runway 15	10,960	10,760	10,760	10,094	10,094
Runway 33		10,960	11,960	10,960	10,694

Source: Airport staff, 2014.

Notes: TORA – Takeoff Run Available – The runway length declared available and suitable for the ground run of an aircraft taking off. TODA – Takeoff Distance Available – The TORA plus the length of any remaining runway or clearway beyond the far end of the TORA; the full length of TODA may need to be reduced because of obstacles in the departure area. ASDA – Accelerate-Stop Distance Available – The runway plus stopway length declared available and suitable for the acceleration and deceleration of an aircraft aborting a takeoff. LDA – Landing Distance Available – The runway length declared available and suitable for landing an aircraft.

A cursory runway length analysis was conducted to determine the impact to the operational capability of the design aircraft. Per the methodology provided in the *FAA Advisory Circular (AC) 150 / 5325-4B, Runway Length Requirements for Airport Design*, the performance of the design aircraft is used to determine recommended runway length. The Boeing 747-8 aircraft is the design aircraft for the Airport. The Boeing 747-8 delivers takeoff and landing performance similar to that of its predecessor, the Boeing 747-400, with an estimated 10,100 feet of runway length required for takeoff at maximum takeoff weight and approximately 8,400 feet of runway length required for landing in wet conditions at maximum landing weight. A longer estimated takeoff distance of 10,400 feet is required for the Boeing 747-8 at maximum takeoff weight when the effective uphill runway gradient is considered. A longer estimated landing distance of 9,700 feet is required for the

Boeing 747-8 at maximum landing weight when the effective downhill runway gradient and icy conditions are considered. The analysis indicated that Runway 15-33 has adequate length to accommodate the design aircraft considering the above-listed parameters. The Boeing 747-8 would be capable of using the shifted Runway 15-33 in both operational directions.

With Airfield Standards Concept 1, the overlapping RSAs are completely decoupled. This is achieved by shifting the Runway 33 arrivals threshold 176 feet north. The new threshold would be located just south of Taxiway L. Declared distances would be impacted. The landing distance available for Runway 33 would be reduced from 10,694 to 10,518 feet. The runway length does not change.

Decoupling Runway 33 may also increase capacity and efficiency. These capacity and efficiency improvements are described in **Section 4.4, Airfield Capacity Concepts**.

Angled Taxiways Realignment

AC 150 / 5300-13A emphasizes increasing pilot situational awareness and reducing the probability of runway incursions through proper airport geometry. Key strategies intended to reduce incursions are as follows:

- A maximum of three choices at taxiway intersections is encouraged.
- The preferred taxiway intersection angle is 90 degrees.
- High-speed taxiway exits are permitted, but high-speed taxiway exits should not lead from one runway to another if possible.
- “High-energy” intersections should also be avoided. The middle third of a runway is the portion of the runway where pilots can maneuver least to avoid collision; therefore, limiting taxiway intersections within this section of the runway is recommended.
- Limiting indirect access from an apron directly onto a runway is recommended by removing or realigning taxiways that lead directly from a parking apron to a runway.
- Redesigning airfield hot spots that are identified on Airport Diagrams is also identified as a priority for the FAA.

Airfield Standards Concept 1 introduces the removal of portions of Taxiways C, D, E, F, G, R, and the taxiway to the Kulis Business Park. These taxiways would be replaced by four perpendicular taxiways connecting Taxiway K to an extended Taxiway Z, referred to as the East / West Parallel Taxiway Extension. The East / West Parallel Taxiway would be extended 600 feet to the west and 1,900 feet to the east. The East / West Parallel Taxiway Extension does not impact any of the existing facilities within the South Airpark.

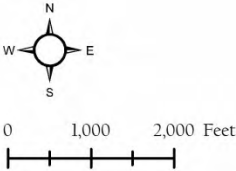
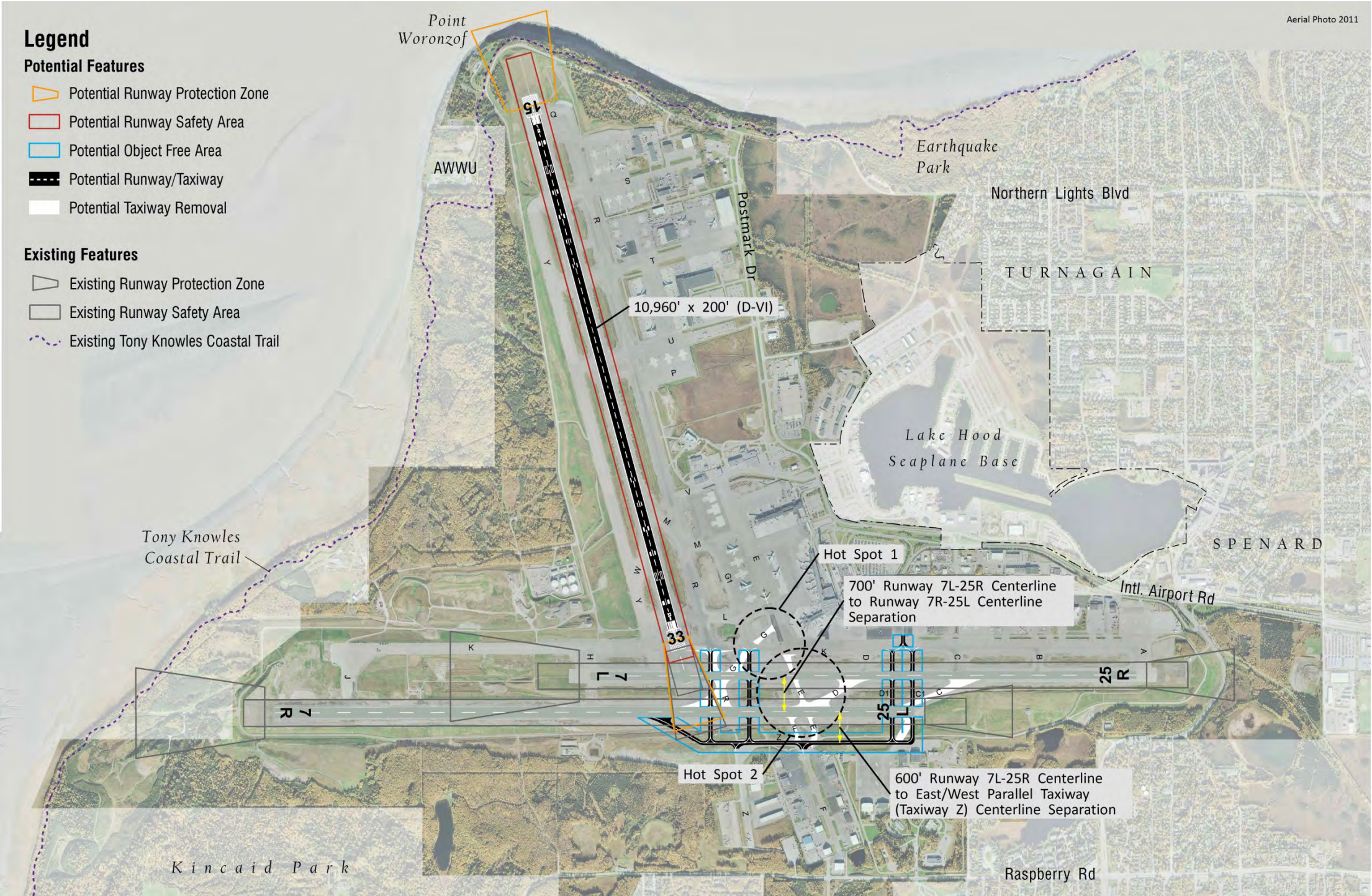
Removing the portion of Taxiway G northeast of Taxiway K and southwest of Taxiway E resolves the potentially confusing four-node intersection where Taxiway K intersects with Taxiway G and Taxiway G1. In addition, removing Taxiways D and E between the two east-west parallel runways would also resolve the confusing intersection at the intersection of Taxiway D, Taxiway E, and Runway 7R-25L. This project may resolve Hot Spot 1 and Hot Spot 2¹. Removing that section of Taxiway G would no longer permit indirect access from the South Terminal C Concourse area directly onto Runway 7L-25R.

In order to realign the angled taxiways, the East / West Parallel Taxiway Extension, would also be extended in both directions. The East / West Parallel Taxiway would be extended approximately 1,900 feet to the east to connect to the east end of Runway 7R-25L and approximately 600 feet to the west. A high-speed taxiway exit would allow arriving aircraft to exit Runway 7R onto the extended portion of the East / West Parallel Taxiway. The East / West Parallel Taxiway would be designed to accommodate ADG-VI aircraft.

Realigning the angled taxiways may also increase capacity and efficiency. These capacity and efficiency improvements are described in **Section 4.4, Airfield Capacity Concepts**.

¹ The concerns with Hot Spot 1 and Hot Spot 2 are described in greater detail in **Chapter 4, Facility Requirements**.

Figure 5.3 Airfield Standards
Concept 1



Potential Taxiway Realignment with Runway 15-33 Upgraded to ADG-VI

Description

- Runway 15-33 decoupled to eliminate overlapping RSAs; widened from 150 to 200 feet to meet ADG-VI standards
- Potential East/West Parallel Taxiway (Taxiway Z - ADG-VI, TDG 7) extension 600 feet to the west and 1,900 feet to the east
- Removal of angled taxiways and high speed exits (Taxiway C, D, E, F, G, R, and Kulis Taxilane) between Runways 7L-25R and 7R-25L; may remove Hot Spot 1 and Hot Spot 2
- Potential new right-angled parallel taxiway intersections (Taxiway C1, D1, G1, R) (ADG-VI, TDG 7) for greater pilot situational awareness

Source: RS&H, HDR, 2014.
Notes: ADG = Airplane Design Group; TDG = Taxiway Design Group; AWWU = Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility.
D-V or D-VI refers to the Runway Design Code, where the first letter represents a specific Aircraft Approach Category, and the Roman numeral following the hyphen represents the Airplane Design Group.

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4.2.2 AIRFIELD STANDARDS CONCEPT 2

Airfield Standards Concept 2, illustrated in **Figure 5.4**, includes the Runway 15-33 widening and decoupling project as described in **Section 4.2.1**, and the realignment of the angled taxiways between Taxiway K and the East / West Parallel Taxiway, along with the resolution of Hot Spot 1 and Hot Spot 2, as described in Airfield Standards Concept 1. A full-length parallel taxiway south of Runway 7R-25L is also proposed. The East / West Parallel Taxiway would be extended approximately 1,900 feet to the east and 8,200 feet to the west to connect to both ends of Runway 7R-25L. The East / West Parallel Taxiway centerline would be 600 feet south of the Runway 7R-25L centerline. The East / West Parallel Taxiway would be designed to accommodate ADG-VI aircraft. The existing Aircraft Rescue and Fire Fighting (ARFF) training facility and shooting range within the South Airpark would need to be relocated to accommodate the extended East / West Parallel Taxiway. However, if the East / West Parallel Taxiway was designed to accommodate only ADG-III aircraft, then only the ARFF Training Facility would be impacted.

A high-speed taxiway exit would allow arriving aircraft to exit Runway 7R south onto the extended portion of the East / West Parallel Taxiway. Two additional perpendicular connector taxiways would also be constructed: a south extension of Taxiway J and a south extension of Taxiway H.

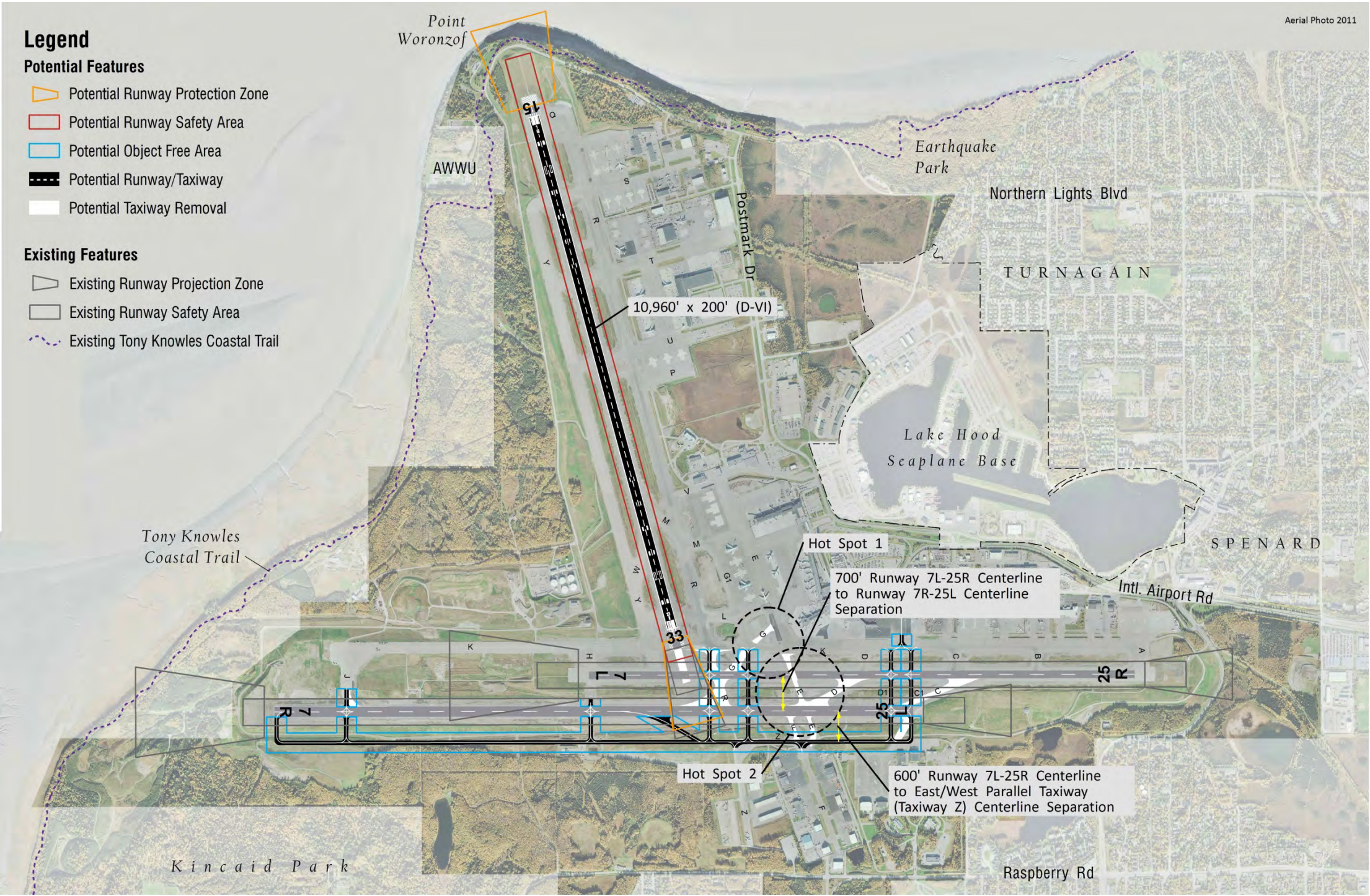
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Figure 5.4 Airfield Standards
Concept 2

**Potential East/West Parallel Taxiway Z
Extension with Runway 15-33 Upgraded to
ADG-VI**

Description

- Runway 15-33 decoupled to eliminate overlapping RSAs; widened from 150 to 200 feet to meet ADG-VI standards
- Potential East/West Parallel Taxiway (Taxiway Z - ADG-VI, TDG 7) extension 8,200 feet to the west and 1,900 feet to the east
- Removal of angled taxiways and high speed exits (Taxiway C, D, E, F, G, R, and Kulis Taxilane) between Runways 7L-25R and 7R-25L; may remove Hot Spot 1 and Hot Spot 2
- Potential new right-angled parallel taxiway intersections (Taxiway C1, D1, G1, R) (ADG-VI, TDG 7) for greater pilot situational awareness



Source: RS&H, HDR, 2014.
Notes: ADG = Airplane Design Group; TDG = Taxiway Design Group; AWWU = Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility. D-V or D-VI refers to the Runway Design Code, where the first letter represents a specific Aircraft Approach Category, and the Roman numeral following the hyphen represents the Airplane Design Group.

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4.2.3 AIRFIELD STANDARDS CONCEPT 3

Airfield Standards Concept 3, illustrated in **Figure 5.5**, includes the Runway 15-33 widening and decoupling project as described in **Section 4.2.1**, and the realignment of the angled taxiways between Taxiway K and the East / West Parallel Taxiway, along with the resolution of Hot Spot 1 and Hot Spot 2, as described in Airfield Standards Concept 1. In addition, Airfield Standards Concept 3 explores relocating Runway 7R-25L 500 feet south. This concept would increase the centerline-to-centerline separation between Runway 7L-25R and Runway 7R-25L from the existing 700 feet to 1,200 feet.

Runway 7R-25L dimensions would remain the same (12,400 feet long and 200 feet wide); it would remain the longest runway at the Airport and allow continued ADG-VI operations.

The increased parallel runway separation allows for a center parallel taxiway. A center parallel taxiway is preferred, as it may increase safety by allowing arriving aircraft to exit the runway without leading directly onto another runway. This new taxiway, designed to accommodate ADG-VI, Taxiway Design Group (TDG)-7 aircraft, would be 600 feet south of Runway 7L-25R and 600 feet north of the new Runway 7R-25L. The 600-foot centerline separation meets design standards for ADG-VI operations on both runways.²

The East / West Parallel Taxiway would be relocated south, resulting in a 550-foot centerline separation with Runway 7R-25L. The East / West Parallel Taxiway would also be extended 1,900 feet east, to connect to the end of Runway 7R-25L, and 600 feet west. This meets standards for ADG-VI aircraft operations. A high-speed taxiway exit would allow arriving aircraft to exit Runway 7R north onto the new center parallel taxiway. The East / West Parallel Taxiway relocation would impact several hangars within the South Airpark and Kulis Business Park, as well as the shooting range and ARFF Training Facility.

As an added benefit, the increased parallel runway separation would also allow for simultaneous Visual Flight Rules (VFR) arrivals and departures except when wake turbulence is a factor. This would potentially result in additional capacity and decreased congestion at the Airport.

² Runway 7L-25R is not currently designed to accommodate ADG-VI aircraft.

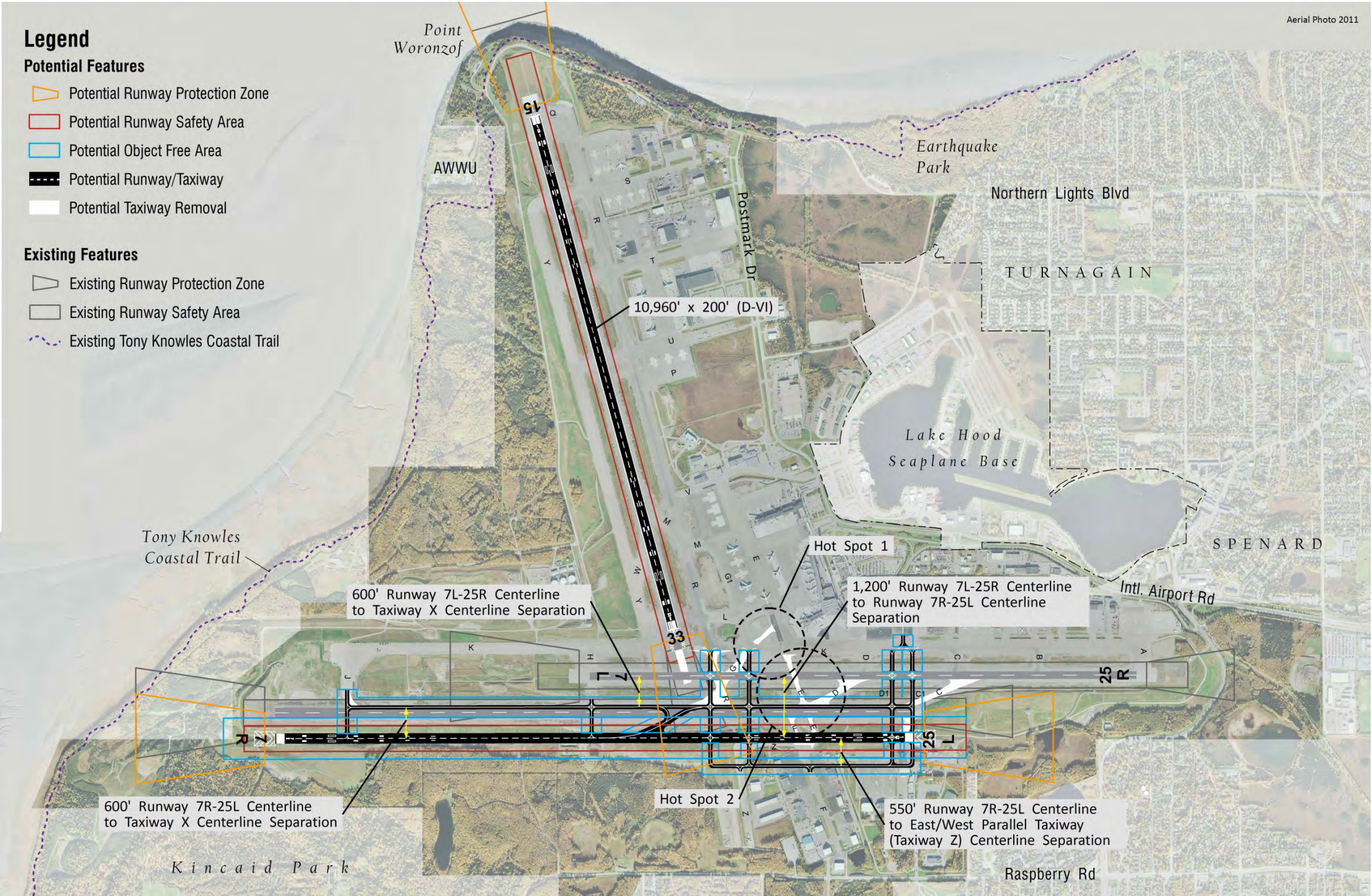
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Figure 5.5 Airfield Standards
Concept 3

Potential Runway 7R-25L Relocation with
1,200' Runway Centerline to Centerline
Separation and Center Parallel Taxiway

Description

- Runway 15-33 decoupled to eliminate overlapping RSAs; widened from 150 to 200 feet to meet ADG-VI standards
- Potential Runway 7R-25L relocation 500 feet south for 1,200-Foot Runway Centerline to Centerline Separation from Runway 7L-25R
- Potential center parallel Taxiway X (ADG-VI, TDG 7) separation accounts for high-speed taxiway reverse turn
- Potential East/West Parallel Taxiway (Taxiway Z - ADG-V, TDG-5) separation accounts for Runway 7L approach
- Removal of angled taxiways and high speed exits (Taxiway C, D, E, F, G, R, and Kulis Taxilane) between Runways 7L-25R and 7R-25L; may remove Hot Spot 1 and Hot Spot 2
- Potential new right-angled parallel taxiway intersections (Taxiway C1, D1, G1, R) (ADG-VI, TDG 7) for greater pilot situational awareness



Source: RS&H, HDR, 2014.
Notes: ADG = Airplane Design Group; TDG = Taxiway Design Group; AWWU = Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility. D-V or D-VI refers to the Runway Design Code, where the first letter represents a specific Aircraft Approach Category, and the Roman numeral following the hyphen represents the Airplane Design Group. Taxiway X refers to any unnamed potential taxiway.

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4.2.4 AIRFIELD STANDARDS CONCEPT 4

Airfield Standards Concept 4, illustrated in **Figure 5.6**, is identical to Airfield Standards Concept 3, except it extends the East / West Parallel Taxiway 1,900 feet east and 8,200 feet west to connect with both ends of Runway 7R-25L.

The East / West Parallel Taxiway relocation would impact several hangars within the South Airpark and Kulis Business Park, as well as the shooting range and ARFF Training Facility.

A high-speed taxiway exit would allow arriving aircraft to exit Runway 7R north onto the new center parallel taxiway. Two additional perpendicular connector taxiways would also be constructed: a south extension of Taxiway J and Taxiway H to Runway 7R-25L.

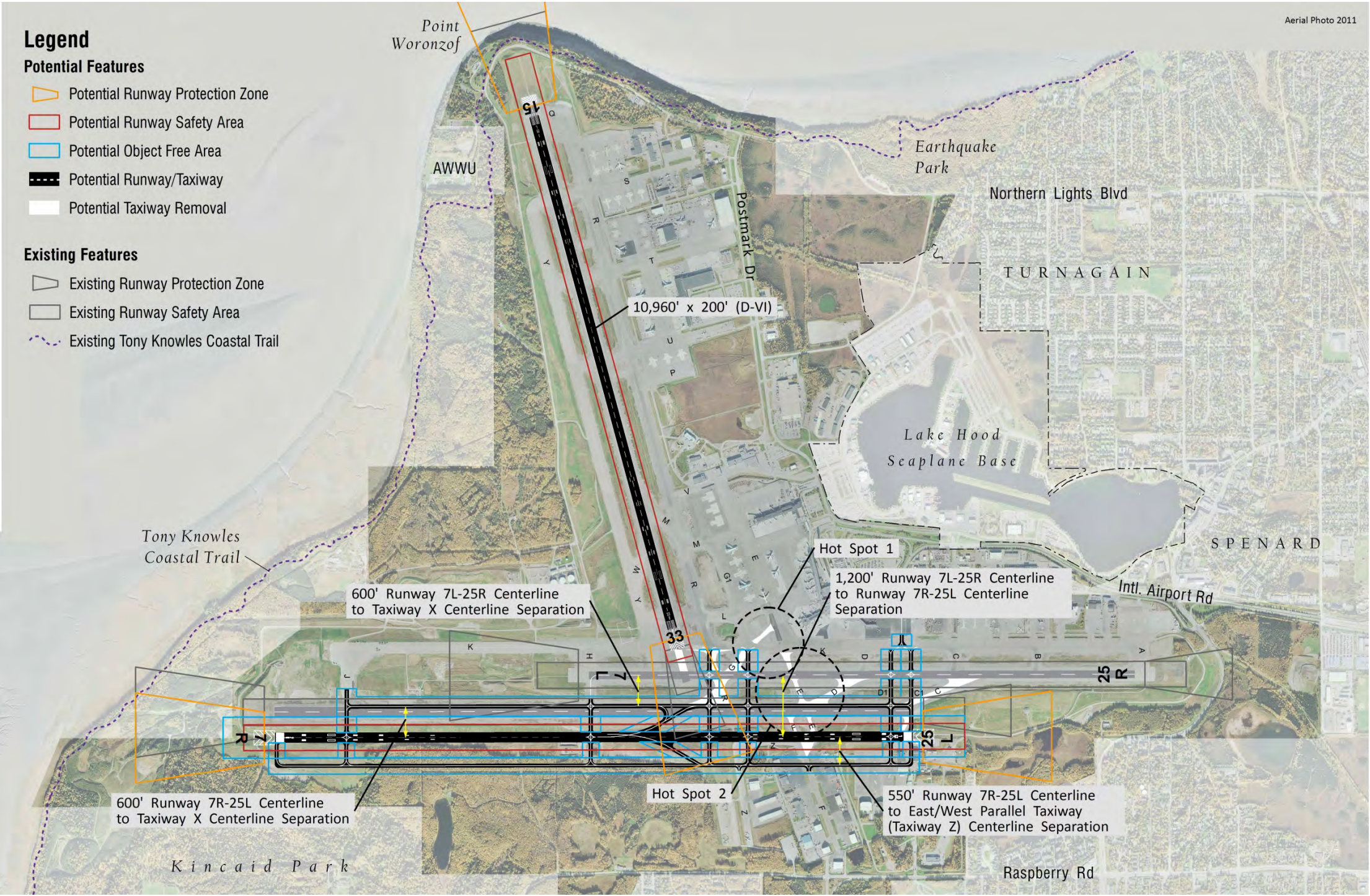
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Figure 5.6 Airfield Standards
Concept 4

Potential Runway 7R-25L Relocation with
1,200' Runway Centerline to Centerline
Separation and South Parallel Taxiway

Description

- Runway 15-33 decoupled to eliminate overlapping RSAs; widened from 150 to 200 feet to meet ADG-VI standards
- Potential Runway 7R-25L relocation 500 feet south for 1,200-Foot Runway Centerline to Centerline Separation from Runway 7L-25R
- Potential center parallel Taxiway X (ADG VI - TDG 7) separation accounts for high-speed taxiway reverse turn
- Potential East/West Parallel Taxiway (Taxiway Z - ADG-V, TDG-5) separation accounts for Runway 7L approach
- Removal of angled taxiways and high speed exits (Taxiway C, D, E, F, G, R, and Kulis Taxilane) between Runways 7L-25R and 7R-25L; may remove Hot Spot 1 and Hot Spot 2
- Potential new right-angled parallel taxiway intersections (Taxiway C1, D1, G1, R) (ADG-VI, TDG 7) for greater pilot situational awareness



Source: RS&H, HDR, 2014.
Notes: ADG = Airplane Design Group; TDG = Taxiway Design Group; AWWU = Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility. D-V or D-VI refers to the Runway Design Code, where the first letter represents a specific Aircraft Approach Category, and the Roman numeral following the hyphen represents the Airplane Design Group. Taxiway X refers to any unnamed potential taxiway.

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4.3 AIRFIELD OPTIMIZATION CONCEPTS

The Airfield Optimization Concepts create options for increasing airfield efficiency that minimize the addition of infrastructure. These options include compliance with standards as in the Airfield Standards Concepts, and add operational changes that optimize the use of existing infrastructure in order to increase the Airport's capacity. The selected Airfield Optimization Concepts are referred to as Airfield Optimization Alternatives.

4.3.1 AIAS OPTIMIZATION (FAIRBANKS) CONCEPT

The Alaska International Airport System (AIAS) Optimization Concept was identified based on the 2013 *AIAS Planning Study* (AIAS Planning Study) alternative, which anticipated diverting a portion of additional cargo technical stop traffic to Fairbanks International Airport instead of the Airport.

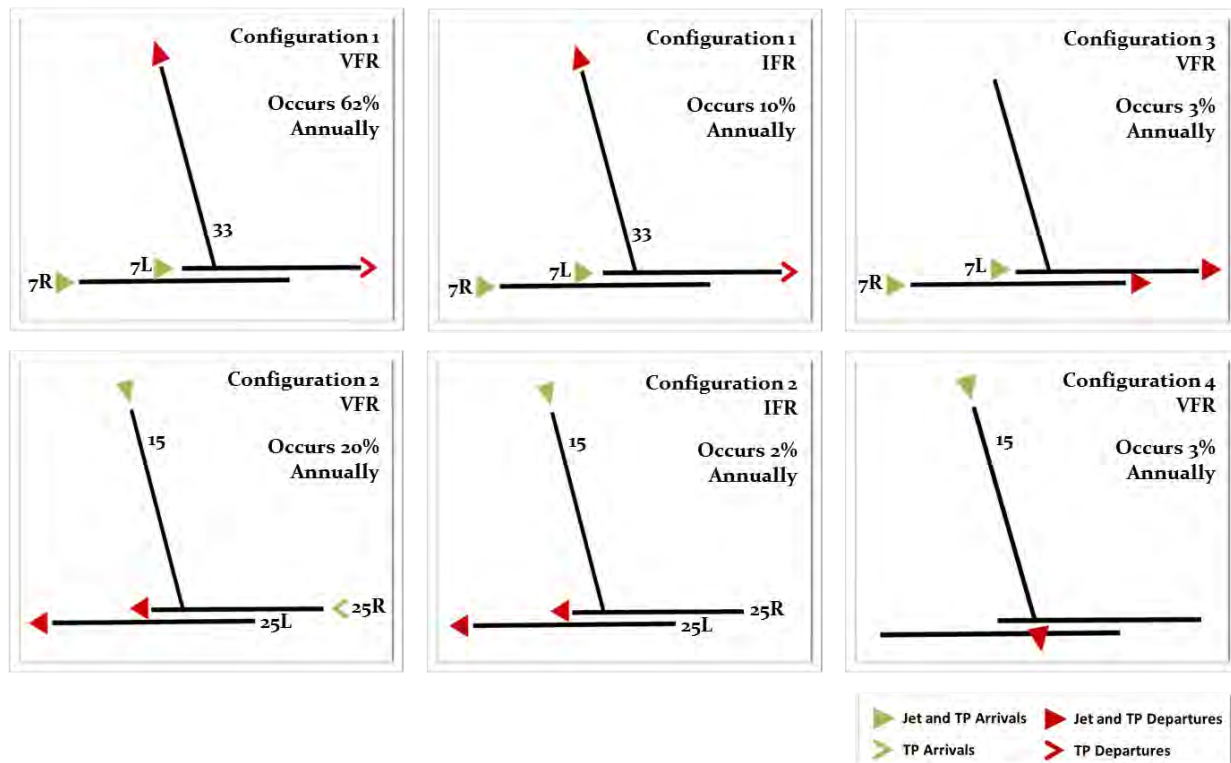
Through the use of operational and policy incentives to shift some traffic to Fairbanks, the AIAS would make more efficient use of existing infrastructure and capacity at both airports. By removing some of the demand from the Airport, existing infrastructure would be adequate for a longer time before delays become untenable.

4.3.2 ANC OPTIMIZATION CONCEPT

The Anchorage International Airport or ANC Optimization Concept modifies the preferential runway use program to allow additional departures from Runway 7L during daytime peak periods. This concept provides additional airfield capacity without the need for infrastructure expansion. The future schedule was modeled in Simmod PRO!, an airspace and airport simulation modeling software, with the modified preferential runway use in effect between 7 a.m. and 10 p.m. Two modifications to the preferential runway use program were modeled for runway use Configuration 1, which occurs 72% of the time. **Figure 5.7** illustrates the runway use configurations for the Airport. The modifications modeled include:

- **Modification A** – Arrivals to Runways 7R and 15 with departures from Runway 7L during peak arrival periods
- **Modification B** – Arrivals to Runway 7R with departures from Runways 7L and 33 during peak departure periods

Figure 5.7
Runway Use Configurations



Source: Master Plan Update team, 2013.
Notes: IFR = Instrument Flight Rules, VFR = Visual Flight Rules

4.4 AIRFIELD CAPACITY CONCEPTS

The Airfield Capacity Concepts present options for increasing efficiency and capacity of the airfield and airspace at the Airport. These concepts are essentially variations of additional runway complexes at the Airport. The selected Airfield Capacity Concepts were carried forward as Airfield Growth Alternatives.

Two of the Airfield Standards Concepts elements also have capacity- and efficiency-enhancing benefits. This includes the widening of Runway 15-33, decoupling of the Runway 15-33 Runway Safety Area from the Runway 7R-25L Runway Safety Area, and the realignment of the taxiways between Runway 7L-25R and Runway 7R-25L. The widening and decoupling of Runway 15-33 is shown in all Airfield Capacity Concepts. The taxiway realignments are not shown in the Airfield Capacity Concepts simply to provide focus to the main capacity- and efficiency-enhancing elements. However, their capacity and efficiency benefits are noted in this section.

Runway 15-33 Widening

Widening Runway 15-33 from 150 feet to 200 feet would meet the standards for runway width for ADG-VI aircraft as prescribed by AC 150 / 5300-13A.

Runway 15-33 RSA Decoupling

Decoupling Runway 33, as described in **Section 4.2.1**, Airfield Standards Concept 1, has a safety benefit in resolving the overlapping RSAs for Runway 15-33 and Runway 7L-25R. The project also has some efficiency benefits. With the current airfield configuration, both runways are impacted if maintenance or snow removal occurs in the area of the overlapping RSAs. The Airport would have to declare an unusable portion of Runway 15-33 via a Notice to Airmen or close both runways to accommodate work in this overlapping area. Decoupling the RSAs would minimize impacts on both runways during times of snow removal and maintenance.

Angled Taxiways Realignment

Realigning the angled taxiways between Runway 7L-25R and Runway 7R-25L, as described in **Section 4.2.1**, Airfield Standards Concept 1, has a safety benefit in increasing pilot situational awareness and reducing the probability of runway incursions. However, the project also has some capacity and efficiency benefits by potentially reducing Air Traffic Controller workload. Air Traffic Controllers would no longer need to direct pilots through confusing intersections and hot spots.

4.4.1 AIRFIELD CAPACITY CONCEPT 1

Airfield Capacity Concept 1, illustrated in **Figure 5.8**, includes the Runway 15-33 widening and decoupling project as described in this section and in **Section 4.2.1**, Airfield Standards Concept 1. Although not illustrated in **Figure 5.8**, Airfield Capacity Concept 1 also considers the realignment of the angled taxiways between Taxiway K and the East / West Parallel Taxiway Extension. The primary capacity-enhancing element in Airfield Capacity Concept 1 is a 10,000-foot-long closely spaced runway located parallel to Runway 15-33 and separated by 908 feet, measured centerline to centerline.

Closely Spaced 10,000-Foot-Long Runway Parallel to Runway 15-33 with a 908-Foot Separation

Airfield Capacity Concept 1, illustrated in **Figure 5.8**, increases airfield arrival and departure capacity through the addition of a closely spaced, 10,000-foot-long by 150-foot-wide runway (D-V) parallel to Runway 15-33.

The runway would be located 908 feet west of existing Runway 15-33, measured centerline to centerline. This separation would allow for simultaneous landings and takeoffs under VFR, except when wake turbulence is a factor. Wake turbulence becomes an issue when there is a significant difference in aircraft weight. Additional in-trail separation is typically required when the leading aircraft is a Boeing 757 or larger and the trailing aircraft is smaller. Runways with centerline spacing less than 2,500 feet are normally treated as a single runway by Air Traffic Control (ATC) when wake turbulence is a factor. Therefore, a closely spaced runway option would likely offer additional capacity, but the increase is limited by wake turbulence separation requirements.

The runway complex includes a parallel taxiway 520 feet west of the runway, measured centerline to centerline. The taxiway would be designed to accommodate large aircraft up to and including ADG-V, TDG-6. This meets the minimum separation required for reverse-turn taxiway exits for TDG-6 aircraft. That is, aircraft arriving in the southbound direction would be permitted to exit onto the taxiway and turn onto the taxiway in the direction opposite of landing.

The runway / taxiway complex would be located 400 feet west of existing Taxiway Y, measured centerline to centerline. This separation meets the standard for Runway Design Code (RDC) D-V with approach visibility minimums not less than $\frac{3}{4}$ mile yet greater than $\frac{1}{2}$ mile, and airport elevations at or below 1,345 feet. Airfield Capacity Concept 1 does not meet minimum separation requirements to accommodate reverse turn taxiway exits for TDG-6 aircraft.

The runway would have visibility minimums similar to those of Runway 15-33: visual for northbound arrivals and $\frac{3}{4}$ mile for southbound arrivals. The existing visibility minimums would be maintained for existing runways.

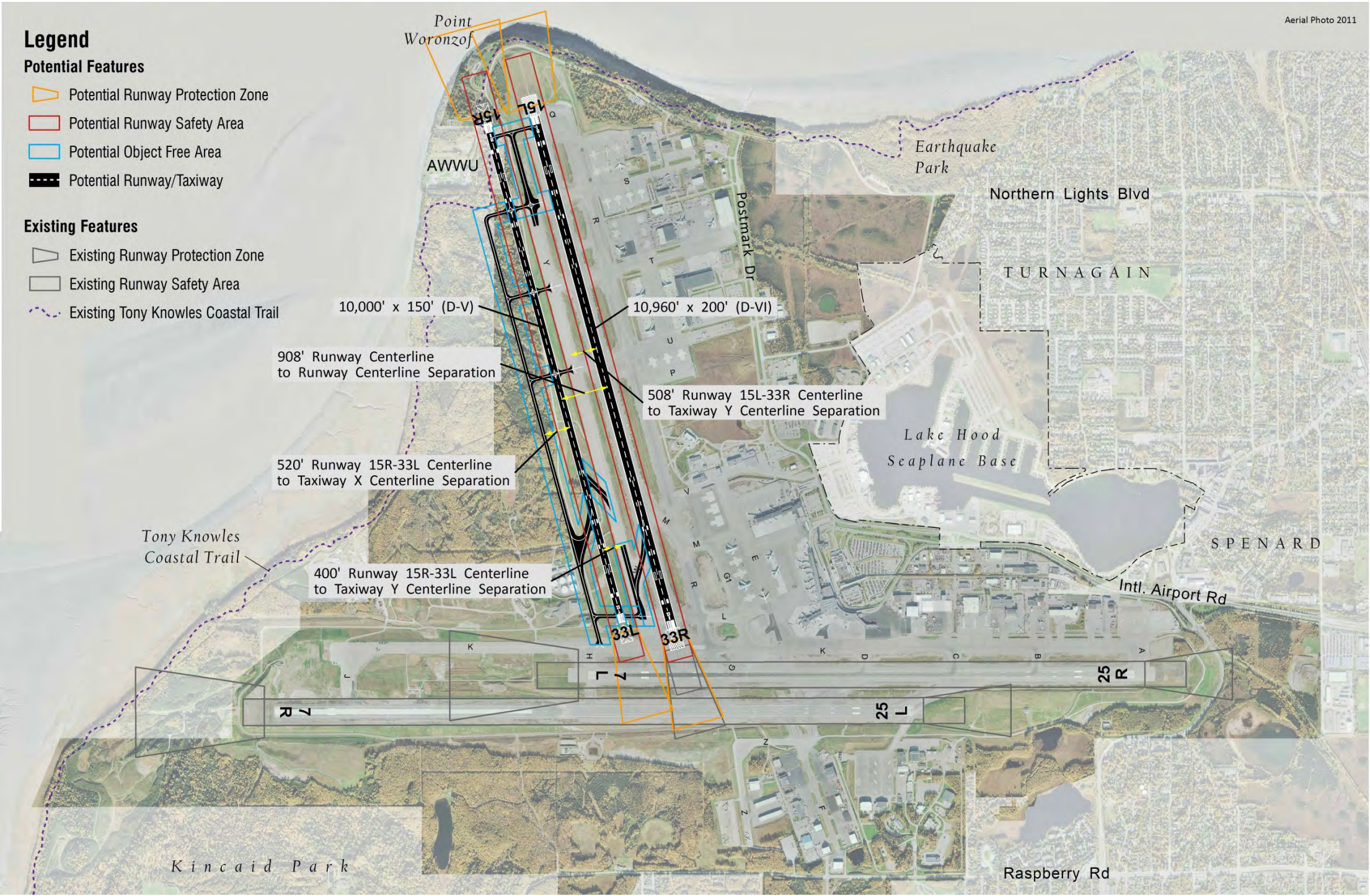
Another goal of Airfield Capacity Concept 1 was to avoid impacts to the Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility (AWWU). The length of the taxiway and the centerline-to-centerline separations between the runways and taxiways would be minimized to avoid encroachment with off-Airport property. It should be noted, however, that a small portion of land would need to be acquired for the runway complex. On-Airport, the runway / taxiway complex would impact the fuel farm facility.

Figure 5.8 Airfield Capacity
Concept 1

Potential 10,000' Runway 15R-33L with 908'
Runway Centerline to Centerline Separation

Description

- Runway 15L-33R decoupled to eliminate overlapping RSAs; widened from 150 to 200 feet to meet ADG-VI standards
- Potential 10,000-foot Runway 15R-33L with a 908-foot Runway Centerline to Centerline Separation
- Potential Runway 15R-33L avoids AWWU expansion area but may conflict with fuel farm
- Potential Taxiway X (ADG-V, TDG 6) accounts for reverse turns from the high speed taxiways, which requires a greater runway to taxiway centerline separation
- Taxiway Y (ADG-VI, TDG 7) does not account for reverse turns from the high speed taxiways
- RSA length from threshold on Runways 33L and 33R measure 738 feet and 600 feet respectively



Source: RS&H, HDR, 2014.
Notes: ADG = Airplane Design Group; TDG = Taxiway Design Group; AWWU = Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility. D-V or D-VI refers to the Runway Design Code, where the first letter represents a specific Aircraft Approach Category, and the Roman numeral following the hyphen represents the Airplane Design Group. Taxiway X refers to any unnamed potential taxiway.

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4.4.2 AIRFIELD CAPACITY CONCEPT 2

Airfield Capacity Concept 2, illustrated in **Figure 5.9**, includes the Runway 15-33 widening and decoupling project as described in this section and in **Section 4.2.1**, Airfield Standards Concept 1. Although not illustrated in **Figure 5.9**, Airfield Capacity Concept 2 also considers the realignment of the angled taxiways between Taxiway K and the East / West Parallel Taxiway Extension. The primary capacity-enhancing element in Airfield Capacity Concept 2 is an 8,000-foot-long closely spaced runway located parallel to Runway 15-33 and separated by 1,200 feet, measured centerline to centerline.

Closely Spaced 8,000-Foot-Long Runway Parallel to Runway 15-33 with a 1,200-Foot Separation

Airfield Capacity Concept 2, illustrated in **Figure 5.9**, increases airfield arrival and departure capacity through the addition of a closely spaced, 8,000-foot-long by 150-foot-wide runway (D-V) parallel to Runway 15-33.

The runway would be located 1,200 feet west of existing Runway 15-33, measured centerline to centerline. This meets the minimum centerline separation distance recommended for ADG-V and ADG-VI runways. Simultaneous landings and takeoffs are allowed under VFR except when wake turbulence is a factor. This closely spaced runway option would likely offer additional capacity, but the increase would be limited by wake turbulence considerations, much like the option presented in Airfield Capacity Concept 1.

The runway complex includes a parallel taxiway located 520 feet west of the runway, measured centerline to centerline. The taxiway would be designed to accommodate large aircraft up to and including ADG-V, TDG-6. Airfield Capacity Concept 2 also meets the minimum separation required for reverse-turn taxiway exits for TDG-6 aircraft. That is, aircraft arriving in the southbound direction would be permitted to exit onto the taxiway and turn onto the taxiway in the direction opposite of landing.

The runway complex would be located 692 feet west of existing Taxiway Y, measured centerline to centerline. This separation meets the standard for RDC D-V with approach visibility minimums not lower than $\frac{3}{4}$ mile yet greater than $\frac{1}{2}$ mile, and airport elevations at or below 1,345 feet. It also accommodates reverse-turn taxiway exits for larger TDG-6 aircraft.

The runway would have $\frac{3}{4}$ -mile approach visibility minimums for both northbound and southbound arrivals. The visibility minimums for the existing Runway 15-33 would be upgraded to $\frac{3}{4}$ mile for Runway 33 and remain the same at $\frac{3}{4}$ mile for Runway 15. The approach visibility would remain the same for Runway 7L-25R and Runway 7R-25L.

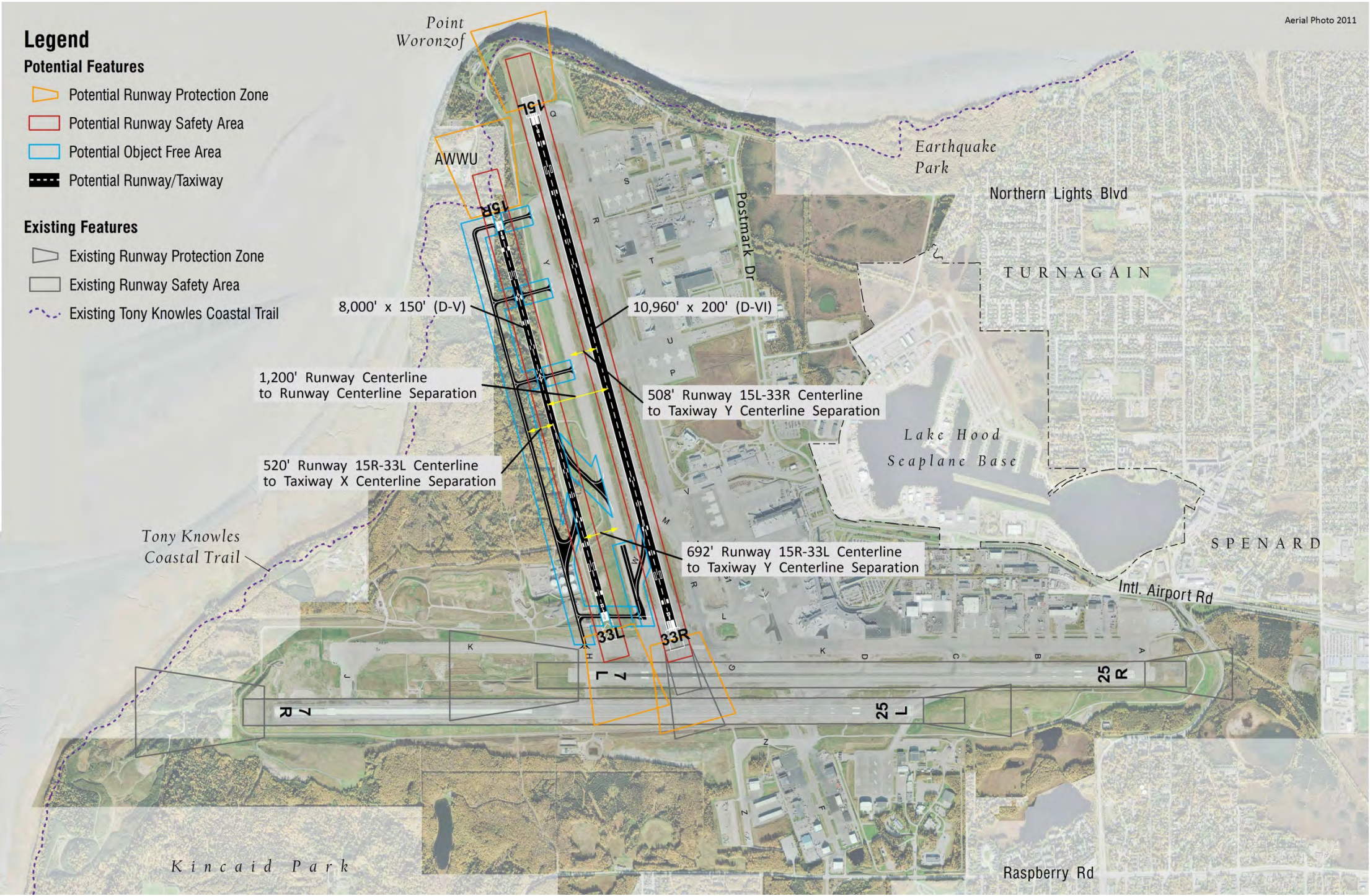
Airfield Capacity Concept 2 would impact the fuel farm and may potentially impact the Asplund Wastewater Treatment Facility. The Asplund Wastewater Treatment Facility would be located within the Runway Protection Zone of the runway. Additional land would need to be acquired for the runway complex.

Figure 5.9 Airfield Capacity
Concept 2

Potential 8,000' Runway 15R-33L with 1,200'
Runway Centerline to Centerline Separation

Description

- Runway 15L-33R decoupled to eliminate overlapping RSAs; widened from 150 to 200 feet to meet ADG-VI standards
- Potential 8,000-foot Runway 15R-33L with a 1,200-foot Runway Centerline to Centerline Separation from Runway 15L-33R
- Potential Runway 15R-33L may conflict with AWWU expansion area and fuel farm
- Potential Taxiway X (ADG-V, TDG 6) accounts for reverse turns from the high speed taxiways, which requires a greater runway to taxiway centerline separation
- Taxiway Y (ADG-VI, TDG 7) does not account for reverse turns from the high speed taxiways
- RSA length from threshold on Runways 33L and 33R measure 772 feet and 600 feet respectively



Source: RS&H, HDR, 2014.
Notes: ADG = Airplane Design Group; TDG = Taxiway Design Group; AWWU = Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility. D-V or D-VI refers to the Runway Design Code, where the first letter represents a specific Aircraft Approach Category, and the Roman numeral following the hyphen represents the Airplane Design Group. Taxiway X refers to any unnamed potential taxiway.

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4.4.3 AIRFIELD CAPACITY CONCEPT 3

Airfield Capacity Concept 3, illustrated in Figure 5.10, includes the Runway 15-33 widening and decoupling project as described in this section and in Section 4.2.1, Airfield Standards Concept 1. Although not illustrated in Figure 5.10, Airfield Capacity Concept 3 also considers the realignment of the angled taxiways between Taxiway K and the East / West Parallel Taxiway Extension. The primary capacity-enhancing element in Airfield Capacity Concept 3 is an 8,000-foot-long widely spaced runway located parallel to Runway 15-33 and separated by 2,500 feet, measured centerline to centerline.

Widely Spaced 8,000-Foot-Long Runway Parallel to Runway 15-33 with a 2,500-Foot Separation

Airfield Capacity Concept 3, illustrated in Figure 5.10, increases airfield arrival and departure capacity through the addition of a widely spaced, 8,000-foot-long by 150-foot-wide runway (D-V) parallel to Runway 15-33.

The runway would be located 2,500 feet west of existing Runway 15-33, measured centerline to centerline. This separation provides greater flexibility, allowing simultaneous VFR landings and takeoffs because wake turbulence is not a factor. There is a partial runway dependency for Instrument Flight Rules (IFR) operations; simultaneous IFR departures are permitted, but IFR arrivals must be staggered. Emerging technologies may make simultaneous independent IFR operations a possibility for this separation in the future. This runway option would likely offer additional capacity, but its efficacy in reducing congestion is undetermined since there is runway dependency for IFR operations.

The runway complex includes a parallel taxiway 520 feet east of the runway, measured centerline to centerline. The taxiway would be designed to accommodate large aircraft up to and including ADG-V, TDG-6. Airfield Capacity Concept 3 also meets the minimum separation required for reverse-turn taxiway exits for TDG-6 aircraft.

The runway would have $\frac{3}{4}$ -mile approach visibility minimums for both northbound and southbound arrivals. The visibility minimums for the existing Runway 15-33 would be upgraded to $\frac{3}{4}$ mile for Runway 33 and remain the same at $\frac{3}{4}$ mile for Runway 15. The approach visibility would remain the same for Runway 7L-25R and Runway 7R-25L.

Airfield Capacity Concept 3 would impact the fuel farm and may potentially impact the Asplund Wastewater Treatment Facility. The Asplund Wastewater Treatment Facility would be located within the Runway Protection Zone of the runway. Additional land would need to be acquired for the runway complex. Fill may also be required to meet runway grade standards.

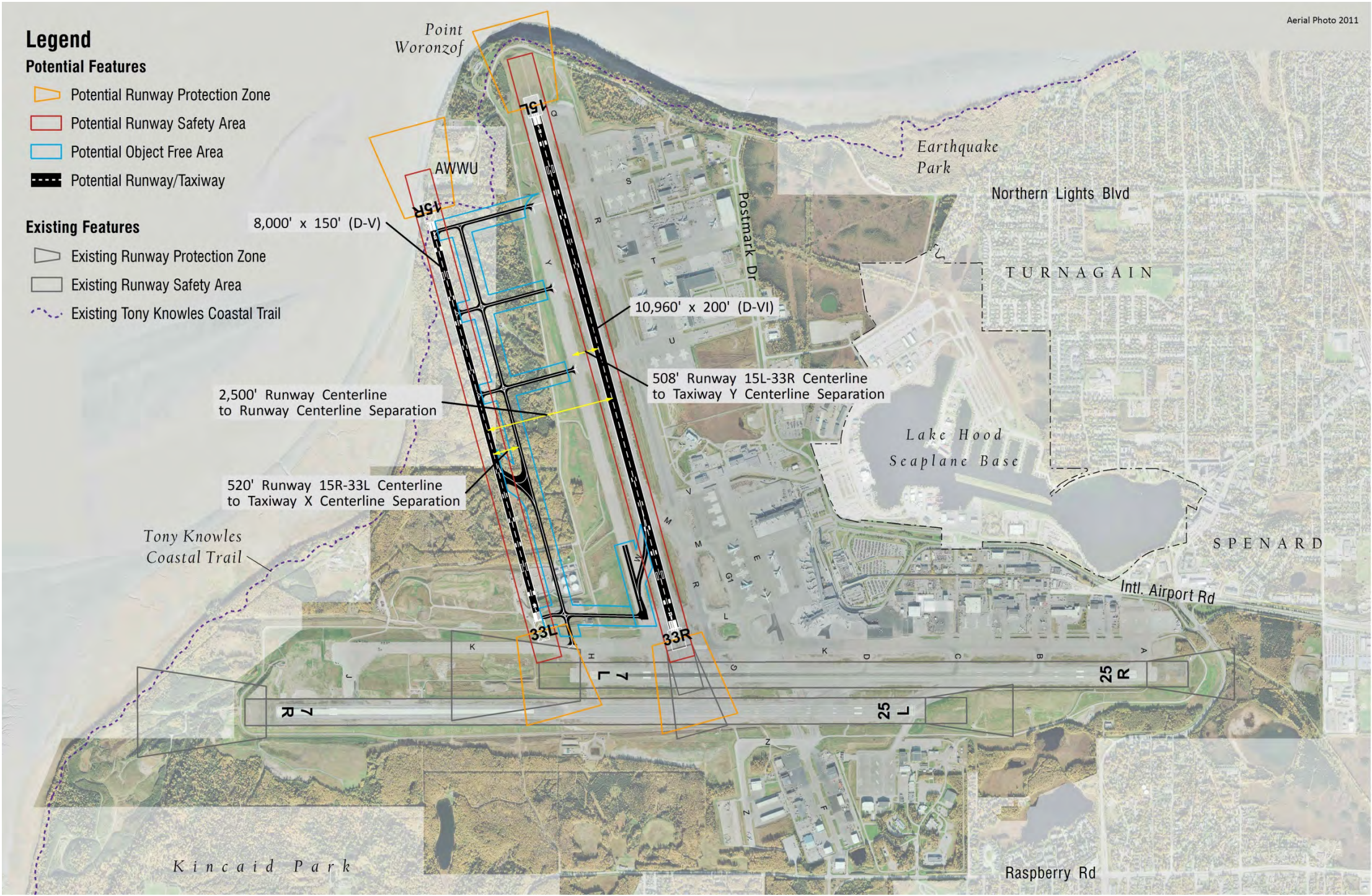
Finally, it should be noted that the runway / taxiway complex could be designed to accommodate ADG-VI, TDG-7 aircraft. However, the existing Runway 15-33 would already be upgraded to accommodate ADG-VI aircraft and a second runway to accommodate ADG-VI aircraft would be unnecessary, considering the forecast. A D-VI runway was also not considered in order to minimize cost and other potential impacts outside the Airport property boundary.

Figure 5.10 Airfield Capacity
Concept 3

Potential 8,000' Runway 15R-33L with 2,500'
Runway Centerline to Centerline Separation

Description

- Runway 15L-33R decoupled to eliminate overlapping RSAs; widened from 150 to 200 feet to meet ADG-VI standards
- Potential 8,000-foot Runway 15R-33L with a 2,500-foot Runway Centerline to Centerline Separation from Runway 15L-33R
- Potential Runway 15R-33L may conflict with AWWU expansion area and fuel farm
- Potential Taxiway X (ADG-V, TDG 6) accounts for reverse turns from the high speed taxiways, which requires a greater runway to taxiway centerline separation
- Taxiway Y (ADG-VI, TDG 7) does not account for reverse turns from the high speed taxiways
- RSA length from threshold on Runways 33L and 33R measure 781 feet and 600 feet respectively



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4.4.4 AIRFIELD CAPACITY CONCEPT 4

Airfield Capacity Concept 4, illustrated in **Figure 5.11**, includes the Runway 15-33 widening and decoupling project as described in this section and in **Section 4.2.1**, Airfield Standards Concept 1. Although not illustrated in **Figure 5.11**, Airfield Capacity Concept 4 also considers the realignment of the angled taxiways between Taxiway K and the East / West Parallel Taxiway Extension. The primary capacity-enhancing element in Airfield Capacity Concept 4 is a 10,000-foot-long widely spaced runway located parallel to Runway 15-33 and separated by 3,000 feet, measured centerline to centerline.

Widely Spaced 10,000-Foot-Long Runway Parallel to Runway 15-33 with a 3,000-Foot Separation

Airfield Capacity Concept 4, illustrated in **Figure 5.11**, increases airfield arrival and departure capacity through the addition of a widely spaced, 10,000-foot-long by 150-foot-wide runway (D-V) parallel to Runway 15-33.

The runway would be located 3,000 feet west of existing Runway 15-33, measured centerline to centerline. This separation would allow for simultaneous IFR arrivals with special high-update radar and monitoring equipment. Airfield Capacity Concept 4 would likely provide additional capacity.

The runway complex includes an additional parallel taxiway located 520 feet east of the runway, measured centerline to centerline. The taxiway would be designed to accommodate large aircraft up to and including ADG-V, TDG-6. Airfield Capacity Concept 4 also meets the minimum separation required for reverse turn taxiway exits for TDG-6 aircraft.

The runway would have $\frac{3}{4}$ -mile approach visibility minimums for both northbound and southbound arrivals. The visibility minimums for the existing Runway 15-33 would be upgraded to $\frac{3}{4}$ mile for Runway 33 and remain the same at $\frac{3}{4}$ mile for Runway 15. The approach visibility would remain the same for Runway 7L-25R and Runway 7R-25L.

Airfield Capacity Concept 4 would impact the fuel farm and potentially the Asplund Wastewater Treatment Facility. Additional land would need to be acquired for the runway complex. Fill may also be required to meet runway grade standards.

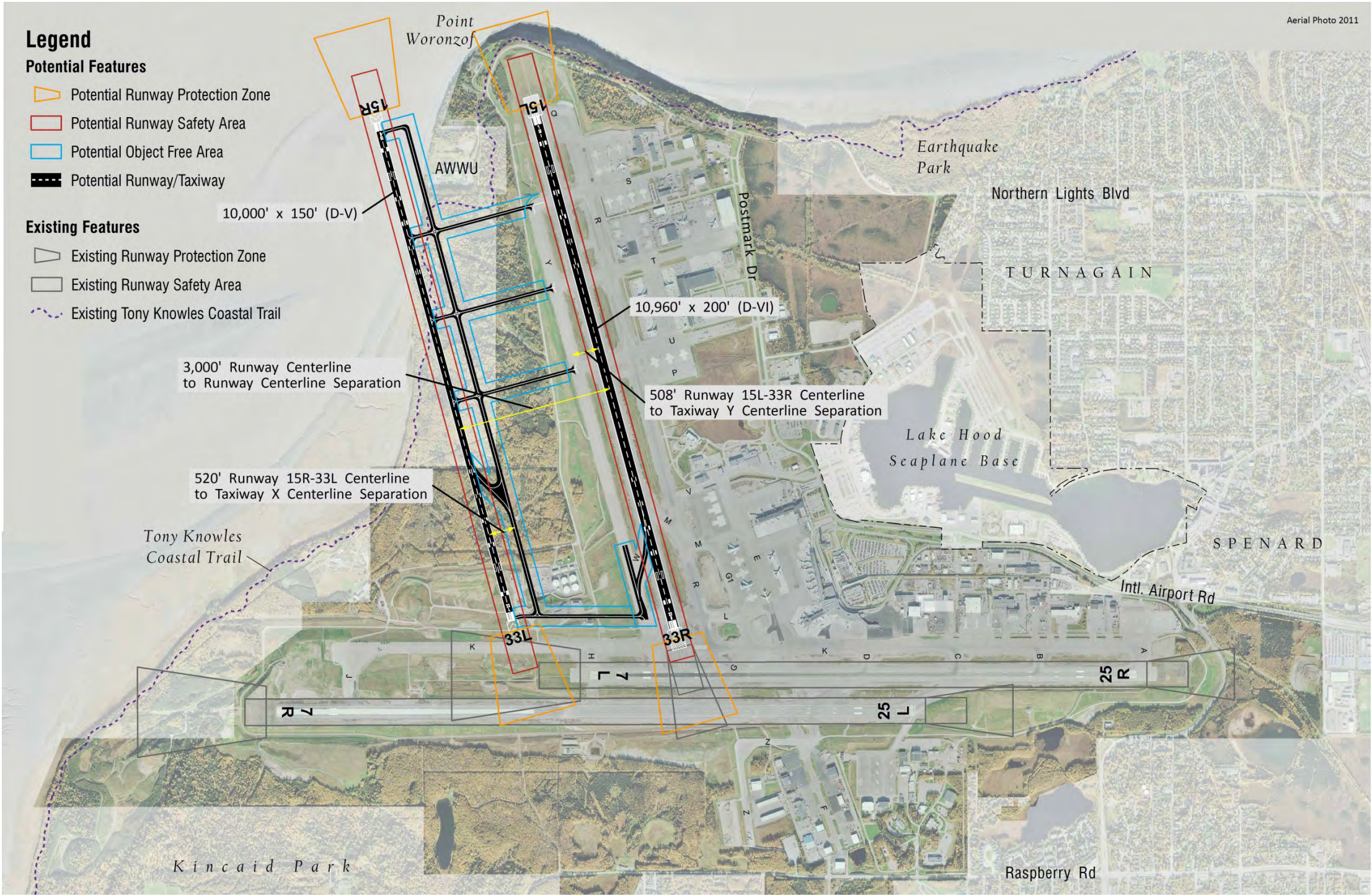
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Figure 5.11 Airfield Capacity
Concept 4

Potential 10,000' Runway 15R-33L with
3,000' Runway Centerline to Centerline

Description

- Runway 15L-33R decoupled to eliminate overlapping RSAs; widened from 150 to 200 feet to meet ADG-VI standards
- Potential 10,000-foot Runway 15R-33L with a 3,000-foot Runway Centerline to Centerline Separation from Runway 15L-33R
- Potential Runway 15R-33L may conflict with AWWU expansion area
- Potential Taxiway X (ADG-V, TDG 6) accounts for reverse turns from the high speed taxiways, which requires a greater runway to taxiway centerline separation
- Taxiway Y (ADG-VI, TDG 7) does not account for reverse turns from the high speed taxiways
- RSA length from threshold on Runways 33L and 33R measure 1,000 feet and 600 feet respectively



Source: RS&H, HDR, 2014.
Note: ADG = Airplane Design Group; TDG = Taxiway Design Group; AWWU = Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility. D-V or D-VI refers to the Runway Design Code, where the first letter represents a specific Aircraft Approach Category, and the Roman numeral following the hyphen represents the Airplane Design Group. Taxiway X refers to any unnamed potential taxiway.

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4.4.5 AIRFIELD CAPACITY CONCEPTS 5A AND 5B

Airfield Capacity Concepts 5A and 5B, illustrated in **Figure 5.12** and **Figure 5.13**, respectively, include the Runway 15-33 widening and decoupling project as described in this section and in **Section 4.2.1**, Airfield Standards Concept 1. Although not illustrated in **Figure 5.12** or **Figure 5.13**, Airfield Capacity Concepts 5A and 5B also consider the realignment of the angled taxiways between Taxiway K and the East / West Parallel Taxiway Extension. The primary capacity-enhancing elements in Airfield Capacity Concepts 5A and 5B are two additional east / west parallel taxiways, including an 8,000-foot-long (Airfield Capacity Concept 5A) or 6,687-foot-long (Airfield Capacity Concept 5B) by 150-foot-wide D-V runway located in the West Airpark, and a 12,400-foot-long by 150-foot-wide D-V runway located south of Runway 7R-25L in the South Airpark. The South Airpark Runway would be separated from Runway 7L-25R by 2,500 feet, measured centerline to centerline.

Airfield Capacity Concepts 5A and 5B, illustrated in **Figure 5.12** and **Figure 5.13**, respectively, depict the impacts to existing on- and off-Airport infrastructure and land uses with two additional east / west runways.

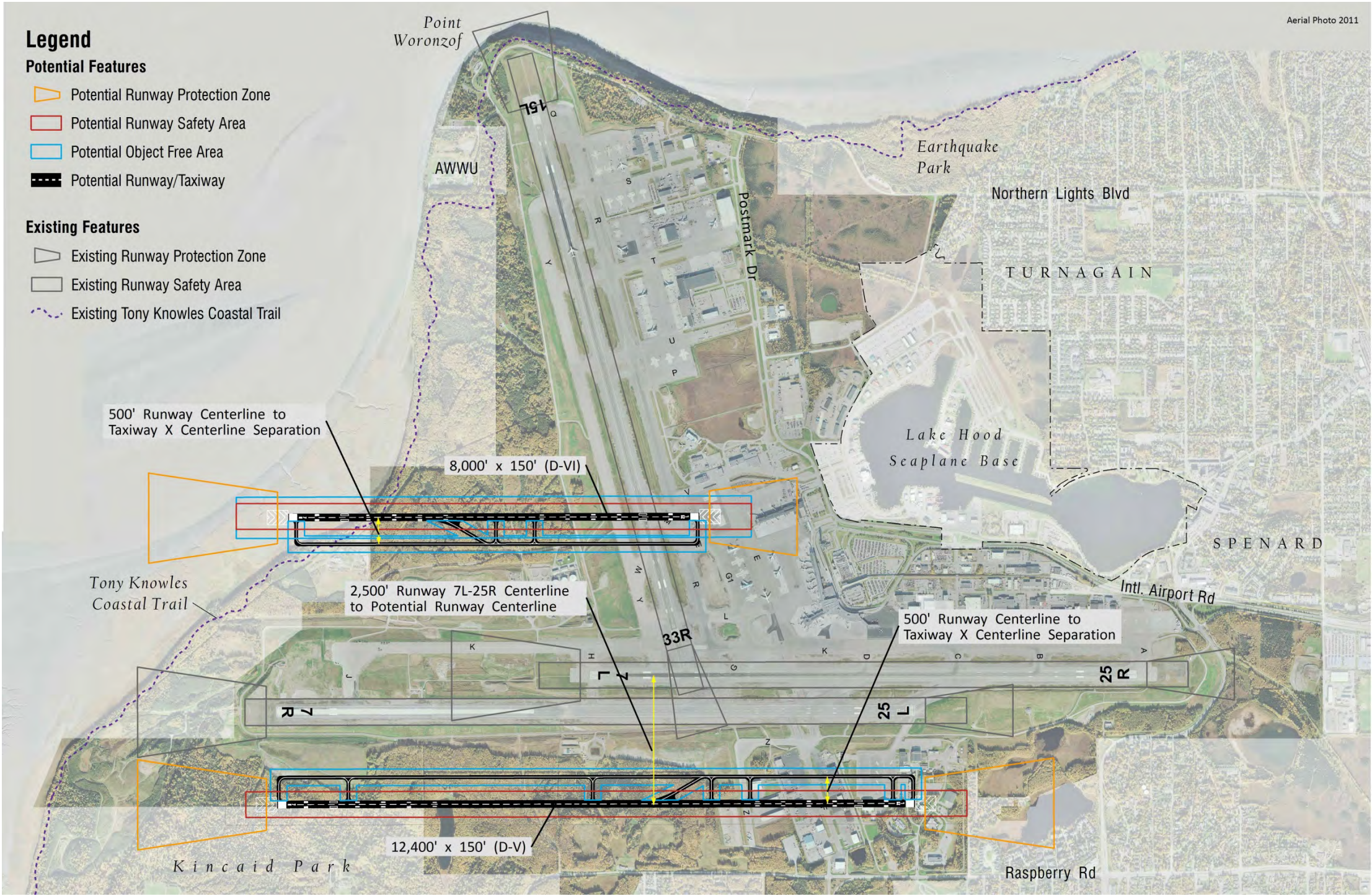
Airfield Capacity Concept 5A depicts an 8,000-foot-long runway located directly west of the existing North Terminal. Airfield Capacity Concept 5B depicts a 6,687-foot-long runway located over the existing North Terminal. Both concepts assume removal of the North Terminal. Airfield Capacity Concepts 5A and 5B also depict a 12,400-foot-long runway located 2,500 feet south of Runway 7L-25R. This runway in the South Airpark would potentially replace Runway 7R-25L (D-VI). Although as shown to accommodate ADG-V aircraft, this southern runway could also be designed to accommodate ADG-VI aircraft. Also, although not shown, both runways may require additional taxiway connections to tie into the existing runway / taxiway system.

The northernmost runways in Concepts 5A and 5B would provide Air Traffic Controllers with operational flexibility for smaller aircraft. Larger aircraft may be operationally restricted while operating on the northern runway depicted in Concept 5B. However, there may also be delays due the crossing runways.

The southernmost 12,400-foot-long south runway would provide greater flexibility under VFR, allowing simultaneous landings and takeoffs. Simultaneous IFR departures would also be permitted, but IFR arrivals would need to be staggered. This closely spaced runway option would likely offer additional capacity, but its efficacy in reducing congestion is undetermined since there is runway dependency for IFR operations.

The airfield / taxiway complex in both concepts would impact existing facilities in the North Airpark and South Airpark, requiring their relocation. The airfield taxiway complex would require additional land acquisition. Fill would also be required to meet runway grade standards.

Figure 5.12 Airfield Capacity
Concept 5A



Source: RS&H, HDR, 2014.
Note: ADG = Airplane Design Group; TDG = Taxiway Design Group; AWWU = Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility. D-V or D-VI refers to the Runway Design Code, where the first letter represents a specific Aircraft Approach Category, and the Roman numeral following the hyphen represents the Airplane Design Group. Taxiway X refers to any unnamed potential taxiway.

- Potential 8,000' East/West Runway in West Airpark and Potential 12,400' Parallel Runway in South Airpark with 2,500' Separation**
- Description**
- Potential 8,000-foot long East/West Runway in West Airpark; assumes removal of North Terminal; approach RPZ clear of vehicle parking area
 - Potential 12,400-foot long East/West Parallel Runway in South Airpark; 2,500-foot centerline to centerline separation from existing Runway 7L-25R centerline

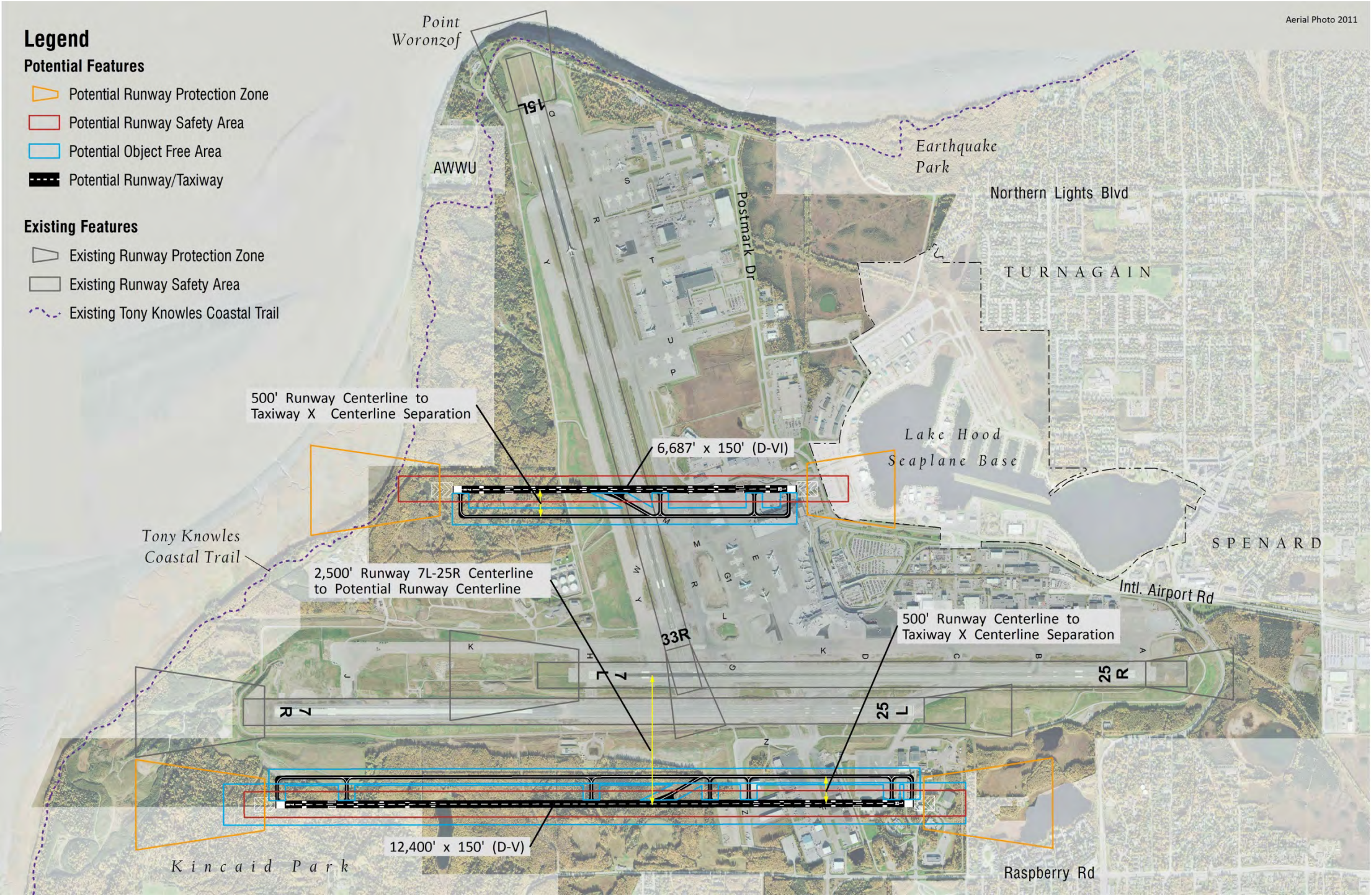
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Figure 5.13 Airfield Capacity
Concept 5B

**Potential 6,687' East/West Runway in
West Airpark and Potential 12,400'
Parallel Runway in South Airpark with
2,500' Separation**

Description

- Potential 6,687-foot long East/West Runway in West Airpark; assumes removal of North Terminal
- Potential 12,400-foot long East/West Parallel Runway in South Airpark; 2,500-foot centerline to centerline separation from existing Runway 7L-25R centerline



Source: RS&H, HDR, 2014.
Note: ADG = Airplane Design Group; TDG = Taxiway Design Group; AWWU = Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility. D-V or D-VI refers to the Runway Design Code, where the first letter represents a specific Aircraft Approach Category, and the Roman numeral following the hyphen represents the Airplane Design Group. Taxiway X refers to any unnamed potential taxiway.

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4.4.6 AIRFIELD CAPACITY CONCEPTS 6A AND 6B

Airfield Capacity Concepts 6A and 6B, illustrated in Figure 5.14 and Figure 5.15, respectively, include the Runway 15-33 widening and decoupling project as described in this section and in Section 4.2.1, Airfield Standards Concept 1. Although not illustrated in Figure 5.14 or Figure 5.15, Airfield Capacity Concepts 6A and 6B also consider the realignment of the angled taxiways between Taxiway K and the East / West Parallel Taxiway Extension. The primary capacity-enhancing element in Airfield Capacity Concepts 6A and 6B is a third route in addition to Taxiway R and Taxiway Y between the passenger terminal complex and North Airpark facilities, allowing for safer access that does not require crossing a runway when two-way traffic is occurring. This additional route may reduce congestion and therefore aircraft delay on Taxiway R, Taxiway Y, and other existing taxiways.

Airfield Capacity Concept 6A illustrates a northward extension of Taxiway G1, connecting to Taxilane P. Airfield Capacity Concept 6B illustrates a northward extension of Taxiway E, connecting to Taxilane P. The additional taxiways depicted in Concepts 6A and 6B would allow bi-directional flow of aircraft up to Taxilane P east of Runway 15-33. This may reduce airfield congestion since aircraft could use the connection as a bypass option instead of crossing Runway 15-33 to get to Taxiway Y. Several structures would need to be removed to allow an extended taxiway.

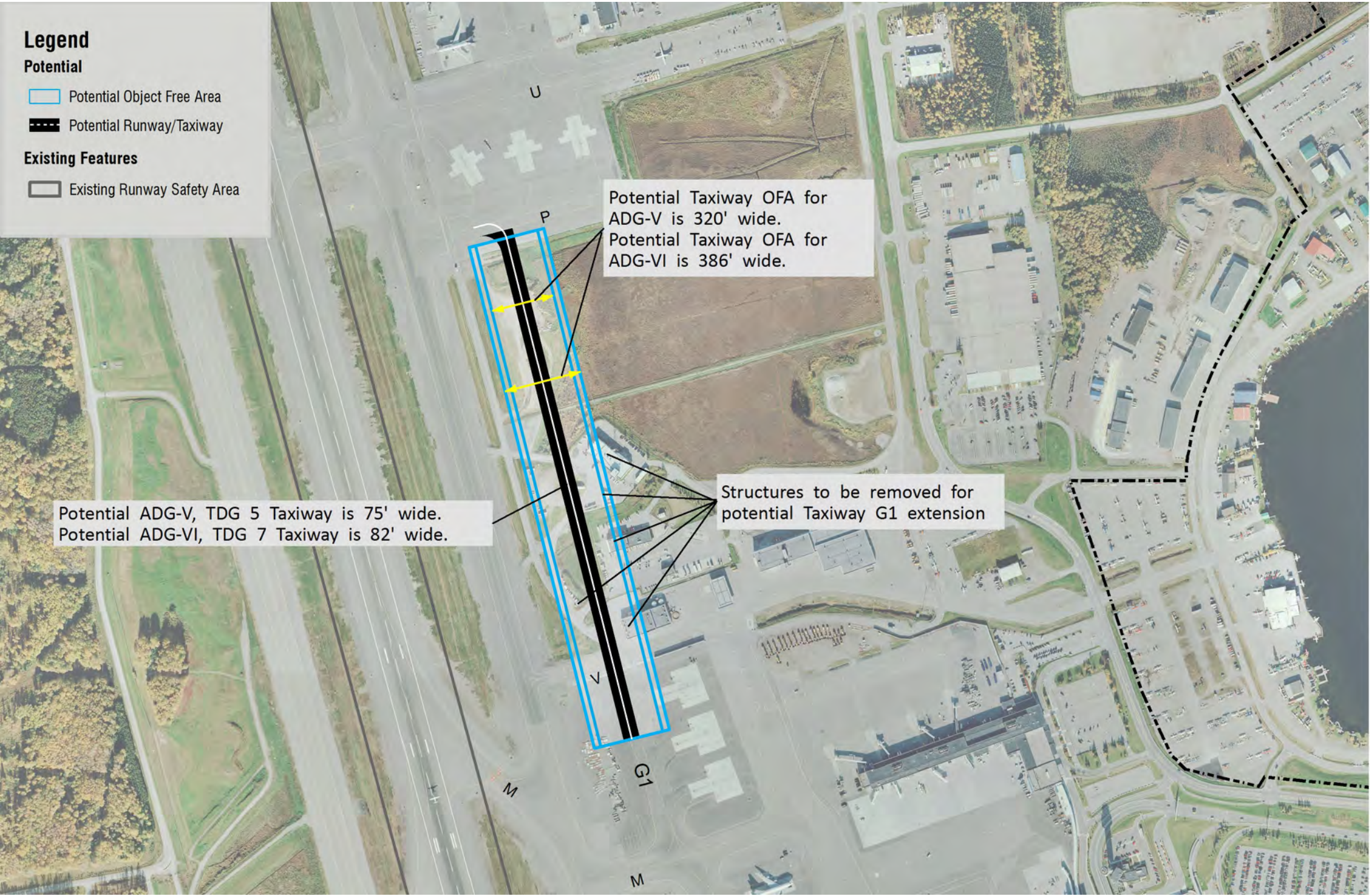
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Figure 5.14 Airfield Capacity
Concept 6A

**Taxiway G1 Extension North to Taxiway P
Potential for ADG-V, TDG 5 or ADG-VI, TDG 7**

Description

- Taxiway OFA for ADG-V encompasses an area of 19.0 acres.
- Taxiway OFA for ADG-VI encompasses an area of 22.9 acres.
- Taxiway OFA for ADG-V occupies 3.9 less acres than the OFA for ADG-VI
- Five structures need to be removed to allow for Taxiway G1 extension; no difference if Taxiway G1 constructed as ADG-V or ADG-VI
- Field Maintenance Facility main building, Quick-Turnaround Facility and ARFF station are clear of potential Taxiway OFA and can remain.



Source: RS&H, HDR, 2014.
Note: ADG = Airplane Design Group, ARRF = Aircraft Rescue and Fire Fighting, TDG = Taxiway Design Group, OFA = Object Free Area.. D-V or D-VI refers to the Runway Design Code, where the first letter represents a specific Aircraft Approach Category, and the Roman numeral following the hyphen represents the Airplane Design Group.

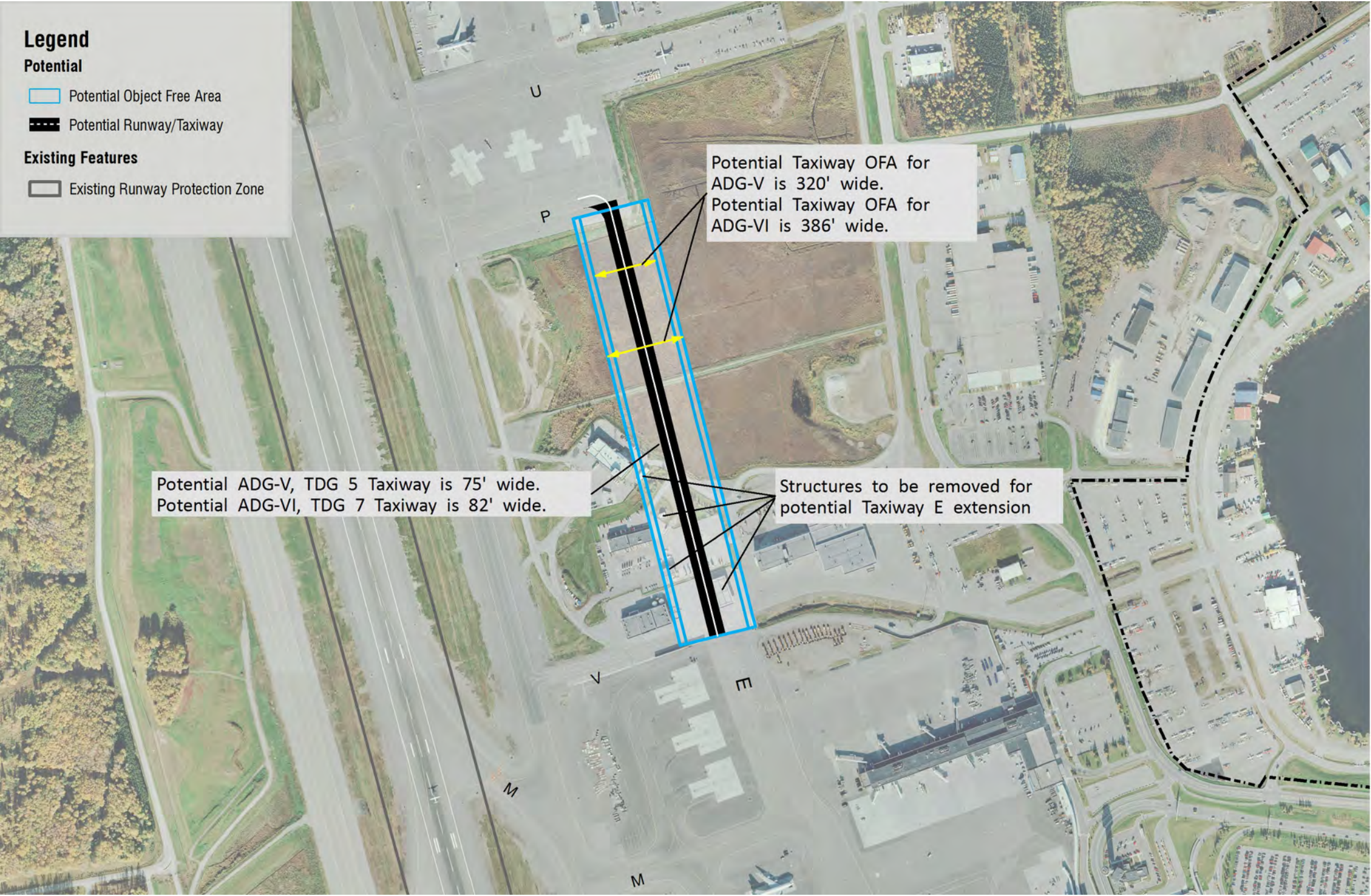
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Figure 5.15 Airfield Capacity
Concept 6B

**Taxiway E Extension North to Taxiway P
Potential for ADG-V, TDG 5 or ADG-VI, TDG 7**

Description

- Taxiway OFA for ADG-V encompasses an area of 16.2 acres.
- Taxiway OFA for ADG-VI encompasses an area of 19.5 acres.
- Taxiway OFA for ADG-V occupies 3.3 less acres than the OFA for ADG-VI
- Four structures need to be removed to allow for Taxiway E extension; no difference if Taxiway E constructed as ADG-V or ADG-VI
- Field Maintenance Facility main building and Quick-Turnaround Facility and ARFF station are clear of potential Taxiway OFA and can remain.



Source: RS&H, HDR, 2014.
Note: ADG = Airplane Design Group; ARFF = Aircraft Rescue and Fire Fighting, OFA = Object Free Area, TDG = Taxiway Design Group. D-V or D-VI refers to the Runway Design Code, where the first letter represents a specific Aircraft Approach Category, and the Roman numeral following the hyphen represents the Airplane Design Group.

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4.5 CONCEPT SCREENING

The Airfield Standards Concepts, Airfield Optimization Concepts, and Airfield Capacity Concepts were presented to key Airport staff and an FAA representative in an airfield concepts meeting. The purpose of the meeting was to discuss the Concepts for the Airport's airside facilities. As previously mentioned in Section 4.1, the Airfield Concepts were developed to resolve two types of issues: to bring the Airport into compliance with design standards documented in AC 150 / 5300-13A, and to accommodate future levels of aviation activity. The venue provided the opportunity for the group to examine potential solutions for several airfield issues.

The goal was to identify airfield elements that would be included and refined in the Comprehensive Airport Alternatives and undergo further analysis. The detailed analysis efforts included airfield / airspace demand capacity modeling with Simmod PRO!, an airport and airspace simulation modeling application, the goal of which was to understand the effect on operations and capacity.

Five airfield concepts were carried forward for evaluation in the comprehensive airport alternatives:

- 1) **Alternative 1 – Minimize Development** – The Minimize Development Alternative would include only airfield development necessary to meet current FAA design standards.
- 2) **Alternative 2 – Optimize AIAS** – The Optimize AIAS Alternative includes Alternative 1, and also assumes increased use of Fairbanks International Airport for cargo technical stop operations to make increased use of the two-airport AIAS.
- 3) **Alternative 3 – Optimize Anchorage International Airport** – The Optimize Anchorage International Airport Alternative includes Alternative 1, plus modification of the Airport's preferential runway use program to enhance efficiency of the existing three-runway airfield system.
- 4) **Alternative 4 – Closely Spaced Runway** – The Closely Spaced Runway Alternative would include Alternative 1 plus the parallel North / South Runway recommended in the 2002 Master Plan Update, located 908 feet west of the existing Runway 15-33. The Closely Spaced Runway alternative was selected for further consideration, as was the current preferred alternative from the 2002 Master Plan Update.
- 5) **Alternative 5 – Widely Spaced Runway** – The Widely Spaced Runway Alternative would include Alternative 1, plus a parallel North / South Runway located approximately 3,500 feet west of the existing Runway 15-33. The Widely Spaced Runway Alternative was selected because it provides parallel widely spaced runways, which greatly increase capacity. No other widely spaced runway concepts were considered feasible.

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SECTION 5

TERMINAL CONCEPTS DEVELOPMENT AND SCREENING

5.1 INTRODUCTION

A primary focus of the terminal planning effort was defined at the outset of the Ted Stevens Anchorage International Airport (Airport) Master Plan Update (Master Plan Update) as an assessment of the future of the North Terminal. Because of the South Terminal's recent renovation and expansion, it was considered sufficient under the scope of this Master Plan Update study. Furthermore, any deficient areas within the South Terminal as documented in **Chapter 4**, Facility Requirements, can be resolved within the existing South Terminal building footprint. As a result, the South Terminal deficiencies were not considered further in this Master Plan Update, except that some North Terminal concepts required South Terminal expansions in order to accommodate the potential relocation of international operations from the North Terminal to the South Terminal.

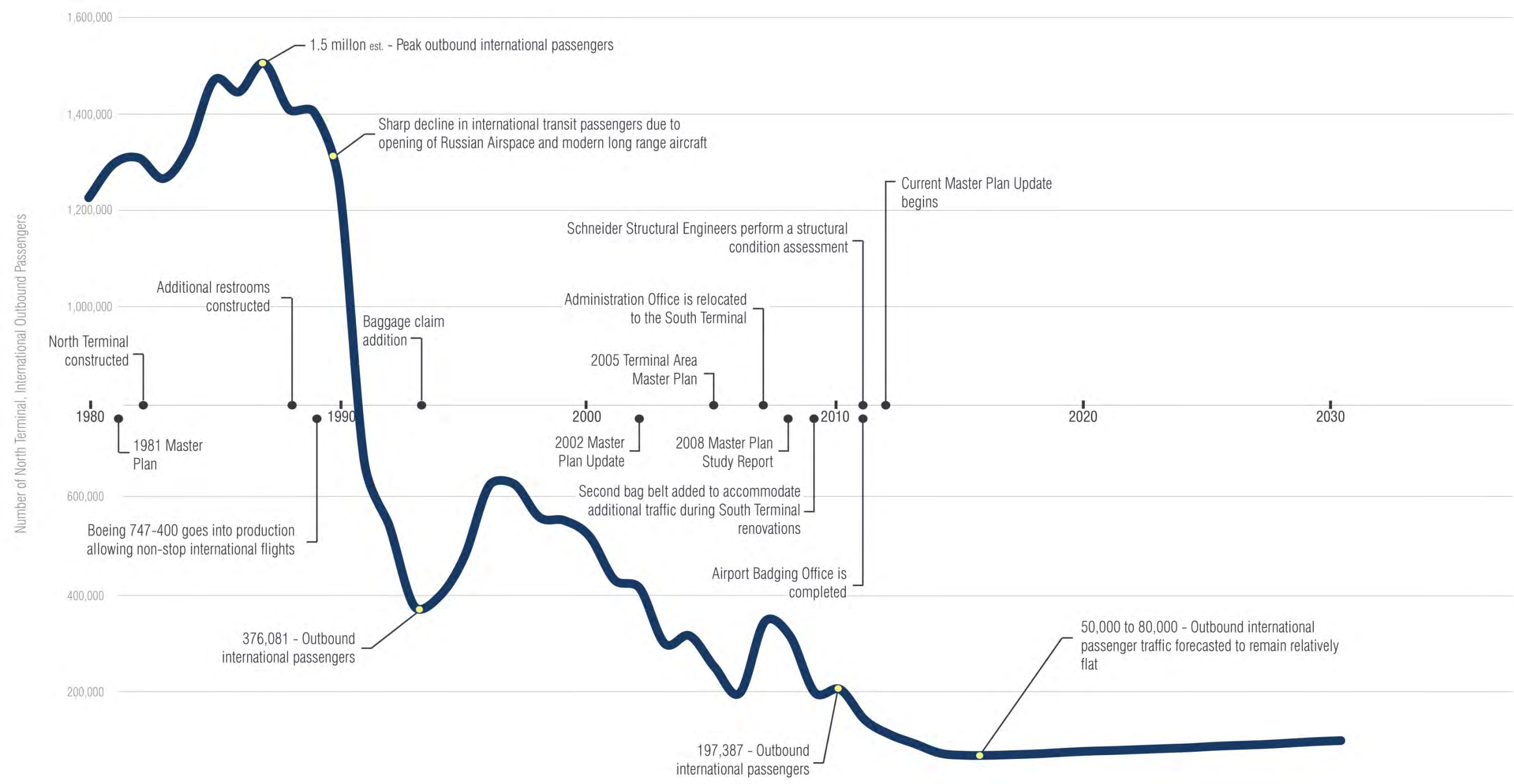
The North Terminal was built in 1982 in response to large numbers of international passengers utilizing the Airport. By the end of the 1980s, almost 1.5 million international passengers were enplaned per year. After the North Terminal was in service for approximately 10 years, enplanements decreased dramatically in response to the opening of Russian airspace and increased use of new long-range passenger aircraft. The result was a loss of nearly 90% of outbound international passengers by 2012. A timeline of activity at the North Terminal is depicted in **Figure 5.16**.

Although the basic purpose of the North Terminal—processing international passengers—still exists, the building sits largely unutilized. It is also nearing the end of its planned life cycle and should not be expected to provide adequate service through the planning period without major upgrades. Airport staff have concerns about the seismic performance of the building. The North Terminal also does not provide the same amenities passengers experience in the South Terminal. In consideration of these concerns, a series of working groups was held to determine the future of the North Terminal.

Three terminal working group meetings were held with participating Airport staff. At these meetings, a number of concepts were developed based on current and future operations, trends, and needs, which were then vetted with participants. Elements from the concepts were used to develop viable alternatives for further consideration and evaluation, resulting in the selection of a final preferred alternative. Terminal concepts are illustrated in **Figure 5.17**.

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Figure 5.16 North Terminal
Timeline



Source: RS&H, 2013.

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Figure 5.17 Terminal Concepts



Source: RS&H, 2013.

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5.1.1 TERMINAL CONCEPT 1 – MAINTAIN TERMINAL

In Terminal Concept 1, illustrated in **Figure 5.17**, the existing international carriers in the North Terminal would remain and regional carriers would be relocated from the A Concourse in the South Terminal to the north side of the North Terminal. In addition, to improve passenger Level of Service, the North Terminal would be refurbished. Terminal Concept 1 allows room for a future hotel located at the northeast edge of the landscaped parking area and a road segment to connect the North and South terminal roadway loops.

Several considerations were identified by participants involved in the terminal workshop meetings:

- Provides enhanced Level of Service and experience for international passengers
- Maximizes utilization of existing infrastructure
- Leaves space for regional and domestic air service expansion
- Connects North and South Terminal roadway loops
- Forces regional carriers to have lesser degree of passenger service
- Does not consolidate commercial airline operations
- Mixes regional and international operations
- Isolates hotel without direct connection to terminal

5.1.2 TERMINAL CONCEPT 2 – REPURPOSE TERMINAL

In Terminal Concept 2, illustrated in **Figure 5.17**, the North Terminal would be repurposed to serve regional carriers. The pier itself would be replaced with a structure designed to accommodate regional carriers.

The North Terminal core and the core components (e.g., offices, fiber-optic utilities, ticketing, and baggage facilities) would remain and the interior would be renovated to match the Level of Service and passenger experience of regional operations in the A Concourse of the South Terminal.

The vacated A Concourse would be expanded and reconfigured to be used by international carriers, which would relocate from the North Terminal. To adequately accommodate international carriers, the A Concourse would need to include Federal Inspection Services (FIS), hold rooms for international operations, concessions, and other necessary infrastructure. International swing gates would be added to maintain the ability to accommodate both international and domestic operations. The new facility would provide an enhanced Level of Service for international passengers, while maintaining a strong connection to the South Terminal. Terminal Concept 2 would also provide room for a hotel in the northern portion of the study area.

Several considerations were identified by participants involved in the terminal workshop meetings:

- Provides dedicated regional terminal
- Constructs new and more efficient international facilities
- Maintains North Terminal core components
- Allows space for regional and domestic operations to grow
- Provides enhanced Level of Service and experience for international and regional passengers
- Increases walking distance for transferring regional passengers
- Limits growth potential for international operations
- Keeps terminal system unconsolidated
- Isolates hotel without direct connection to the terminal

5.1.3 TERMINAL CONCEPT 3 – REPLACE TERMINAL

In Terminal Concept 3, illustrated in **Figure 5.17**, the North Terminal would be demolished and a new terminal pier constructed at the South Terminal. Regional carriers would remain in Concourse A of the South Terminal.

The new terminal pier at the South Terminal would include international swing gates and FIS facilities, as well as additional domestic gates, hold rooms, and concessions. International passengers would experience a higher Level of Service in the South Terminal, which has excellent concession options and amenities compared to the North Terminal. The new pier would also provide an enhanced passenger experience through the use of new modern finishes, improved circulation, and a shorter walking distance for connecting passengers.

By moving international passengers into the South Terminal, the area currently occupied by the North Terminal could be used as a cargo or alternate aircraft parking apron. Terminal Concept 3 would also provide room for a hotel in the northern portion of the study area.

Several considerations were identified by participants involved in the terminal workshop meetings:

- Provides additional cargo aircraft parking
- Enhances Level of Service and experience for international passengers
- Allows domestic operations room to expand
- Consolidates terminal system
- Allows for hotel with direct connection to terminal
- Requires construction phasing so as to not interfere with domestic and international operations
- Requires North Terminal core components to be relocated

5.1.4 TERMINAL CONCEPT 4 – ENHANCE TERMINAL

In Terminal Concept 4, illustrated in **Figure 5.17**, the North Terminal would be enhanced. The North Terminal's capacity would be reduced by removing half the length of its pier. Doing so would decrease the cost of maintenance and utilities and eliminate unused space.

The North Terminal would be renovated to increase the Level of Service and enhance the passenger experience. Swing gates on the end of the pier would maintain international operations; the FIS facility would be retained and renovated. The South Terminal would also be expanded as necessary to form a more significant connection to the North Terminal.

Regional service would remain in the A Concourse. Additionally, a roadway could be constructed to connect the north and south roadway loops. Terminal Concept 4 would also include a hotel option to be built east of the South Terminal on what is currently a parking lot.

Several considerations were identified by participants involved in the terminal workshop meetings:

- Provides enhanced Level of Service and experience for international passengers
- Permits North Terminal right-sizing, which would lower cost of utilities and maintenance
- Retains North Terminal core components
- Maintains unconsolidated terminal system
- Forces terminal construction phasing, which could hinder passenger experience during construction
- Limits growth of domestic operations
- Isolates hotel without direct connection to the Terminal

5.2 TERMINAL ALTERNATIVES

Three terminal alternatives, Preserve, Reduce, and Consolidate, were prepared incorporating the best elements from the concepts. Each alternative meets the facility requirements for all planning activity levels.

The terminal alternatives are illustrated in **Figure 5.18** and described below.

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Figure 5.18 Terminal Development
Alternatives

PRESERVE

*North Terminal preserved
and facility maintained as necessary*



Features

- 1 Mechanical, electrical, and structural upgrades

Considerations

- ➔ Existing domestic and regional operations unchanged
- ➔ Utilizes existing infrastructure
- ➔ Passenger Level of Service unchanged
- ➔ Allows possible domestic carrier expansion into North Terminal
- ➔ Requires largest operating and maintenance cost
- ➔ Cost spread out over the planning horizon
- ➔ North Terminal remains underutilized
- ➔ Buildings inefficient and difficult to operate

REDUCE

*Half of North Terminal concourse
demolished and remaining building upgraded*



Features

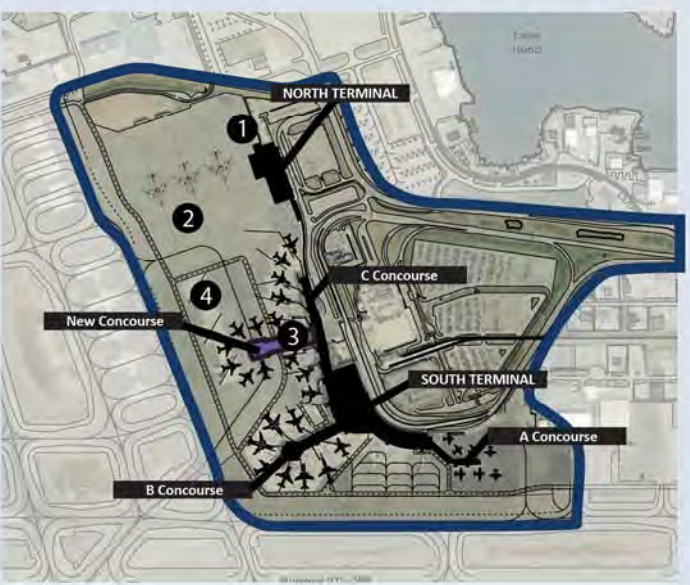
- 1 Half of North Terminal concourse demolished; Four (4) international gates remain
- 2 Mechanical, electrical, and structural upgrades
- 3 A Concourse used for domestic nighttime operations; regional operations unchanged

Considerations

- ➔ Meets demand
- ➔ No improvement in passenger Level of Service
- ➔ Increases domestic capacity without affecting regional operations
- ➔ Reduces operating and maintenance cost
- ➔ Requires large capital investment in North Terminal

CONSOLIDATE - Preferred

*North Terminal concourse demolished
and new South Terminal concourse added*



Features

- 1 Remove North Terminal concourse; Maintain processor
- 2 Former North Terminal site used for cargo parking positions
- 3 New South Terminal concourse with 5 new gates at
- 4 South Terminal (3 international gates) 3 cargo parking positions relocated

Considerations

- ➔ Consolidates all gates at South Terminal
- ➔ Meets demand and improves gate flexibility
- ➔ Excellent passenger Level of Service
- ➔ Requires investment in new concourse at South Terminal
- ➔ Reduces operating and maintenance cost
- ➔ Preserves A Concourse second floor for future growth
- ➔ Enables adaptive reuse of North Terminal processor



Source: RS&H, 2013.

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5.2.1 TERMINAL ALTERNATIVE 1 - PRESERVE TERMINAL

In Terminal Alternative 1, illustrated in **Figure 5.18**, the North Terminal would be retained. Due to the age and condition of the terminal, mechanical and electrical upgrades, structural strengthening, and specific maintenance would need to be completed to ensure the building's ability to provide a sufficient Level of Service into the future.

In this alternative, the current Level of Service for passengers would remain unchanged. Additionally, the South Terminal baggage make-up area, identified as one of the areas of concerns in the South Terminal, would be optimized with operational changes rather than expanded facilities. Domestic and regional operations would also remain in their current state.

5.2.2 TERMINAL ALTERNATIVE 2 - REDUCE TERMINAL

In Terminal Alternative 2, illustrated in **Figure 5.18**, the North Terminal would be reduced in size, with about half the pier being demolished to eliminate unutilized space. Mechanical and electrical upgrades, structural strengthening, and specific maintenance would need to be completed on the remaining portion of the North Terminal to ensure the building's ability to remain operational into the future. The Level of Service would remain equivalent to present day.

Additional ramp space would be made available for cargo aircraft parking or alternate aircraft positioning by reducing the size of the North Terminal pier.

It may also be possible to use the A Concourse for nighttime jet operations, as the second level of the A Concourse is currently unused. This would require adding four passenger boarding bridges (PBB) to the second level of the A Concourse. Regional operations would continue to use the A Concourse ramp area during daytime hours.

5.2.3 TERMINAL ALTERNATIVE 3 - CONSOLIDATE TERMINAL

In Terminal Alternative 3, illustrated in **Figure 5.18**, the North Terminal pier would be removed, but the building's core would remain intact. Keeping the core would prevent the need to replace the offices, fiber-optic utilities, ticketing, and baggage facilities that are located in the North Terminal.

A new pier would be built at the South Terminal off the C Concourse. The new pier would include three international swing gates with the flexibility to be utilized for domestic operations, a new FIS facility, domestic gates and hold rooms, and additional concessions. The new pier is projected to take the space currently used for three cargo hardstands. However, the three cargo hardstands could be replaced in the space currently occupied by the North Terminal pier.

5.3 TERMINAL ALTERNATIVES SCREENING

The three terminal alternatives were screened at a high level to evaluate Level of Service and total cost of ownership. Total cost of ownership considers capital costs, utility and maintenance costs, and potential revenue generation. The costs were not escalated.

5.3.1 TERMINAL ALTERNATIVE 1 - PRESERVE TERMINAL

Level of Service

The layout and organization of the North Terminal limits its ability to meet modern terminal standards. In its current use, no amount of investment within the existing North Terminal area would provide the same Level of Service, amenities, and passenger experience that the South Terminal provides. In addition, some passenger amenities, such as rental car facilities and covered parking, require passengers using the North Terminal to walk long distances between the North Terminal and those support facilities.

Cost of Ownership

Terminal Alternative 1 is estimated to require a capital investment of \$149 million over the 20-year planning horizon. This is driven by the large amount of structural, mechanical, and electrical upgrades the North Terminal requires to maintain future service, based on prior analyses of building conditions.

In 2005, the State of Alaska Department of Transportation and Public Facilities (DOT&PF) completed a survey that inventoried the condition of the electrical and mechanical systems, their life expectancy, and their replacements costs. The survey identified a number of components that were in need of replacement or upgrade. In 2011, a structural evaluation was performed that revealed the building was in need of structural strengthening to satisfy the 2009 International Building Code design requirements for a seismic and snow load events. To satisfy the requirements identified in these reports, the North Terminal building would require a large capital investment to remain viable. A large component of the cost is due to the sheer size of the structure.

One advantage of Terminal Alternative 1 is its ability to spread the required capital investment over the course of the planning period.

Phasing

Renovations to the North Terminal building may slightly disrupt international activity; however, flexibility within the seven available gates³ exists to accommodate these operational limitations. Up to four international gates are required during peak periods throughout the planning horizon.

5.3.2 TERMINAL ALTERNATIVE 2 - REDUCE TERMINAL

Level of Service

The layout and organization of the North Terminal limits its ability to meet modern terminal standards. In its current use, no amount of investment within the existing North Terminal area would provide the same Level of Service, amenities, and passenger experience that the South Terminal provides. In addition, some passenger amenities, such as rental car facilities and covered parking, require passengers using the North Terminal to walk long distances between the North Terminal and those support facilities.

Cost of Ownership

Terminal Alternative 2 is estimated to require a capital investment of \$118 million. Costs include demolition of the east half of the pier, construction of a replacement pier face, and apron demolition and construction. If Terminal Alternative 2 is the preferred alternative, the capital investment should be in the near term to take advantage of the cost savings in utilities and maintenance.

Phasing

Reducing the North Terminal building would disrupt international activity. Operational disruptions may be limited with strategic phasing. For example, building renovation could occur prior to demolition. While the east end of the terminal is being renovated, passengers could use the west end that would later be demolished.

5.3.3 TERMINAL ALTERNATIVE 3 - CONSOLIDATE TERMINAL

Level of Service

All passengers would experience an equal and very high Level of Service with consolidation of all passenger operations into the South Terminal.

³ Although the North Terminal has eight gates, one of the North Terminal gates is unavailable, as US Customs and Border Protection is currently using it. However, the gate could be used again to accommodate flights at a future date.

Cost of Ownership

Terminal Alternative 3 would require a capital investment of \$91 million to construct a new terminal pier at the South Terminal, including facilities to accommodate international operations, and aircraft-rated pavement around the new pier. In consideration of additional renovations to the South Terminal core (estimated cost of \$4.5 million) to accommodate international operations, demolition costs of the existing North Terminal, and North Terminal apron improvements (estimated cost of \$22 million) to reconstruct the North Terminal Apron and add three cargo parking positions to replace cargo parking positions R1, R2, and R3, total costs for the entire project are estimated to be approximately \$124.5 million. Costs associated with the replacement of the North Terminal cargo parking positions (three to four gates) and reconfiguration of the fuel system are excluded from total costs.

A consolidated terminal may have additional benefits, including higher concessions revenue and lower utilities and maintenance costs. Additionally, the shared use of the South Terminal's existing check in, baggage systems, and Transportation Security Administration (TSA) security checkpoints by international passengers would provide cost savings to the Airport and airlines.

Phasing

Consolidating international operations in the South Terminal would require three or more years of construction, depending on construction timing and coordination of aircraft operations. During this time, operational impacts should be coordinated. This includes international and domestic passenger operations, as well as military and cargo operations using the North Terminal. Cargo parking positions should be relocated prior to the start of terminal construction.

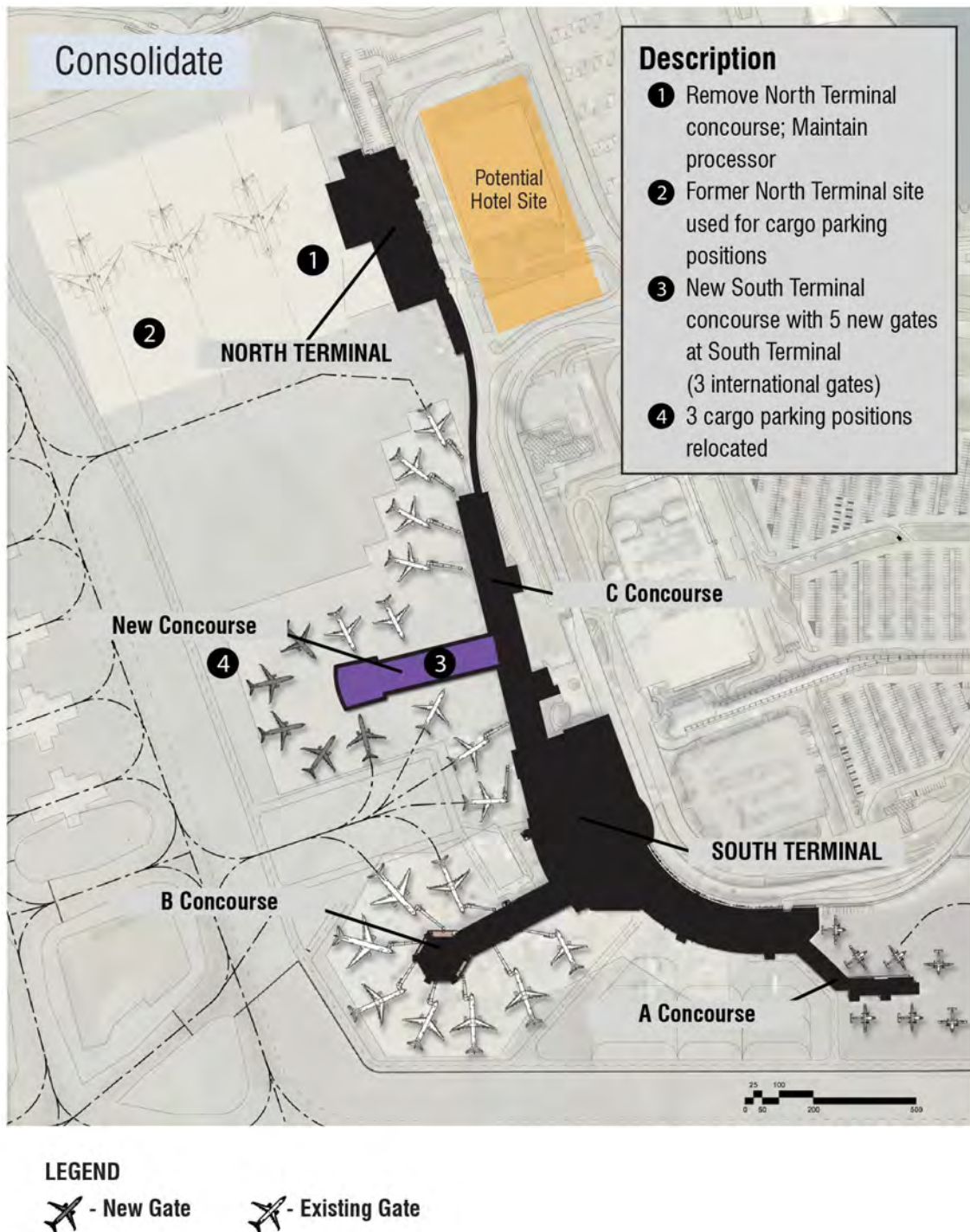
5.3.4 PREFERRED TERMINAL ALTERNATIVE

Terminal Alternative 3 to consolidate the domestic and international operations was selected as the preferred terminal alternative (see **Figure 5.19**).

Terminal Alternative 3 has numerous advantages on which the Airport would be able to capitalize after the new pier is completed. Overall, consolidation would provide a higher Level of Service for passengers, additional flexibility, enabling an increase in domestic capacity if needed, and numerous benefits stemming from consolidating functions within the South Terminal.

Terminal Alternative 3 would provide the highest Level of Service and lowest total cost of ownership. Phasing is more challenging but is not an issue that would offset the benefits.

Figure 5.19
Preferred Terminal Alternative



Source: RS&H, 2013.

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SECTION 6

LAND USE CONCEPTS DEVELOPMENT AND SCREENING

6.1 INTRODUCTION

This section outlines development options for the four Airparks and their respective land uses. A discussion of the opportunities and constraints associated with the development of the four Airparks follows. The four Airparks are shown in Figure 5.20.

6.2 NORTH AIRPARK

North Airpark land use was evaluated to meet facility requirements in the North Airpark area using different configurations and land use allocations. Issues raised by tenants and other stakeholders (constraints and opportunities) were considered. The Concepts consider both landside and airside elements that could be applied in the North Airpark area. These land use allocations were largely proposed for undeveloped areas, but in some cases, reuse or reconfiguration of some land areas was explored.

Airside elements include additional space for air cargo⁴, corporate / general aviation⁵, and airport / airline support⁶ operations. Because of the existing cargo facilities in the North Airpark, the North Airpark was considered the best location to accommodate most of the cargo demand, particularly large cargo development. Therefore, potential layouts for additional aircraft parking positions for technical stop cargo operations were explored in the Postmark Bog. In addition, northward and eastward cargo expansion opportunities were explored. Airport / airline support and general aviation facilities were also considered. Additional airport / airline support facilities were considered to support cargo operations. General aviation facilities were also considered on Ted Stevens Anchorage International Airport (Airport) land in areas near the Lake Hood Airport.

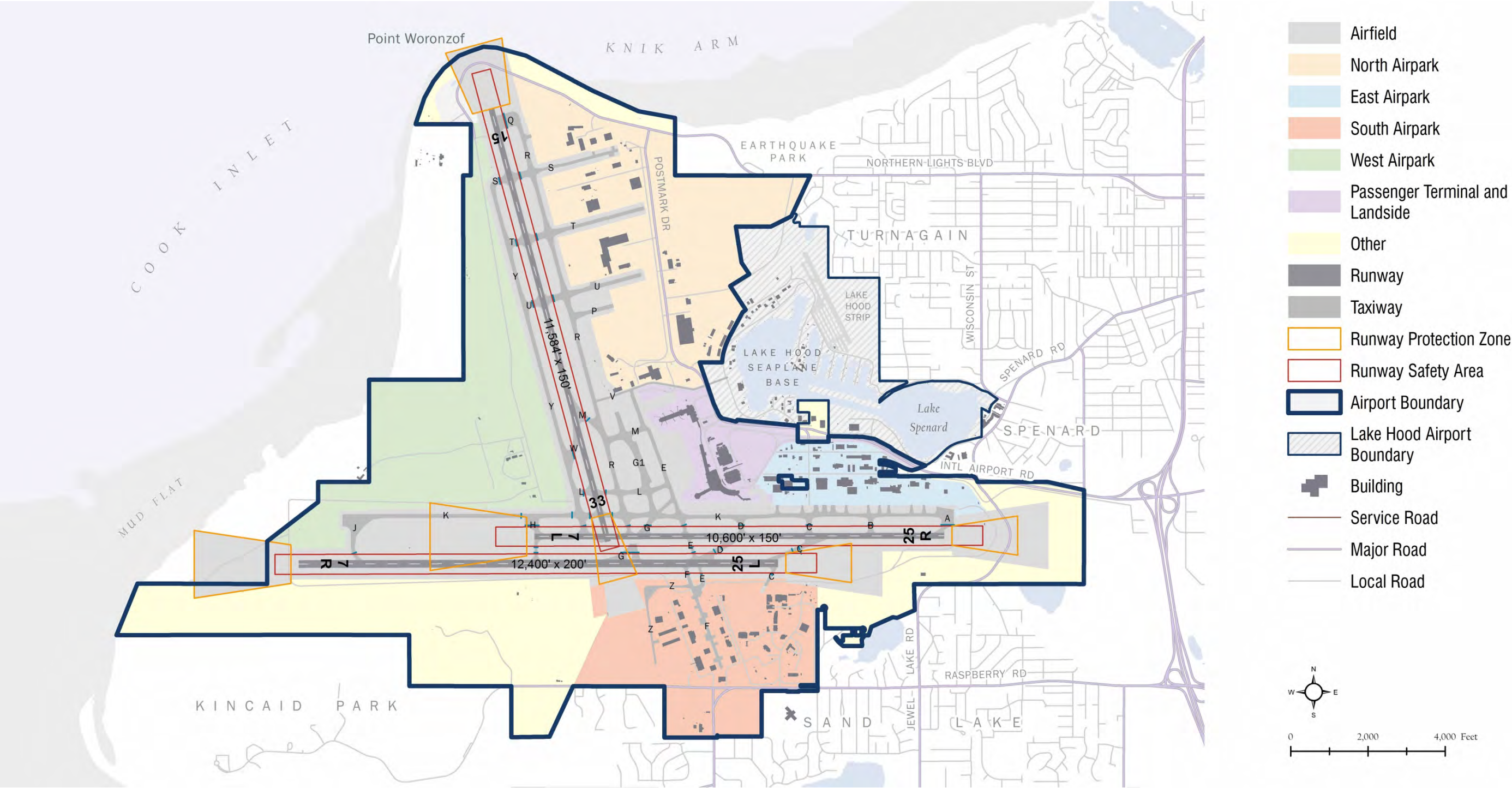
⁴ Air cargo refers to operations that are involved in the transport of cargo, freight, or mail on aircraft.

⁵ Corporate aviation refers to operations that use personal aircraft versus commercial airline aircraft for the purposes of transporting passengers or goods for business purposes. General aviation refers to civil aviation operations other than scheduled air services and non-scheduled transport operations that are typically for-hire (e.g., commercial passenger transport). General aviation operators include fixed-base operators.

⁶ Airport / airline support refers to operations that support the Airport and / or airlines. Airport / airline support facilities may provide aircraft maintenance, ground handling, deicing, firefighting, and fueling services. Facilities may be used for administration and management offices or material and equipment storage, including snow storage areas.

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Figure 5.20 Airparks



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Landside elements include a potential roadway access tunnel to the West Airpark, which would support operations in the western portion of the Airport. A roadway access tunnel was recommended in the 2002 Ted Stevens Anchorage International Airport Master Plan Update. A roadway access tunnel would provide public access and airport vehicle access to West Airpark development without having to circumnavigate the north end of Runway 15-33 and its associated parallel taxiways. The tunnel would provide improved access to the West Airpark by substantially reducing driving distance between the east side of the Airport and the West Airpark around the north ends of the runway and taxiways. The driving distance to the West Airpark from the intersection of Postmark Drive and De Havilland Avenue would be approximately 1 mile with tunnel access. Without the tunnel, the driving distance from the East Airpark to the West Airpark would be as long as 4 miles. The tunnel would reduce each vehicle trip between these points by as much as 3 miles. However, as with any recommended project, the tunnel's benefits and costs would be subject to further study to assess purpose and need, environmental impacts, and financial feasibility.

An additional roadway parallel to and east of Postmark Drive, called Logistics Drive, was recommended in the 2002 *Ted Stevens Anchorage International Airport Master Plan Update* and also recommended in this Ted Stevens Anchorage International Airport Master Plan Update (Master Plan Update). The new roadway would be publically accessible. The purpose of the new roadway would be to facilitate eastward expansion of the North Airpark. A new recommendation is to convert the existing Postmark Drive for use as a "perimeter road," to be used by tugs to safely access the U.S. Post Office and address concerns raised by cargo tenants interviewed during the Master Plan Update process. Public vehicular traffic would be shifted to the new roadway.

6.3 EAST AIRPARK

The East Airpark was the first Airport lease area developed, and some of the existing structures and roadways date from the early 1950s. The East Airpark has changed considerably since then, but development patterns have not reflected the evolution of aviation markets in Alaska or the world at large. Beneficial future land use is likely to emphasize intrastate cargo operations and airport / airline support. Development of future East Airpark land use concepts included the following strategies to address previously identified concerns and facility requirements:

- Provide additional access points to the air operations area by increasing the depth of leased lots or adding an additional security access gate
- Encourage the replacement or modernization of existing structures to maximize the utility of available lease space and get the highest and best use of the available land area

- Provide larger lease lots to accommodate modern aircraft and employee parking, consolidate lessee operations, and facilitate economies of scale
- Acquire and repurpose Federal Aviation Administration (FAA) property that is occupying high-value aviation lease space
- Reduce or eliminate non-aviation land uses occupying potentially high-value aviation lease space

Wholesale redevelopment of the East Airpark was not evaluated in detail because it would be costly and disruptive to ongoing leaseholder operations at the Airport. However, as existing leaseholds expire, the Airport could elect to implement a lease lot reconfiguration consistent with the objectives identified above to facilitate efficient leaseholder operations and maximize the value of the East Airpark.

6.4 SOUTH AIRPARK

The South Airpark includes the Kulis Business Park and facilities located south of Runway 7R-25L. Aviation uses include corporate⁷ and general⁸ aviation, fixed-base operators, cargo, charter passenger service, training, and aircraft maintenance. Through discussions among the Master Plan Update team and with Airport staff, the South Airpark was considered most suitable for corporate and general aviation; regional and domestic, or intrastate, cargo; as well as general airport / airline support use.

Corporate and General Aviation Development

Facility requirements indicated that to meet Planning Activity Level (PAL) 4 demand levels, a total of 7.2 acres of corporate and general aviation development would be required. The South Airpark was considered the most suitable location to accommodate corporate and general aviation development, as most corporate and general aviation tenants already occupy the area. This deficit was therefore accommodated in the development of the Comprehensive Airport Alternatives described in Section 7.

Kulis Business Park Development

Another focus of the South Airpark was determining the best use of the Kulis Business Park. In 2011, the *Kulis Land Use Plan* (Kulis Land Use Plan) sought to address how to best develop or redevelop the Kulis Business Park, which was formerly the Kulis Air National Guard Base.

⁷ Corporate aviation refers to the use of aircraft for the purposes of transporting passengers or goods for business purposes.

⁸ General aviation refers to civil aviation operations other than scheduled air services and non-scheduled transport operations that are typically for-hire. These general aviation operators are based at the Airport and primarily use the runways and taxiways at Anchorage International Airport, not Lake Hood Airport.

The Kulis Land Use Plan identified development issues and constraints, land use options and how those options should be phased, potential community impacts and mitigation measures, and a proposed strategy to attract business to the Kulis Business Park.

Three development options were planned and evaluated. The three Options have different taxiway layouts and land use configurations. The three options are illustrated in Figure 5.21.

The Kulis Land Use Plan did not recommend a preferred option. The Kulis Land Use Plan, however, did recommend a phased approach to development of the Kulis Business Park, concentrating aeronautical use on the north side of the property first, and particularly the northwest side, where aeronautical facilities already exist. The Kulis Land Use Plan recommended interim non-aeronautical use of the south side of the site, until demand for aeronautical use justifies leveling and redeveloping the south side. The south side of the Kulis Business Park is a hilly area that would require grading to remove soil and level the land for future development. In addition, three commercial office/warehouse buildings are within this area and can be leased to generate revenue for the Airport. The cost of demolishing buildings, grading, and providing new roads, taxiways, and utilities on the south side make aeronautical use more complex compared to other areas within the Airport. The Master Plan Update team agreed with the recommended phasing plan from the Kulis Land Use Plan efforts. The Airport is also coordinating with FAA to allow non-aeronautical use of the southern portion of Kulis Business Park to encourage interested parties to enter into leases for terms that extend beyond this Master Plan Update planning horizon.

Further evaluation of the Kulis Business Park development options by the Master Plan Update team resulted in selecting Option 1 as the preferred future development option. Although this option is not ideal as presented, it does offer elements that are all favorable to near-term development such as utilization of the existing ramp, the addition of two taxiways, and a phased approach. Some reevaluation of the east-west vehicle roadway location may be necessary to suit development needs.

Prior to evaluating the three development options, the Master Plan Update team identified several criteria and considerations. The criteria and considerations are as follows:

- **Meets Future Land Uses** – As previously mentioned, the South Airpark, which includes the Kulis Business Park, is planned for corporate and general aviation, regional and domestic cargo, and airport / airline support.
- **Minimizes Noise / Vibrational Impacts** – Minimizes noise and vibrational impacts to the surrounding residential community. Previous noise studies completed while the Kulis Air National Guard still occupied the site indicated most of the noise generated related to taxiing and maintenance of aircraft. Therefore, for planning purposes, the preference is to use natural

vegetation and / or buildings to buffer the surrounding community from aircraft noise. Generally, as the distance between residential and aircraft operations areas increase, noise effects decrease. The South Airpark and the Kulis Business Park are not well suited for facilities that would accommodate large jet aircraft due to its proximity to residential development. The North Airpark and future West Airpark are more suitable to accommodate tenants with larger jet aircraft (e.g., larger cargo tenants).

- **Considers Aesthetic / Visual Impacts** – Considers aesthetic or visual impacts, as well as odors / air pollution to the surrounding residential community. The goal is to minimize views of aircraft apron areas. The three development options already include an existing treeline buffer along the eastern and southern border of the Kulis Business Park.
- **Provides Safe and Efficient Aircraft Access** – Provides safe and efficient aircraft access to the South Airpark.
- **Minimizes Vehicle Traffic Impacts** – Minimizes vehicle traffic impacts, particularly on Raspberry Road, due to increased tenant growth in the South Airpark. All three development options generally had the same level of traffic volumes via Raspberry Road as analyzed in the Kulis Land Use Plan. Traffic analysis indicated full development of the Kulis Business Park could result in up to 3,600 trips per day, an increase of up to 205 from peak traffic levels in 2011.
- **Maximizes Revenue Generating Potential** – Maximize revenue generating potential by maximizing the land area for development in the Kulis Business Park, minimize development costs (e.g., to level out the terrain), and consider existing leases during construction efforts.
- **Considers Flexibility for Change** – Consider flexibility for change in development based on actual demand. Also, focus should be placed on how to best transition from non-aeronautical to aeronautical development.

The evaluation results are presented in Table 5.2.

Table 5.2
Evaluation Results of 2011 Kulis Land Use Plan Development Options

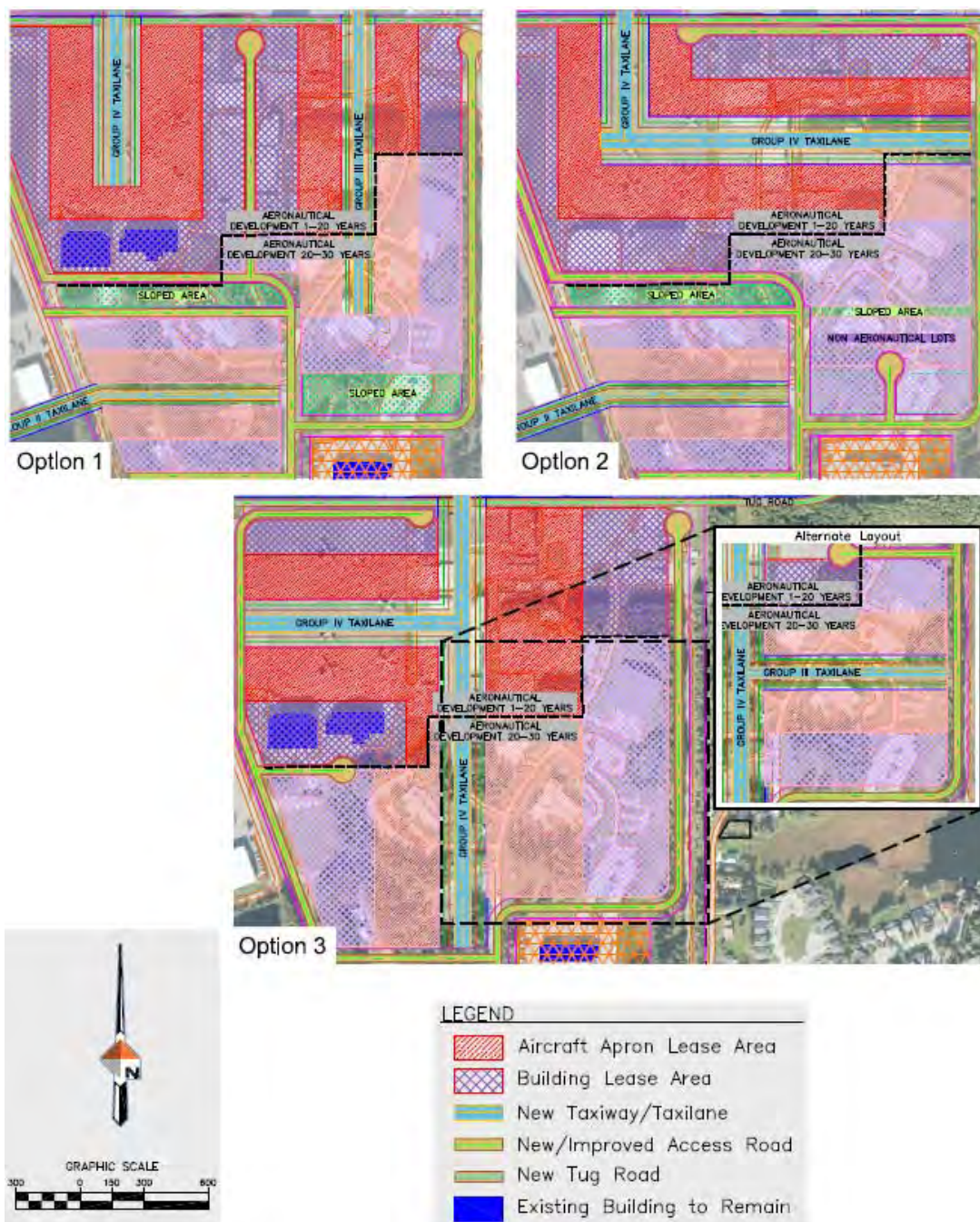
	Option 1	Option 2	Option 3
Meets Future Land Uses	✓	✓	- Larger parcels may attract larger tenants, which may deviate from the preferred land uses
Minimizes Noise / Vibrational Impacts	✓ Buildings serve as noise buffers	X Aircraft apron is directly facing residential areas to the east	X Aircraft apron is directly facing residential areas to the south
Considers Aesthetic / Visual Impacts	✓ Aeronautical development farther away from residential areas	X Aeronautical development closer to residential areas	X Aeronautical development closer to residential areas; leveling out the land area may require installing more retaining walls
Provides Safe and Efficient Aircraft Access	✓ Two different taxiways provided	X Most tenants accessing one taxiway may lead to congestion; area to the southeast provides no airside access	X All tenants accessing one taxiway may lead to congestion
Minimizes Vehicle Traffic Impacts ¹	N/A	N/A	N/A
Maximizes Revenue-Generating Potential	- Potential to capture non-aeronautical revenue when the ADG-II taxiway is constructed (cannot lease out two buildings); less area available for development	- Potential to capture non-aeronautical revenue when the ADG-II taxiway is constructed (cannot lease out two buildings); less area available for development	- Less potential to capture non-aeronautical revenue when the ADG-IV taxiway is constructed; costly to level out terrain; more area available for development
Considers Flexibility for Change	- Can start development in the northwest and then phase into either Option 1 or 2; too many roads does not provide flexibility for change	✓ Can start development in the northwest and then phase into either Option 1 or 2	- Larger developable areas can be subdivided as necessary as needed; cannot easily phase into another Option

Source: RS&H, 2014.

Notes: ✓ = Meets criteria / considerations, - = Meets criteria / considerations in some ways, but not in others, X = Does not effectively meet criteria / consideration, N/A = not applicable, ADG = Airplane Design Group.

1 - All three development options generally attracted the same level of traffic volumes via Raspberry Road.

Figure 5.21
Kulis Business Park Development Options



Source: 2011 Kulis Land Use Plan.

The remainder of the South Airpark, including the developed and undeveloped property between the Kulis Business Park, the former Federal Communications Commission, which was conveyed to the Airport in 2014, and Kincaid Park, are likely to continue to be developed beyond the 20-year planning horizon with uses similar to those that exist today. When tenant demand dictates, taxiways, roads, utilities, and lease lots will be developed, expanding in a westerly direction from existing developed areas. The South Airpark would also contain other Airport / airline support infrastructure, such as the Aircraft Rescue and Fire Fighting (ARFF) training facility, joint-use shooting range, and the FAA's Airport Surface Detection Equipment installation.

The ARFF training facility is planned to be relocated slightly southwest of its existing location just south of the Runway 7L end and below Runway 7R-25L. The existing ARFF training facility is outdated and will be relocated to address concerns about the facility's structural integrity and condition of its secondary liner, which does not meet design standards as specified in *FAA Advisory Circular (AC) 150 / 5220-17B, Aircraft Rescue and Firefighting Training Facilities*. The existing location is also relocated to meet long-term development plans for the South Airpark. Building a new facility allows the Airport to be able to also accommodate the larger ARFF vehicles, and meet live fire training standards per *Federal Aviation Regulation (FAR) Part 139.319, Aircraft Rescue and Firefighting Operational Requirements*. **Appendix G** provides additional information regarding the ARFF training facility relocation.

South Airpark Development – South of Raspberry Road

On the south side of Raspberry Road, land uses would be ideally suited for aeronautical businesses that do not require direct airfield access, or for revenue generation from non-aeronautical use.

6.5 WEST AIRPARK

The West Airpark is dedicated primarily to future cargo and Airport / airline support development as warranted by demand. As part of concept development, the total acreage of the West Airpark was identified in order to determine the potential land area within the existing property boundary that could be available for future Airport development. Initial concepts presented in **Section 4** show the airfield improvements. All other land areas outside of airfield pavement safety areas were identified as potential future cargo and Airport / airline development areas.

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SECTION 7

COMPREHENSIVE AIRPORT ALTERNATIVES

Based on the identification of preferred elements in the various concepts and alternatives identified earlier in the process, five comprehensive Ted Stevens Anchorage International Airport (Airport) alternatives were prepared for additional analysis. Key considerations carried forward from the concept development and screening process included the following:

- The primary consideration was long-term airfield capacity. Five different airfield alternatives were identified to address these needs. Each airfield alternative serves as a basis for a comprehensive Airport alternative.
- All comprehensive Airport alternatives included the preferred terminal alternative.
- Land use preferences are consistent in each alternative (e.g., international cargo in the North and West Airparks).
- Airpark development was balanced with airfield capacity. In other words, higher capacity airfield alternatives would require increased airpark development.
- Landside development is consistent in each alternative, as existing landside facilities are anticipated to meet demand throughout the planning horizon.

The five comprehensive airport alternatives are as follows:

- Alternative 1 – Minimize Development
- Alternative 2 – Optimize Alaska International Airport System (AIAS)
- Alternative 3 – Optimize Anchorage International Airport (ANC)
- Alternative 4 – Closely Spaced Runway
- Alternative 5 – Widely Spaced Runway

The alternatives described and shown reflect the final alternative after all refinements were made based on feedback from Airport staff, tenants, Technical Advisory Committee members, Working Group members, and members of the general public.

7.1 ALTERNATIVE 1 – MINIMIZE DEVELOPMENT

Alternative 1, Minimize Development, illustrated in **Figure 5.22**, focuses investment at the Airport to those elements necessary to meet airport design standards. The airside elements in Alternative 1 are based on Federal Aviation Administration (FAA) regulations and best practice

guidance on airfield safety. Alternative 1 does not restrict tenants' ability to develop or upgrade their facilities. The alternative identifies areas where tenants may develop facilities on leaseholds in conformance with the Airport's preferred land use guidance and only as warranted by demand.

Alternative 1, as illustrated in Figure 5.22, includes the following features:

Airside⁹

Airside features include:

- Angled Taxiways C, D, E, F, G, R, and the taxiway to the Kulis Business Park are removed and replaced with four 90-degree taxiways (Taxiways C1, D1, G, and R).
- Taxiway Z, referred to as the East / West Parallel Taxiway, is extended 1,900 feet east, to connect to the end of Runway 7R-25L, and 600 feet west, providing access between the South Airpark and the Kulis Business Park.
- Runway 15-33 is decoupled from Runway 7L-25R to eliminate the overlapping runway safety areas. Runway 15-33 is also widened from 150 feet to 200 feet to meet Airplane Design Group (ADG)-VI design standards.
- Taxiway R is extended to the Runway 15 end, Taxiway Q is realigned, and a new bypass Taxiway Q1 is constructed. This project maximizes the Runway 15-33 length to allow the full use of the Runway. Taxiway R is extended northward to add a connector taxiway to the north end of Runway 15, along with a realignment of Taxiway Q to the Runway 15 end. A new Taxiway Q1 would then be constructed and used as a bypass taxiway to increase flexibility in operations. The FAA recognizes the advantage of the bypass taxiways, as their use is recommended in *FAA Advisory Circular (AC) 150 / 5300-13A, Airport Design (AC 150 / 5300-13A)*. Another benefit is that departures would be able to start at the Runway 15 end, increasing the runway takeoff distance available and takeoff run available. Aircraft currently depart Runway 15 from Taxiway Q, leaving 200 feet of Runway 15-33 unused. The Runway 15 approach threshold would also shift north to coincide with the existing Runway 15 endpoint.

⁹ Airside refers to activity occurring within the airfield where aircraft are located (moving or parked), as well as in the airspace (aircraft takeoffs and landings).

Landside

Landside facilities include facilities that are located outside areas where aircraft operate and exclude the passenger terminal. They include facilities such as roadways and parking garages. Landside features include:

- The amount of land area dedicated to vehicle parking near the passenger terminal complex remains unchanged. Additional demand is accommodated by expanding parking capacity (e.g., adding parking lots or parking structures) within the existing footprint area allocated for parking or by managing the demand for parking (e.g., increasing parking rates or encouraging parking in the economy parking lot).

Airport Support

Potential Airport support, or tenant development sites, is identified in the North, South, and West Airparks for development as warranted by demand. For planning purposes, three general types of tenant development are considered: air cargo (international and regional / domestic), corporate and general aviation, and Airport / airline support. They are defined below.

- **Air cargo** – Air cargo refers to operations that are involved in the transport of cargo, freight, or mail on aircraft.
- **Corporate / general aviation** – Corporate aviation refers to operations that use personal aircraft for the purpose of transporting passengers or goods for business purposes. General aviation refers to civil aviation operations other than scheduled air services and non-scheduled transport operations that are typically for hire (e.g., commercial passenger air carriers). General aviation operators include fixed-base operators.
- **Airport / airline support** – Airport / airline support refers to operations that support the Airport and / or airlines. Airport / airline support facilities may provide aircraft maintenance, ground handling, deicing, firefighting, and fueling services. Facilities may be used for administration and management offices or material and equipment storage, including snow storage areas.

The three types of tenant development areas are generally referred to as “Airport Support” on Figure 5.22. Alternative I features include:

- A potential site for a tenant-developed hotel is identified just north of the Airport Traffic Control Tower and southeast of the North Terminal.
- Tenant development as warranted by demand in the South Airpark.

- A new South Airpark Access Road is provided to support future tenant development as warranted by demand.
- The fuel storage facility in the West Airpark is expanded as warranted by demand.
- A potential site for a ground run-up enclosure (GRE) is identified in the Postmark Bog. A GRE was included to minimize noise impacts from aircraft engine run-ups to surrounding areas. Three potential sites were identified: near Taxiway Q in the North Airpark, near Taxiway P and Taxiway U in the Postmark Bog of the North Airpark, and a third site closer to the North Terminal building in the Postmark Bog. A separate site study will be completed to select a preferred GRE site at project initiation. **Figure 5.22** shows the GRE site located near Taxiway P and Taxiway U.
- Taxiways P and U are extended and four pull-through cargo parking positions are added / constructed as warranted by demand.
- Tenant development as warranted by demand in the North Airpark.

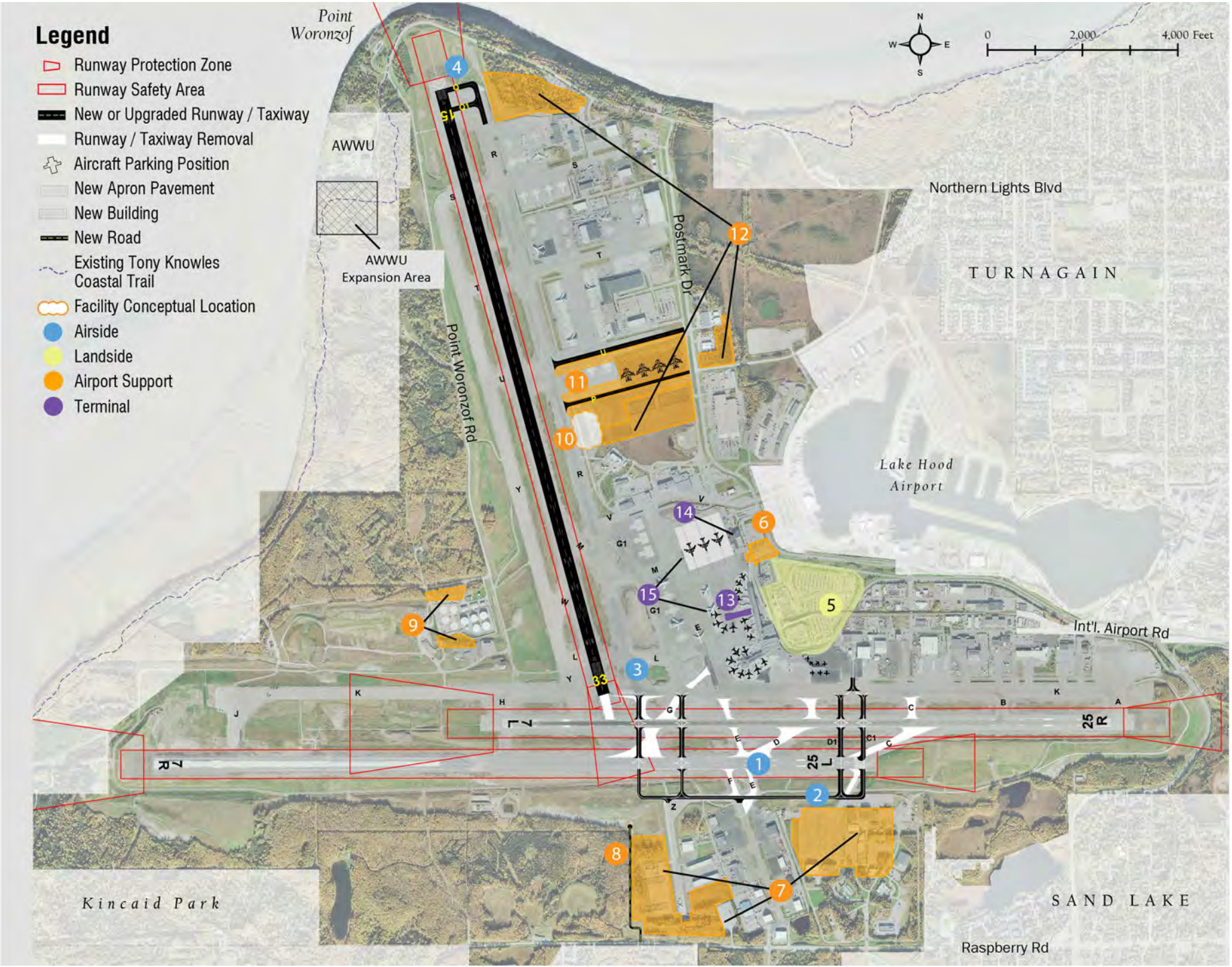
Terminal

The preferred terminal alternative, which consolidates international and domestic operations, includes the following features:

- A new South Terminal Concourse is added / constructed, adding an additional five new gates to the South Terminal. Three of the five gates can be used as swing gates to accommodate the larger aircraft required for international operations.
- The North Terminal Concourse is removed / demolished. The North Terminal core is maintained.
- The three cargo parking positions, R2, R3, and R4, are removed from the South Terminal and replaced at the North Terminal¹⁰. The former North Terminal apron is used for cargo parking positions.

¹⁰ Further analysis is required following the Master Plan Update to determine the best use of the North Terminal apron.

Figure 5.22 Airport Alternative 1 –
Minimize Development



Source: RS&H, HDR, 2014.

Note: ADG = Airplane Design Group, AWWU = Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility, RSA = Runway Safety Area.

- 1 Angled taxiways replaced with 90-degree taxiways
- 2 East / West Parallel Taxiway (Taxiway Z) extended east and west to provide South Airpark access
- 3 Runway 15-33 decoupled to eliminate overlapping RSAs; widened to meet ADG-VI standards
- 4 Taxiway R extended to Runway 15 end, Taxiway Q realigned and new bypass Taxiway Q1 constructed
- 5 Existing parking and rental car demand managed or facilities reconfigured within existing footprint
- 6 Tenant developed hotel site identified
- 7 Tenant development in South Airpark as warranted by demand
- 8 New South Airpark Access Road to support tenant development as warranted by demand
- 9 Fuel storage facility expanded as warranted by demand
- 10 Potential site for Ground Run-up Enclosure identified
- 11 Taxiways U and P extended; 4 pull-through cargo parking positions added as warranted by demand
- 12 Tenant development in North Airpark as warranted by demand
- 13 New South Terminal Concourse added
- 14 Remove North Terminal Concourse; maintain building core
- 15 Three cargo parking positions relocated; former North Terminal site used for cargo parking positions

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7.2 ALTERNATIVE 2 – OPTIMIZE AIAS

Alternative 2 – Optimize AIAS, illustrated in Figure 5.23, seeks to address Airport runway capacity needs by shifting a segment of aviation demand, international technical stop flights, from the Airport to Fairbanks International Airport. The goal of Alternative 2 is to make the best use of existing Alaska International Airport System (AIAS) infrastructure before building new infrastructure. Approximately 50% of the Airport’s cargo technical stop operations could be shifted to Fairbanks International Airport. Technical stop operations are international cargo flights flying between Asia and North America that currently stop at Anchorage only to refuel.

Using an airfield capacity / delay simulation tool, the 2013 AIAS Planning Study (AIAS Planning Study) examined the effect on both airports’ runway delay of shifting some of the Airport’s cargo technical stop operations to Fairbanks International Airport. The analysis, presented in Table 5.3 for Planning Activity Level (PAL) 1 (242,000 annual operations) and PAL 2 (282,000 annual operations), indicates that the Fairbanks International Airport runway / taxiway system can handle a move of 50% (45 daily flights) or 100% (90 daily flights) of the Airport’s technical stop traffic without creating airfield delay concerns.

The AIAS Planning Study also showed the reduced delays at the Airport from shifting traffic to Fairbanks International Airport. A shift of 50% of the Airport’s cargo technical stop operations to Fairbanks International Airport reduces the Airport’s occurrence of unacceptable delays from 75% of the time (without move) to just 13% of the time (with move) at 282,000 operations. Unacceptable delay is defined as 30 minutes of delay 10% or more of the time during peak periods.

Table 5.3
Average Airport Delay in Minutes
Cargo Technical Stop Airlines Moved to Fairbanks International Airport

	Critical Hours for Integrated Carriers			
	242K Annual Operations (PAL 2)		282K Annual Operations (PAL 4)	
	Without Move	With 50% Move	Without Move	With 50% Move
62% of Time (Configuration 1 VFR)	18.1	6.3	42.1	9.0
22% of Time (Configuration 2 VFR)	7.2	6.3	20.3	11.2
10% of Time (Configuration 1 IFR)	21.8	11.3	57.7	31.2
3% of Time (Configuration 4 VFR)	>60	>60	>60	>60

Source: 2013 Alaska International Airport System Planning Study.

Notes: IFR = Instrument Flight Rules, PAL = Planning Activity Level, VFR = Visual Flight Rules.

While some infrastructure investment would be required at Fairbanks International Airport to handle the increased operations, the costs of infrastructure improvements there would be far less expensive than building a new runway at Anchorage. Fairbanks International Airport has considerable existing underutilized infrastructure for technical stop aircraft, as it currently serves those aircraft on an infrequent basis when they are unable to land at Anchorage and need an alternate airport. Fairbanks International Airport also formerly had scheduled technical stop operations by Lufthansa, Cargolux, and Air France.

Airlines cannot be required to shift operations from the Airport to Fairbanks International Airport; however, under Alternative 2, airlines might shift tech-stop operations to Fairbanks International Airport if enough incentive is offered. The development of sufficient incentive would likely come from one or more of the following sources: private sector companies, public communities, or a combined effort involving AIAS, the FAA, and the airlines. AIAS / FAA / airline coordination could result in one or more airport incentives, such as waiving or reducing the landing fee, fuel flowage fee, aircraft parking fee, Federal Inspection Service fees, and terminal rent (if applicable). However, FAA regulations governing airport incentives do not cover the Alternative 2 scenario, so FAA approval is not certain. Other public- and private-sector entities could offer incentives unbound by FAA restrictions, so long as AIAS was not involved. If established, those incentives might include fuel pricing, ground-handling services, crew lodging, crew transportation, and deicing services.

Alternative 2, as illustrated in Figure 5.23, includes the following features:

Airside

Airside features include:

- Angled Taxiways C, D, E, F, G, R, and the taxiway to the Kulis Business Park are removed and replaced with four 90-degree taxiways (Taxiways C1, D1, G, and R).
- Taxiway Z, referred to as the East / West Parallel Taxiway, is extended 1,900 feet east, to connect to the end of Runway 7R-25L, and 600 feet west, providing access between the South Airpark and the Kulis Business Park.
- Runway 15-33 is decoupled from Runway 7L-25R to eliminate the overlapping runway safety areas. Runway 15-33 is also widened from 150 feet to 200 feet to meet ADG-VI design standards.
- Taxiway R is extended to the Runway 15 end, Taxiway Q is realigned, and a new bypass Taxiway Q1 is constructed.

Landside

Landside facilities include facilities that are located outside areas where aircraft operate and exclude the passenger terminal. They include facilities such as roadways and parking garages. Landside features include:

- The amount of land area dedicated to vehicle parking near the passenger terminal complex remains unchanged. Additional demand is accommodated by expanding parking capacity (e.g., adding parking lots or parking structures) within the existing footprint area allocated for parking or by managing the demand for parking (e.g., increasing parking rates or encouraging parking in the economy parking lot).

Airport Support

Potential Airport support, or tenant development sites, is identified in the North, South, and West Airparks for development as demand warrants. For planning purposes, three general types of tenant development are considered: air cargo (international and regional / domestic), corporate and general aviation, and Airport / airline support.

The three types of tenant development areas are generally referred to as “Airport Support” on Figure 5.23. Alternative 2 features include:

- A potential site for a tenant-developed hotel is identified just north of the Airport Traffic Control Tower and southeast of the North Terminal.
- Tenant development as warranted by demand in the South Airpark.
- A new South Airpark Access Road is provided to support future tenant development as warranted by demand.
- The fuel storage facility in the West Airpark is expanded as warranted by demand.
- A potential site for a GRE is identified in the Postmark Bog. A separate site study will be completed to select a preferred GRE site at project initiation.
- Tenant development as warranted by demand in the North Airpark.

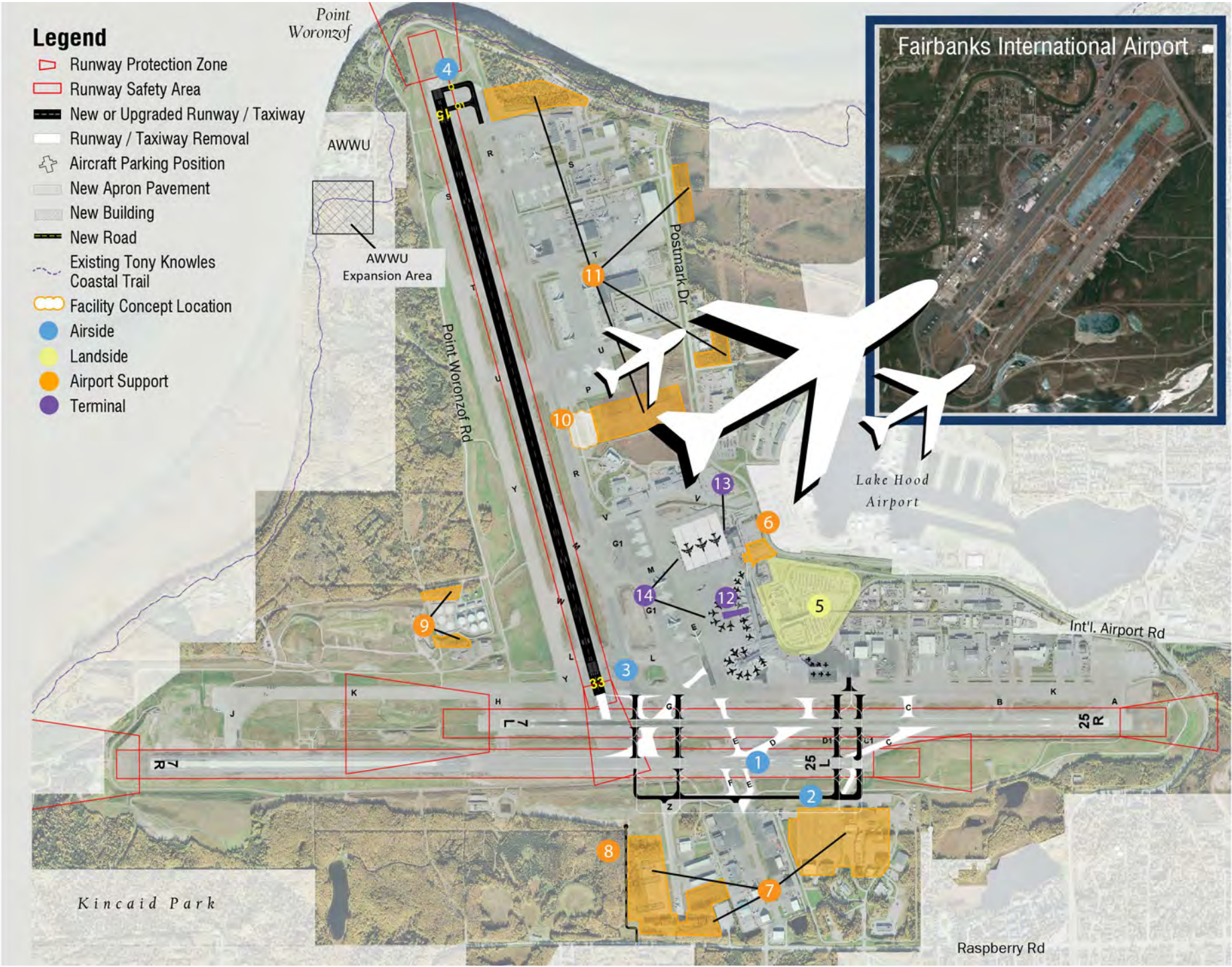
Terminal

The preferred terminal alternative, which consolidates international and domestic operations, includes the following features:

- A new South Terminal Concourse is added / constructed, adding an additional five new gates to the South Terminal. Three of the five gates can be used as swing gates to accommodate the larger aircraft required for international operations.
- The North Terminal Concourse is removed / demolished. The North Terminal core is maintained.
- The three cargo parking positions, R2, R3, and R4, are removed from the South Terminal and replaced at the North Terminal¹¹. The former North Terminal apron is used for cargo parking positions.

¹¹ Further analysis is required following the Master Plan Update to determine the best use of the North Terminal apron.

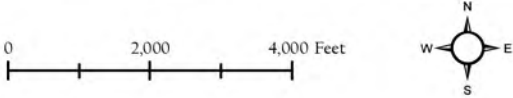
Figure 5.23 Airport Alternative 2 – Optimize AIAS



Source: RS&H, HDR, 2014.

Note: ADG = Airplane Design Group, AWWU = Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility, RSA = Runway Safety Area.

- 1 Angled taxiways replaced with 90-degree taxiways
- 2 East / West Parallel Taxiway (Taxiway Z) extended east and west to provide South Airpark access
- 3 Runway 15-33 decoupled to eliminate overlapping RSAs; widened to meet ADG-VI standards
- 4 Taxiway R extended to Runway 15 end, Taxiway Q realigned and new bypass Taxiway Q1 constructed
- 5 Existing parking and rental car demand managed or facilities reconfigured within existing footprint
- 6 Tenant developed hotel site identified
- 7 Tenant development in South Airpark as warranted by demand
- 8 New South Airpark Access Road to support tenant development as warranted by demand
- 9 Fuel storage facility expanded as warranted by demand
- 10 Potential site for Ground Run-up Enclosure identified
- 11 Tenant development in North Airpark as warranted by demand
- 12 New South Terminal Concourse added
- 13 Remove North Terminal Concourse; maintain building core
- 14 Three cargo parking positions relocated; former North Terminal site used for cargo parking positions



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7.3 ALTERNATIVE 3 – OPTIMIZE ANC

Alternative 3, Optimize ANC, illustrated in **Figure 5.24**, utilizes existing airfield infrastructure at the Airport to maximize the capacity of existing runways by altering the preferential runway use policy during daytime hours. This policy is currently in effect at all times to reduce noise impacts on residential areas east of the Airport. This alternative would provide additional capacity with the existing three-runway system by eliminating restrictions on runway use during the hours of 7 a.m. to 10 p.m.

Alternative 3, illustrated in **Figure 5.24**, includes the following features:

Airside

Airside features include:

- Angled Taxiways C, D, E, F, G, R, and the taxiway to the Kulis Business Park are removed and replaced with four 90-degree taxiways (Taxiways C1, D1, G, and R).
- Taxiway Z, referred to as the East / West Parallel Taxiway, is extended 1,900 feet east, to connect to the end of Runway 7R-25L, and 600 feet west, providing access between the South Airpark and the Kulis Business Park.
- Runway 15-33 is decoupled from Runway 7L-25R to eliminate the overlapping runway safety areas. Runway 15-33 is also widened from 150 feet to 200 feet to meet ADG-VI design standards.
- Taxiway R is extended to the Runway 15 end, Taxiway Q is realigned, and a new bypass Taxiway Q1 is constructed.

Landside

Landside facilities include facilities that are located outside areas where aircraft operate and exclude the passenger terminal. They include facilities such as roadways and parking garages. Landside features include:

- The amount of land area dedicated to vehicle parking near the passenger terminal complex remains unchanged. Additional demand is accommodated by expanding parking capacity (e.g., adding parking lots or parking structures) within the existing footprint area allocated for parking or by managing the demand for parking (e.g., increasing parking rates or encouraging parking in the economy parking lot).
- Postmark Drive is realigned to the east to facilitate tenant development to the east and provide safer access for tugs accessing the U.S. Post Office.

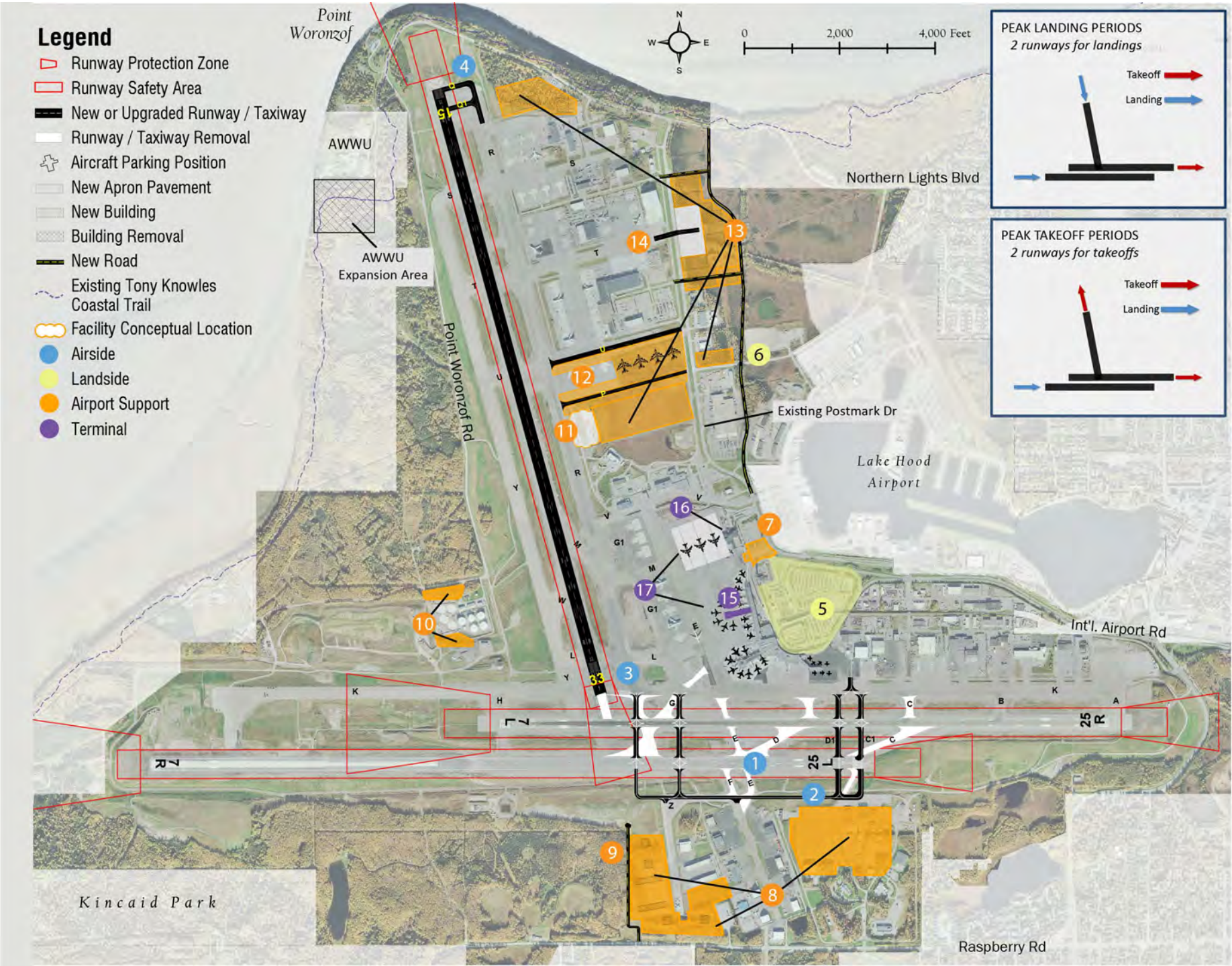
Airport Support

Potential Airport support, or tenant development sites, is identified in the North, South, and West Airparks for development as demand warrants. For planning purposes, three general types of tenant development are considered: air cargo (international and regional / domestic), corporate and general aviation, and Airport / airline support.

The three types of tenant development areas are generally referred to as “Airport Support” on **Figure 5.24**. Alternative 3 features include:

- A potential site for a tenant-developed hotel is identified just north of the Airport Traffic Control Tower and southeast of the North Terminal.
- Tenant development as warranted by demand in the South Airpark.
- A new South Airpark Access Road is provided to support future tenant development as warranted by demand.
- The fuel storage facility in the West Airpark is expanded as warranted by demand.
- A potential site for a GRE is identified in the Postmark Bog. A separate site study will be completed to select a preferred GRE site at project initiation.
- Taxiways P and U are extended and four pull-through cargo parking positions are added / constructed as warranted by demand.
- Tenant development as warranted by demand in the North Airpark.
- Taxiway T is extended east to facilitate tenant development as warranted by demand.

Figure 5.24 Airport Alternative 3 – Optimize ANC



Source: RS&H, HDR, 2014.

Note: ADG = Airplane Design Group, AWWU = Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility, RSA = Runway Safety Area.

- 1 Angled taxiways replaced with 90-degree taxiways
- 2 East / West Parallel Taxiway (Taxiway Z) extended east and west to provide South Airpark access
- 3 Runway 15-33 decoupled to eliminate overlapping RSAs; widened to meet ADG-VI standards
- 4 Taxiway R extended to Runway 15 end, Taxiway Q realigned and new bypass Taxiway Q1 constructed
- 5 Existing parking and rental car demand managed or facilities reconfigured within existing footprint
- 6 Postmark Dr realigned to the east
- 7 Tenant developed hotel site identified
- 8 Tenant development in South Airpark as warranted by demand
- 9 New South Airpark Access Road to support tenant development as warranted by demand
- 10 Fuel storage facility expanded as warranted by demand
- 11 Potential site for Ground Run-up Enclosure identified
- 12 Taxiways P and U extended; 4 pull-through cargo parking positions added as warranted by demand
- 13 Tenant development in North Airpark as warranted by demand
- 14 Taxiway T extended east
- 15 New South Terminal Concourse added
- 16 Remove North Terminal Concourse; maintain building core
- 17 Three cargo parking positions relocated; former North Terminal site used for cargo parking positions

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Terminal

The preferred terminal alternative, which consolidates international and domestic operations, includes the following features:

- A new South Terminal Concourse is added / constructed, adding an additional five new gates to the South Terminal. Three of the five gates can be used as swing gates to accommodate the larger aircraft required for international operations.
- The North Terminal Concourse is removed / demolished. The North Terminal core is maintained.
- The three cargo parking positions, R2, R3, and R4, are removed from the South Terminal and replaced at the North Terminal¹². The former North Terminal apron is used for cargo parking positions.

7.4 ALTERNATIVE 4 – CLOSELY SPACED RUNWAY

Alternative 4, illustrated in **Figure 5.25**, modestly increases Airport capacity by adding a new closely spaced North / South Runway parallel to Runway 15-33. The closely spaced runway provides only modest additional capacity because closely spaced runways cannot be operated independently.

Alternative 4, as illustrated in **Figure 5.25**, includes the following features:

Airside

Airside features include:

- Angled Taxiways C, D, E, F, G, R, and the taxiway to the Kulis Business Park are removed and replaced with four 90-degree taxiways (Taxiways C1, D1, G, and R).
- Taxiway Z, referred to as the East / West Parallel Taxiway, is extended 1,900 feet east, to connect to the end of Runway 7R-25L, and 600 feet west, providing access between the South Airpark and the Kulis Business Park.
- Runway 15-33 is decoupled from Runway 7L-25R to eliminate the overlapping runway safety areas. Runway 15-33 is also widened from 150 feet to 200 feet to meet ADG-VI design standards.

¹² Further analysis is required following the Master Plan Update to determine the best use of the North Terminal apron.

- Taxiway R is extended to the Runway 15 end, Taxiway Q is realigned, and a new bypass Taxiway Q1 is constructed.
- A new 10,000-foot-long by 150-foot-wide ADG-V, Taxiway Design Group (TDG)-6 runway with associated taxiway connections is constructed. The new runway is separated by 908 feet, measured centerline to centerline, from the existing Runway 15-33. The new parallel taxiway is constructed 520 feet west of the new runway, and includes six connecting taxiways from Taxiway Y.

Landside

Landside facilities include facilities that are located outside areas where aircraft operate and exclude the passenger terminal. They include facilities such as roadways and parking garages. Landside features include:

- The amount of land area dedicated to vehicle parking near the passenger terminal complex remains unchanged. Additional demand is accommodated by expanding parking capacity (e.g., adding parking lots or parking structures) within the existing footprint area allocated for parking or by managing the demand for parking (e.g., increasing parking rates or encouraging parking in the economy parking lot).
- Postmark Drive is realigned to the east to facilitate tenant development to the east and provide safer access for tugs accessing the U.S. Post Office.
- Point Woronzof Drive and the service road would need to be realigned around the new runway.

Airport Support

Potential Airport support, or tenant development sites, is identified in the North, South, and West Airparks for development as demand warrants. For planning purposes, three general types of tenant development are considered: air cargo (international and regional / domestic), corporate and general aviation, and airport / airline support.

The three types of tenant development areas are generally referred to as “Airport Support” on Figure 5.25. Alternative 4 features include:

- A potential site for a tenant-developed hotel is identified just north of the Airport Traffic Control Tower and southeast of the North Terminal.
- Tenant development as warranted by demand in the South Airpark.
- A new South Airpark Access Road is provided to support future tenant development as warranted by demand.

- The fuel storage facility in the West Airpark is expanded as warranted by demand.
- A potential site for a GRE is identified in the Postmark Bog.
- Taxiways P and U are extended and four pull-through cargo parking positions are added / constructed as warranted by demand.
- Tenant development as warranted by demand in the North Airpark
- Six pull-through cargo parking positions are added in the West Airpark to accommodate tenant development as warranted by demand.
- Tenant development as warranted by demand in the West Airpark

Terminal

The preferred terminal alternative, which consolidates international and domestic operations, includes the following features:

- A new South Terminal Concourse is added / constructed, adding an additional five new gates to the South Terminal. Three of the five gates can be used as swing gates to accommodate the larger aircraft required for international operations.
- The North Terminal Concourse is removed / demolished. The North Terminal core is maintained.
- The three cargo parking positions, R2, R3, and R4, are removed from the South Terminal and replaced at the North Terminal¹³. The former North Terminal apron is used for cargo parking positions.

Other Features

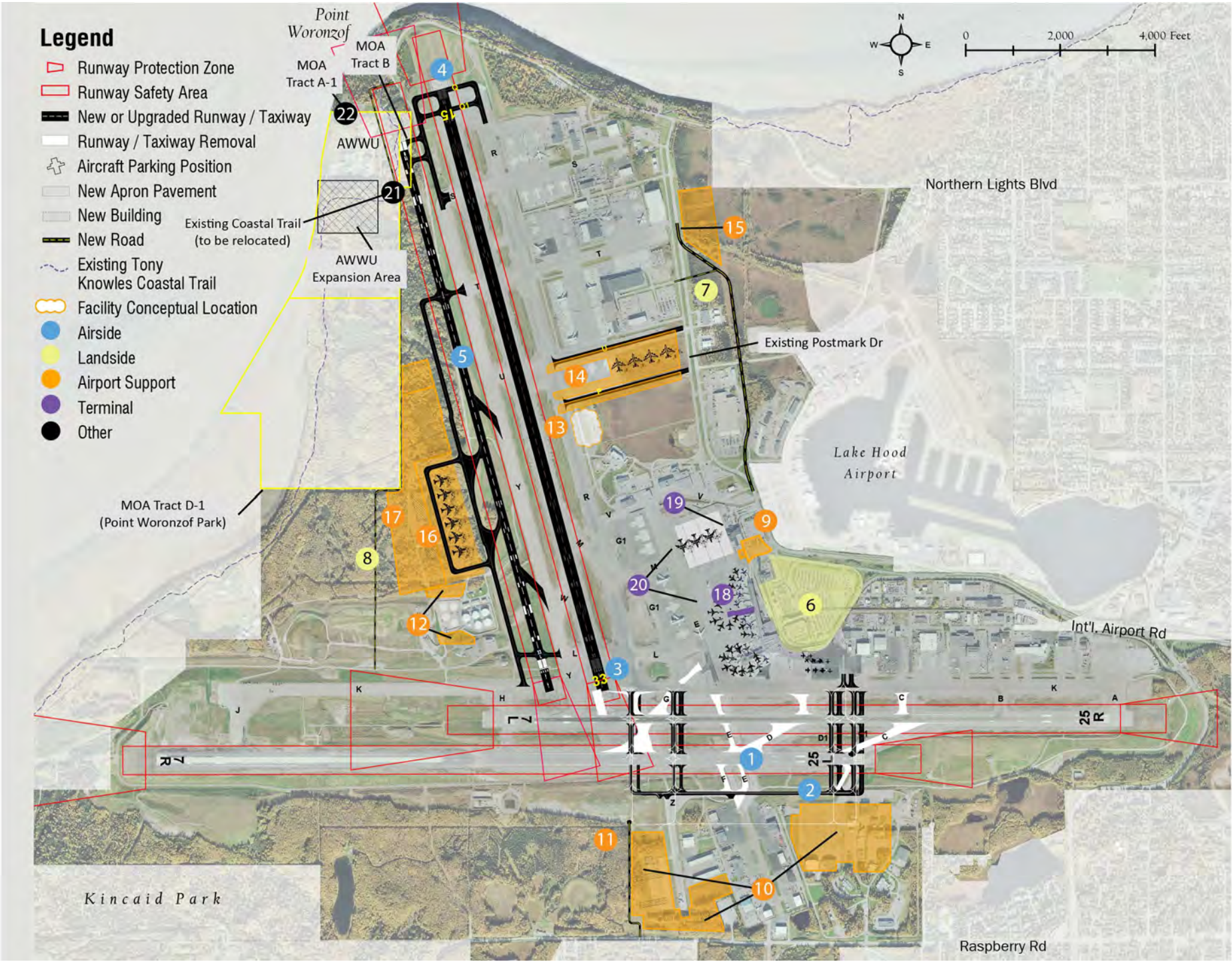
Other features necessary to construct a new North / South Runway with associated taxiway and tenant developments as warranted by demand include:

- A portion of the Tony Knowles Coastal Trail (Coastal Trail) would need to be realigned to maintain a contiguous Coastal Trail.
- A portion of land owned by the Municipality of Anchorage would need to be acquired. This includes Tract B and a portion of Tract A-1.

¹³ Further analysis is required following the Master Plan Update to determine the best use of the North Terminal apron.

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Figure 5.25 Airport Alternative 4 –
Closely Spaced Runway



Source: RS&H, HDR, 2014.

Notes: ADG = Airplane Design Group, AWWU = Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility, MOA = Municipality of Anchorage, RSA = Runway Safety Area, TDG = Taxiway Design Group.

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7.5 ALTERNATIVE 5 – WIDELY SPACED RUNWAY

Alternative 5, illustrated in **Figure 5.26**, substantially increases Airport capacity by adding a new widely spaced North / South Runway parallel to Runway 15-33. The widely spaced runway provides substantial additional capacity because widely spaced runways can be operated independently in all weather conditions.

Alternative 5, as illustrated in **Figure 5.26**, includes the following features:

Airside

Airside features include:

- Angled Taxiways C, D, E, F, G, R, and the taxiway to the Kulis Business Park are removed and replaced with four 90-degree taxiways (Taxiways C1, D1, G, and R).
- Taxiway Z, referred to as the East / West Parallel Taxiway, is extended 1,900 feet east, to connect to the end of Runway 7R-25L, and 600 feet west, providing access between the South Airpark and the Kulis Business Park.
- Runway 15-33 is decoupled from Runway 7L-25R to eliminate the overlapping runway safety areas. Runway 15-33 is also widened from 150 feet to 200 feet to meet ADG-VI design standards.
- Taxiway R is extended to the Runway 15 end, Taxiway Q is realigned, and a new bypass Taxiway Q1 is constructed.
- A new 8,000-foot-long by 150-foot-wide ADG-VI, TDG-7 runway with associated taxiway connections is constructed. The new runway is separated by 3,100 feet, measured centerline to centerline, from the existing Runway 15-33. A new parallel taxiway is constructed 600 feet east of the new runway, and includes four taxiways connecting the new parallel taxiway to Taxiway Y.
- Taxiway U segment between Taxiway R and Taxiway Y is removed because it is located in the middle third of Runway 15-33, a high-energy intersection per (AC 150 / 5300-13A).

Landside

Landside facilities include facilities that are located outside areas where aircraft operate and exclude the passenger terminal. They include facilities such as roadways and parking garages. Landside features include:

- The amount of land area dedicated to vehicle parking near the passenger terminal complex remains unchanged. Additional

demand is accommodated by expanding parking capacity (e.g., adding parking lots or parking structures) within the existing footprint area allocated for parking or by managing the demand for parking (e.g., increasing parking rates or encouraging parking in the economy parking lot).

- Postmark Drive would be realigned to the east to facilitate tenant development to the east and provide safer access for tugs accessing the U.S. Post Office.
- A new West Airpark access tunnel would need to be constructed to connect public and private access from the east side of the Airport to the west side of the Airport. The tunnel would be constructed to run under Runway 15-33, the new runway, and two of the new parallel taxiways in the West Airpark.

Airport Support

Potential Airport support, or tenant development sites, is identified in the North, South, and West Airparks for development as demand warrants. For planning purposes, three general types of tenant development are considered: air cargo (international and regional / domestic), corporate and general aviation, and Airport / airline support.

The three types of tenant development areas are generally referred to as “Airport Support” on Figure 5.26. Alternative 5 features include:

- A potential site for a tenant-developed hotel is identified just north of the Airport Traffic Control Tower and southeast of the North Terminal.
- Tenant development as warranted by demand in the South Airpark.
- A new South Airpark Access Road is provided to support future tenant development as warranted by demand.
- The fuel storage facility in the West Airpark is expanded as warranted by demand.
- A potential site for a GRE is identified in the Postmark Bog.
- Taxiways P and U are extended and four pull-through cargo parking positions are added / constructed as warranted by demand.
- Tenant development as warranted by demand in the North Airpark.
- Six pull-through cargo parking positions are added in the West Airpark to accommodate tenant development as warranted by demand.
- Tenant development as warranted by demand in the West Airpark.

Terminal

The preferred terminal alternative, which consolidates international and domestic operations, includes the following features:

- A new South Terminal Concourse is added / constructed, adding an additional five new gates to the South Terminal. Three of the five gates can be used as swing gates to accommodate the larger aircraft required for international operations.
- The North Terminal Concourse is removed / demolished. The North Terminal core is maintained.
- The three cargo parking positions, R2, R3, and R4, are removed from the South Terminal and replaced at the North Terminal¹⁴. The former North Terminal apron is used for cargo parking positions.

Other Features

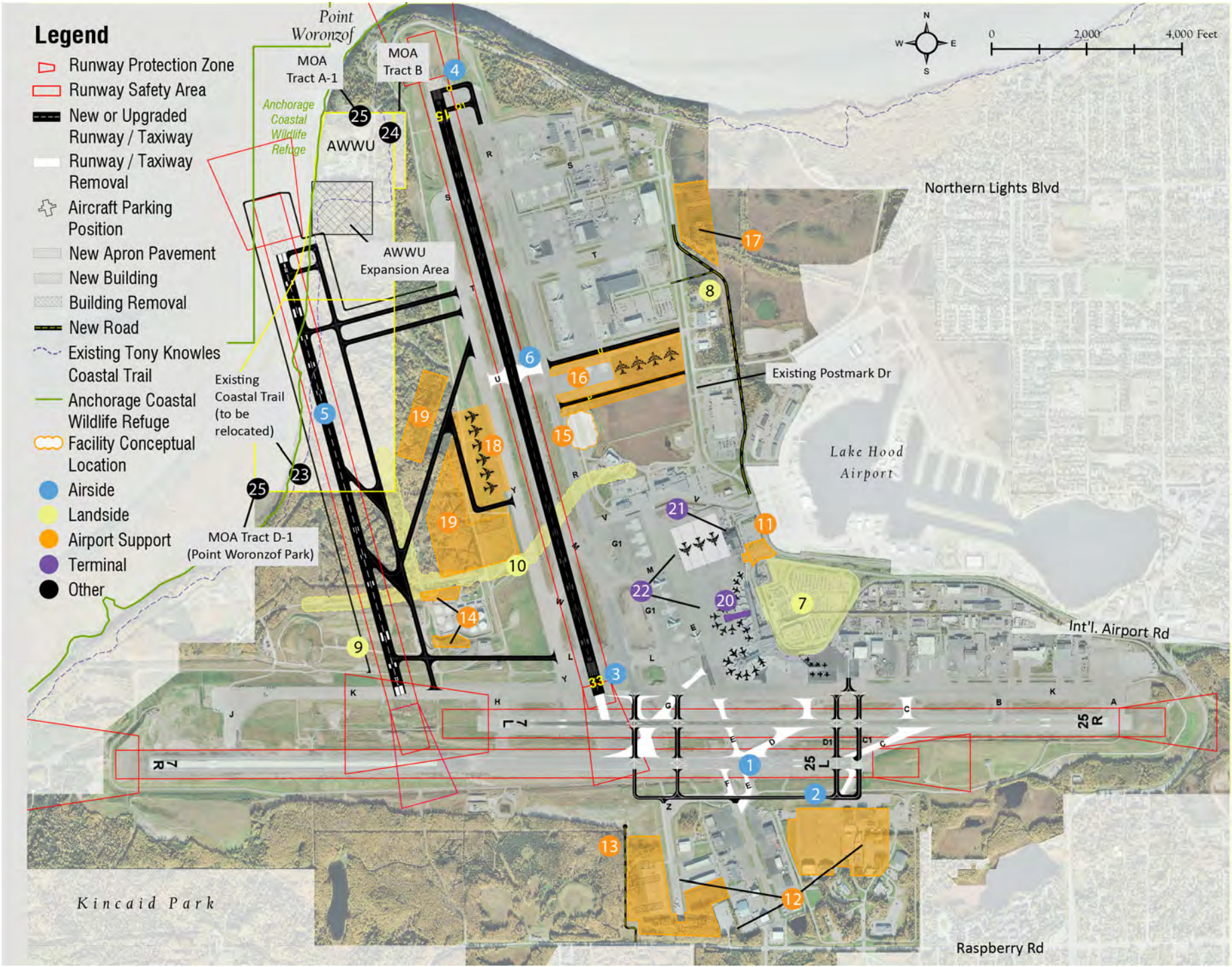
Other features necessary to construct a new North / South Runway with associated taxiway and tenant developments as warranted by demand include:

- A portion of the Coastal Trail would need to be realigned to maintain a contiguous Coastal Trail.
- Access to the Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility (AWWU) is maintained.
- A portion of land owned by the Municipality of Anchorage would need to be acquired. This includes Tract B, a portion of Tract A-1, and a portion of Tract D-1.

¹⁴ Further analysis is required following the Master Plan Update to determine the best use of the North Terminal apron.

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Figure 5.26 Airport Alternative 5 –
Widely Spaced Runway



Source: RS&H, HDR, 2014.

Notes: ADG = Airplane Design Group, AWWU = Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility, MOA = Municipality of Anchorage, RSA = Runway Safety Area, TDG = Taxiway Design Group.

- 1 Angled taxiways replaced with 90-degree taxiways
- 2 East / West Parallel Taxiway (Taxiway Z) extended east and west to provide South Airpark access
- 3 Runway 15-33 decoupled to eliminate overlapping RSAs; widened to meet ADG-VI standards
- 4 Taxiway R extended to Runway 15 end, Taxiway Q realigned and new bypass Taxiway Q1 constructed
- 5 New 8,000' x 150' runway with associated taxiway connections (ADG-VI, TDG-7)
- 6 Taxiway U segment removed
- 7 Existing parking and rental car demand managed or facilities reconfigured within existing footprint
- 8 Postmark Drive realigned to the east
- 9 Point Woronzof Road and service road realigned around new runway
- 10 New West Airpark access tunnel
- 11 Tenant developed hotel site identified
- 12 Tenant development in South Airpark as warranted by demand
- 13 New South Airpark Access Road to support tenant development as warranted by demand
- 14 Fuel storage facility expanded as warranted by demand
- 15 Potential site for Ground Run-up Enclosure identified
- 16 Taxiways P and U extended; 4 pull-through cargo parking positions added as warranted by demand
- 17 Tenant development in North Airpark as warranted by demand
- 18 Six pull-through cargo parking positions added in West Airpark
- 19 Tenant development in West Airpark as warranted by demand
- 20 New South Terminal Concourse added
- 21 Remove North Terminal Concourse; maintain building core
- 22 Three cargo parking positions relocated; former North Terminal site used for cargo parking positions
- 23 Requires realignment of a portion of the Coastal Trail
- 24 Existing access to AWWU maintained
- 25 Requires acquisition of a portion of land owned by the Municipality of Anchorage

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SECTION 8 COMPREHENSIVE AIRPORT ALTERNATIVES EVALUATION

8.1 INTRODUCTION

Participants involved in the airfield and terminal meetings, various Working Group and Technical Advisory Committee meetings, Public Open House meetings, airline representative meetings, and other stakeholder meetings provided feedback on the five developed comprehensive alternatives as described in **Section 7**. The feedback received was combined with technical analysis to aid in evaluation of the alternatives during an Alternatives Evaluation Workshop held on August 15, 2013. This section describes the results of technical analysis, the considerations or concerns raised by participants that aided in the evaluation of the alternatives, and a discussion of the evaluation of the developed alternatives.

Although the evaluation of the alternatives was completed by Ted Stevens Anchorage International Airport (Airport) staff, the concerns and issues raised by members of the public, Airport tenants, airlines, and other stakeholders were presented to Airport staff to aid in the evaluation process. Other considerations were also raised during the evaluation process itself. Some considerations were supported by technical analyses efforts, whereas other considerations were not, particularly with environmental considerations.

All alternatives meet current design standards and either meet or exceed facility requirements. All alternatives include reducing the length of Runway 15-33 to eliminate the existing runway intersection with Runway 7L-25R, and widening it to accommodate Airplane Design Group (ADG)-VI aircraft. All alternatives include realigning the angled taxiways in the South Airpark to meet current Federal Aviation Administration (FAA) airport design standards.

The lynchpin of the evaluation process was a series of technical analyses that included the airfield demand / capacity analysis, airfield delay savings analysis, financial considerations for the North Terminal, and order of magnitude cost estimates for the comprehensive alternatives. Public input was also considered in the alternatives evaluation process. Notable public comments are listed separately within this section.

The results of the technical analyses are presented below. In addition to the technical analyses, each of the alternatives was assessed in relation to the Master Plan Goals and Objectives, and their associated criteria, outlined at the beginning of the Ted Stevens Anchorage International Airport Master Plan Update (Master Plan Update) study.

8.2 ALTERNATIVES EVALUATION METHODOLOGY

In order to evaluate the relative merit of each of the alternatives, the technical analysis and public input were both used to determine how each of the alternatives fulfilled five goals identified at the beginning of the Master Plan Update. The five Master Plan Update Goals used for evaluation were: Safety, Efficiency, Environmental Awareness, Fiscal Sustainability, and Land Management. The Communications Goal was not included in the evaluation since it was used primarily in reference to the Master Plan Update process.

To aid Airport staff in the alternatives evaluation process, criteria were developed for each Master Plan Update Goal based on the original Master Plan Update Objectives. The evaluation criteria are shown in **Figure 5.27**.

Airport staff evaluated the alternatives on August 15, 2013. In order to evaluate the performance of the alternatives, Airport staff examined the forecast of aviation demand, facility requirements summary, technical analysis, and public comments.

Each evaluator was provided with an evaluation matrix on which to record individual assessments of the alternatives. Staff evaluated each alternative against each evaluation criterion, organized by goal. Airport staff evaluated each alternative separately. Each participant assigned an individual evaluation score to each alternative for each evaluation criterion on a summary worksheet as follows:

- "1" - alternative does not meet or barely meets the criteria,
- "2" - alternative somewhat meets the criteria,
- "3" - alternative mostly meets the criteria, or
- "4" - alternative fully or almost fully meets the criteria.

Each Goal was weighed evenly, regardless of the number of criteria within. The results are summarized in **Section 8.3**.

Figure 5.27
Master Plan Update Evaluation Criteria based on Goals and Objectives

SAFETY — <i>Maintain or enhance the safe operation of the Airport</i>	
✈	CRITERIA – Meets or Exceeds Design Standards: Does the alternative comply with applicable Federal Aviation Administration design standards, Federal Aviation Regulations, and other appropriate design standards that apply to Anchorage International Airport facilities?
✈	CRITERIA – Consistency with Best Safety Practices: Does the alternative incorporate the Federal Aviation Administration’s best practices for airfield safety and pilot situational awareness to the greatest practical degree?
EFFICIENCY — <i>Maintain or enhance the efficient operation of the Airport</i>	
✈	CRITERIA – Maintains or Enhances Operational Efficiency: Does the alternative accommodate demand such that the Airport operates efficiently (e.g. with minimal delays) and at the desired levels of service throughout the planning horizon?
✈	CRITERIA – Supports Adaptable Facilities: Does the alternative include facilities that may be adapted to meet unforeseen changes in levels of demand and types of demand within the planning horizon and beyond?
✈	CRITERIA – Ease of Implementation: Can the alternative be implemented in a phased manner that does not unduly complicate existing operation of the Airport during implementation?
ENVIRONMENTAL AWARENESS — <i>Minimize the impact of airport development through environmental awareness</i>	
✈	CRITERIA – Noise: Does the alternative minimize airplane related noise on noise-sensitive areas near the Airport?
✈	CRITERIA – Recreation: Does the alternative consider impacts to recreation lands on and near the Airport?
✈	CRITERIA – Environmental Compatibility: Does the alternative minimize general airport impacts on neighborhoods surrounding the Airport?
FISCAL SUSTAINABILITY — <i>Enhance the long-term fiscal sustainability of the Airport</i>	
✈	CRITERIA – Funding: Can the implementation of the alternative be financed?
✈	CRITERIA – Supports Revenue Generation: Does the alternative provide opportunities to increase potential revenue generation?
LAND MANAGEMENT — <i>Facilitate long-term Airport development through strategic land management planning</i>	
✈	CRITERIA – Supports Aeronautical Use: Does the alternative maximize the use of Airport land for current and future aeronautical needs?
✈	CRITERIA – Land Use Compatibility: Does the alternative meet Federal Aviation Administration on-Airport land use compatibility requirements and does the alternative minimize conflicts with nearby off-Airport land uses?
✈	CRITERIA – Supports Adaptable Land Use: Does the alternative include land use that may be adapted to meet unforeseen changes in levels of demand and types of demand within the planning horizon and beyond?

Source: RS&H, 2013.

8.2.1 TECHNICAL ANALYSIS

A technical analysis of each alternative was made to determine the objective merit of each element relative to the goals identified early in the Master Plan Update process. The results of those analyses are presented below.

Cost

Order of magnitude cost estimates were prepared for each of the five development alternatives. The preliminary order of magnitude cost estimates were used for alternatives evaluation. These cost estimates were further refined during the development of the implementation plan. Refer to **Chapter 6, Implementation Plan**, to review the refined estimates.

The individual components making up each of the five alternatives for which order of magnitude cost estimates were prepared are as follows:

- Decouple Runway 33 End from Runway 7L-25R
- Remove Taxiways C, D, E, F, G, R, and the taxiway to the Kulis Business Park and replace with four 90-degree taxiways (Taxiways C1, D1, G, and R)
- Extend Taxiway R, Realign Taxiway Q, and Construct Taxiway Q1

- Extend Taxiway T
- Construct Closely Spaced Runway / Taxiway System and Realign the Service Road and Coastal Trail
- Construct Widely Spaced Runway / Taxiway System and Realign the Service Road and Coastal Trail
- Construct the North Terminal Apron (Cargo Positions)
- Construct the North Terminal Apron (Cargo Positions only)
- Realign Postmark Drive Partially
- Realign Postmark Drive Fully
- Constructing Cross-Airport Tunnel

Order of magnitude cost estimates include only airfield (runway, taxiway, apron areas) and public / private roadway improvements. Public parking and tenant-driven improvements are excluded. The order of magnitude cost estimates do not consider the North Terminal building improvements. However, terminal total cost of ownership was considered and presented for each terminal alternative in **Section 5.3**. Order of magnitude cost estimates are also presented in 2013 dollars and were not escalated, and include capital, design, environmental, construction, and contingency costs. With respect to airfield improvements, order of magnitude costs include the cost of clearing, excavating or removing pavement, constructing pavement, installing drainage, removing or installing fencing, erosion control and other earthwork, surveying efforts, materials, seeding, necessary mechanical components, construction traffic control, construction mobilization and demobilization, construction administration, environmental mitigation, utilities, final design engineering, and soft costs.

The Minimize Development Alternative and Optimize ANC Alternative are the least costly alternatives because they limit infrastructure development at the Airport. The total estimated cost of the Optimize Alaska International Airport System (AIAS) Alternative is unknown because it would likely require infrastructure investments at Fairbanks International Airport, which are under evaluation within the Fairbanks International Airport Master Plan Update. Finally, construction of a new runway at the Airport, as considered in the Closely Spaced Runway Alternative and Widely Spaced Runway Alternative, would have the highest capital investment cost. The order of magnitude cost estimates for each alternative are presented below in **Table 5.4**. Additional information regarding cost estimates is presented in **Appendix J**, Cost Estimates.

Table 5.4
Order of Magnitude Cost Estimates

Operating Configuration	Alternative 1 – Minimize Development	Alternative 2 – Optimize AIAS*	Alternative 3 – Optimize ANC	Alternative 4 – Closely Spaced Runway	Alternative 5 – Widely Spaced Runway
Decouple Runway 33 End from Runway 7L-25R	\$310,000	\$310,000	\$310,000	\$310,000	\$310,000
Realign Angled Taxiways Between Runway 7L-25R and 7R-25L	\$39,500,000	\$39,500,000	\$39,500,000	\$39,500,000	\$39,500,000
Realign Taxiways Q and Q1	\$7,510,000	\$7,510,000	\$7,510,000	\$7,510,000	\$7,510,000
Extend “Papa” Apron (4 Position) and Taxiways U and P	\$47,970,000	N/A	\$47,970,000	\$47,970,000	\$47,970,000
Extend Taxiway T	N/A	N/A	\$1,540,000	N/A	N/A
Construct Closely spaced Runway / Taxiway System and Realign the Service Road and Coastal Trail	N/A	N/A	N/A	\$295,680,000	N/A
Construct the Widely spaced Runway / Taxiway System and Realign the Service Road and Coastal Trail	N/A	N/A	N/A	N/A	\$605,630,000
Construct the North Terminal Apron Cargo Positions	\$21,030,000	\$21,030,000	\$21,030,000	\$21,030,000	\$21,030,000
Realign Postmark Drive Partially				\$9,160,000	\$9,160,000
Realign Postmark Drive Fully	N/A	N/A	\$12,960,000	N/A	N/A
Construct Cross-Airport Tunnel	N/A	N/A	N/A	N/A	\$156,050,000
Total	\$116,320,000	\$89,380,000	\$130,820,000	\$421,160,000	\$887,160,000

Source: RS&H and HDR, 2014.

Notes: Order of magnitude cost estimates include only airfield (runway, taxiway, apron areas) and public / private roadways improvements. Terminal, public parking, and other tenant-driven improvements are excluded. Costs are in 2013 dollars and include capital, design, environmental, construction, and contingency costs. AIAS = Alaska International Airport System.

The preliminary order of magnitude cost estimates were used for alternatives evaluation. These cost estimates were further refined during the development of the implementation plan. Refer to Chapter 6, Implementation Plan, to review the refined estimates.

*Costs for Alternative 2 – Optimize AIAS exclude costs associated in improving Fairbanks International Airport.

Capacity (Congestion)

As part of the Master Plan Update, an in-depth simulation modeling effort was completed to determine the operational impacts of the current airfield configuration, or “Existing / No Action” case, as well as the proposed alternative options in which either infrastructure or operational changes would be made to alleviate congestion at the Airport. A summary of the simulation modeling effort is presented in this section. Details of the effort are included in **Appendix I**.

An airfield demand / capacity analysis was completed via the simulation modeling software, Simmod PRO!, developed by the Master Plan Update team, to model the future airport and airspace movements. The model

captures the interactions between airport and airspace operations, including interactions among multiple neighboring airports.

Airfield Inputs

Airfield inputs include the airfield layout (e.g., runways, taxiways, aprons, and gates). The inputs related to the airfield layout and apron / gate usage are described in **Chapter 2**, Inventory and Existing Conditions. Other inputs or considerations include the runway configurations and airfield usage.

Runway Configurations:

Runway configurations based on weather (visibility, ceiling, winds) and noise abatement procedures are illustrated in **Figure 5.28** and **Table 5.5** and described below. The occurrence of these configurations changes depending on weather conditions. Under Visual Meteorological Conditions, Visual Flight Rules (VFR) apply. Under Instrument Meteorological Conditions, Instrument Flight Rules (IFR) apply. The runway configurations are important to consider, as they create variations in capacity and delay.

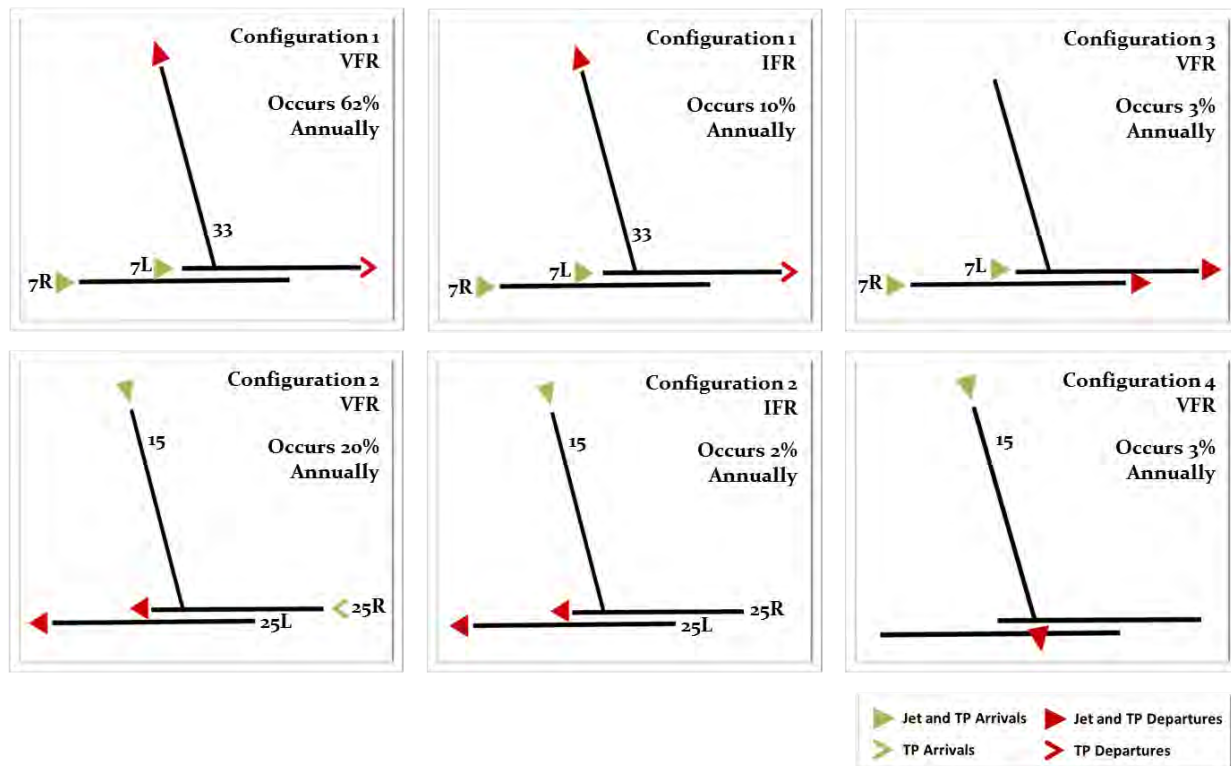
Configuration 1 involves arrivals primarily to Runway 7R (primary arrival runway) and, during overflow times, to Runway 7L. Departures occur primarily from Runway 33 (primary departure runway). Runway 7L may be used for departures as well, but only by small jets and turboprop aircraft when conditions permit. Configuration 1 is the predominant runway configuration, and is active approximately 72% of the time. VFR operations account for 62% of the total annual traffic and IFR operations account for the other 10%.

Configuration 2 involves arrivals for jets and turboprops to Runway 15 (primary arrival runway) and only turboprops to Runway 25R. Departures for all aircraft are from Runways 25L and 25R. Configuration 2 is active approximately 22% of the time, with VFR and IFR operations occurring 20% and 2% of the time, respectively.

Configuration 3 involves arrivals / departures to and from Runways 7L and 7R. Configuration 3 is used 2% of the time and only under VFR.

Configuration 4 involves arrivals / departures to and from Runway 15. Configuration 4 is used 2% of the time and only under VFR.

Figure 5.28
Runway Use Configurations



Source: 2013 Alaska International Airport System Planning Study.

Table 5.5
Runway Use Configurations

Operating Configuration	Weather Conditions	Percent Active
Configuration 1	Visual Meteorological Conditions	62
	Instrument Meteorological Conditions	10
Configuration 2	Visual Meteorological Conditions	20
	Instrument Meteorological Conditions	2
Configuration 3	Visual Meteorological Conditions	2
Configuration 4	Visual Meteorological Conditions	2

Source: 2013 Alaska International Airport System Planning Study..

The Master Plan Update team ran simulations of an Existing / No-Action case and the five Airport development alternatives. The simulations of the five alternatives were compared to the Existing / No-Action case for the Airport to determine delay impacts. These simulations were completed at three different Airport activity demand levels. Due to changing economic, physical, and technological conditions, future operations were not associated with specific years, but rather were classified as future demand levels. The demand levels, referred to throughout this document, are the Baseline (2012), Planning Activity Level (PAL) 2 (annual operations reaches 242,000), and PAL 4

(annual operations reaches 282,000) demand levels. Their corresponding operations are presented in Table 5.6.

Table 5.6
Airport Annual Aircraft Operations

	2010	PAL 2	PAL 4
Cargo	78,830	95,812	118,714
Passenger	93,246	101,540	111,212
General Aviation / Air Taxi	39,087	42,656	49,749
Military	4,401	2,267	2,267
Total	215,564	242,275	281,942

Source: 2013 Alaska International Airport System Planning Study, RS&H, 2014.
Notes: PAL = Planning Activity Level.

Model Inputs for the Airport

The simulation process involved making a number of inputs or rules, generally regarding the paths traversed by aircraft on the ground and in the air.

The inputs are organized into three major categories: airfield-related input, airspace-related input, and simulation event input. The airfield-related input allows the user to specify the physical layouts of airports and operational parameters such as gate, taxiway, and runway structure, gate utilization by airlines, taxiway routings between gates and runways, departure lineup strategies, and aircraft landing and takeoff strategies. The airspace-related input allows the user to specify airspace routings, airspace sectorization, airspace separation standards including wake turbulence, arrival and departure procedures, metering and flow constraints, and strategies for resolving potential conflicts. Simulation event inputs provide the user with the capability to specify the departure and arrival demand schedules and desired changes in operating conditions, including runway use configurations, terminal routing plans, and flow and metering constraints.

Benefit (Delay Savings)

Delay savings are the cost savings associated with a positive change in delay (reduced delays) for each of the five developed alternatives compared to the Existing / No-Action scenario. Delay savings were determined for all-cargo, passenger, general aviation, and military aircraft for PAL 4 demand levels.

For the purposes of the Master Plan Update, the *Economic Values for FAA Investment and Regulatory Decisions, A Guide* report was used in determining delay savings. Where applicable, the costs presented in the guide, which originated from 2002 data, were adjusted based upon inflation and the changing prices of fuel. The guide was developed in order to meet FAA's Management Advisory Council recommendation that standardized

methods and costs be used in all regulatory economic analyses to the extent possible.

Noise Analysis

Airport noise continues to be a concern for many people in the community, and two programs exist to mitigate the noise impact of airplane operations. The two programs are the Residential Sound Insulation Program and the Preferential Runway Use Program.

Alternative 1 - Minimize Development is not anticipated to change the Airport's noise patterns, as operational changes are limited to minor taxiway configuration adjustments.

Alternative 2 - Optimize AIAS is anticipated only to reduce airplane noise around the Airport, as some operations would be accommodated at Fairbanks International Airport.

Noise analyses for Alternative 1 - Minimize Development and Alternative 2 - Optimize AIAS were not conducted because they would not materially change the existing airfield layout, and therefore would not result in an increase relative to existing conditions. Furthermore, the 2002 Master Plan Update developed noise contours for similar alternatives that did not result in increased noise over non-compatible land uses. Since 2002, airplane noise has only been reduced due to quieter engine technology.

Alternative 3 - Optimize Anchorage International Airport (ANC) involves optimizing airfield efficiency at the Airport by modifying the Preferential Runway Use Program. The modification would entail increasing the number of aircraft taking off from Runway 7L during peak daytime hours between 7 a.m. and 10 p.m., as necessary to reduce airfield congestion. This increase in Runway 7L departures would likely occur gradually over many years. During nighttime hours between 10 p.m. and 7 a.m., the existing Preferential Runway Use Program would remain in effect. A noise analysis was conducted for Alternative 3. The FAA-approved Integrated Noise Model (INM) was used to determine noise impacts associated with Alternative 3. The results are presented in **Section 8.3.4**.

Alternative 4 - Closely Spaced Runway and Alternative 5 - Widely Spaced Runway would alter traffic patterns at the Airport due to the addition of a runway. Noise analyses for Alternative 4 - Closely Spaced Runway and Alternative 5 - Widely Spaced Runway were not conducted because the alternatives would result in the development of additional airfield infrastructure north and west of the existing three-runway system.

The time at which planning efforts would need to start for Alternative 4 or Alternative 5 would not occur for 5 to 10 years, and possibly longer. At the point an additional runway would be necessary, detailed analysis of

impacts including noise would be required. However, both alternatives propose construction of a runway to the north and west of existing runway infrastructure. While airplane noise would be affected by these alternatives, noise is not anticipated to increase over non-compatible land uses.

8.2.2 PUBLIC INPUT METHODOLOGY

Stakeholder input was obtained from Working Group and Technical Advisory Committee members in meetings held in March 2013. The committee members drafted evaluation criteria, while considering the Master Plan Update's Goals and Objectives for each goal category. This input was considered in the development of the evaluation criteria for the Comprehensive Airport Alternatives.

Public outreach was conducted to determine what members of the public thought of the alternatives. Public meetings related to the alternatives development and evaluation process are summarized below. These public meetings were supplemented with presentations, listening posts, and one-on-one interviews. For a complete list of public outreach, please refer to **Appendix A, Public Involvement Summary**.

- Presented evaluation process and gathered feedback on constraints and opportunities.
 - Working Group Meeting #4 (April 3, 2013)
 - Technical Advisory Committee Meeting #3 (April 4, 2013)
- Presented draft comprehensive development alternatives.
 - Working Group Meeting #5 (May 8, 2013)
 - Technical Advisory Committee Meeting #4 (May 9, 2013)
 - Public Open House #5 (May 23, 2013)
 - Online Open House (May 24 to June 7, 2013)
 - Working Group Meeting #6 (June 13, 2013; continued discussion from Meeting #5)
- Presented results of alternatives screening.
 - Working Group Meeting #7 (September 11, 2013)
 - Technical Advisory Committee Meeting #5 (September 12, 2013)
 - Public Open House #6 (September 12, 2013)
 - Online Open House (September 13 to 27, 2013)

Comments are documented in Comment-Response Report #1 and Comment-Response Report #2, and in meeting notes from these events, available on the project website (www.ancmasterplan.com).

8.3 EVALUATION RESULTS

Evaluation results for each of the five comprehensive Airport alternatives are presented below. Table 5.8 summarizes the evaluation results, indicating how well each alternative performed in meeting the established criteria for each goal.

Although the preferred terminal alternative was included in all comprehensive Airport alternatives, evaluation results for the terminal are not included in the overall evaluation results.

8.3.1 ALTERNATIVE 1 – MINIMIZE DEVELOPMENT

Evaluation results of Alternative 1 – Minimize Development, are as follows:

Safety

All alternatives were designed to meet the established criteria for the Safety Goal.

Criteria 1 – Meets or Exceeds Design Standards

Alternative 1 – Minimize Development includes several improvements to meet Airport geometric design standards established in *FAA Advisory Circular (AC) 150 / 5300-13A, Airport Design* (AC 150 / 5300-13A). This includes realigning the angled taxiways between the east / west parallel runways to increase pilot situational awareness when pilots taxi across runways and enhance overall airfield safety, and widening Runway 15-33 to 200 feet to accommodate ADG-VI aircraft.

Criteria 2 – Consistent with Best Safety Practices

Alternative 1 – Minimize Development includes realigning the angled taxiways between Runways 7L-25R and 7R-25L. Removing the portion of Taxiway G northeast of Taxiway K and southwest of Taxiway E resolves the potentially confusing four-node intersection where Taxiway K intersects with Taxiway G and Taxiway G1. In addition, removing Taxiways D and E between the two east-west parallel runways would also resolve the confusing intersection at the intersection of Taxiway D, Taxiway E, and Runway 7R-25L. This project may resolve FAA-designated Hot Spot 1 and Hot Spot 2¹⁵.

As an added benefit, decoupling the runway ends would also minimize the need to close both runways during times of snow removal and maintenance.

¹⁵ The concerns with Hot Spot 1 and Hot Spot 2 are described in greater detail in Chapter 4, Facility Requirements.

Efficiency

Criteria 1 – Maintains or Enhances Operational Efficiency

The untenable peak delay threshold is the point at which peak hour airplane delays in excess of 30 minutes can be expected to occur at least 10% of the time. In Alternative 1, this threshold would be anticipated to be reached at about 243,000 annual takeoffs and landings (or operations). Alternative 1 results in slightly reduced efficiency because the required realignment of some taxiways would be expected to lessen airfield efficiency.

Technical analysis showed that at the highest demand levels (PAL 4), airplane takeoff and landing delays would be 10.3 minutes on average. Average daily delay of 10 minutes is typical of more congested U.S. airports.

Criteria 2 – Supports Adaptable Facilities

With the availability of land in the North Airpark, tenants would have some flexibility within the North Airpark to develop their facilities. However, development opportunities are somewhat limited and may be farther away from the airfield. In the South Airpark, tenants may develop either in the Kulis Business Park or to the west.

Criteria 3 – Ease of Implementation

Alternative 1 – Minimize Development includes airfield safety enhancement projects that would pose limited impacts to operations. The majority of land areas proposed for new development are located on currently vacant land.

Environmental Awareness

Criteria 1 – Noise

Alternative 1 – Minimize Development is anticipated to have little to no impact on noise relative to maintaining the existing three-runway airfield. The Ground Run-up Enclosure (GRE) would reduce noise generated from aircraft engine run-ups. Several potential GRE sites were identified during the Master Plan Update process. However, a separate site study will be completed to select a preferred GRE site at project initiation.

Criteria 2 – Recreation

Alternative 1 – Minimize Development is not anticipated to impact recreation areas on and near the Airport.

Criteria 3 – Environmental Compatibility

Alternative 1 – Minimize Development may result in increased congestion that could impact air quality.

Fiscal Sustainability

Criteria 1 – Funding

The estimated cost of airfield development in Alternative 1 – Minimize Development is \$116 million. This cost includes upgrades of Runway 15-33, realignment of taxiways, and development of additional cargo parking positions and associated taxiways.

There would be no airline delay savings associated with Alternative 1 – Minimize Development because the alternative would result in increased delay, not reduced delay.

Criteria 2 – Supports Revenue Generation

Alternative 1 – Minimize Development would provide some economic benefit to the region and opportunities for increased revenue generation through cargo aircraft parking.

Land Management

Criteria 1 – Supports Aeronautical Use

Alternative 1 – Minimize Development would not maximize use of Airport land.

Criteria 2 – Land Use Compatibility

Alternative 1 – Minimize Development is not anticipated to create any land use compatibility issues.

Criteria 3 – Supports Adaptable Land Use

Alternative 1 – Minimize Development would be somewhat adaptable to unforeseen changes in levels of demand as it would accommodate land use requirements through the 20-year planning horizon but not beyond.

Public Input

The Master Plan Update team obtained feedback from members of the public from several public meetings. A web-based comment database was also created to track public comments and provide responses to the comments. The public comments and their responses are available on the Master Plan Update website, www.ancmasterplan.com, and in Appendix A, Public Involvement Summary.

Public comments noted that Alternative 1 – Minimize Development had the fewest negative impacts and did not meet the anticipated demand or do much to advance the Airport’s efficiency and fiscal sustainability.

A sampling of public comments includes:

- “Alternative 1 creates no new growth, and is not realistic for passenger travel.”
- “I am in favor of Alternative 1. There exists no proven need to expand the airport.”
- “I most favor Alternative 1. The tenants should develop facilities as they see fit.”
- “This “no action” alternative may be low cost up front, but it could impose more costs on users if airlines choose to go elsewhere or delays worsen.”

8.3.2 ALTERNATIVE 2 – OPTIMIZE AIAS

Safety

All alternatives were designed to meet the established criteria for the Safety Goal.

Criteria 1 – Meets or Exceeds Design Standards

Alternative 2 – Optimize AIAS includes several improvements to meet airport geometric design standards established in AC 150 / 5300-13A. This includes realigning the angled taxiways between the east / west parallel runways to increase pilot situational awareness when pilots taxi across runways and enhance overall airfield safety, and widening Runway 15-33 to 200 feet to accommodate ADG-VI aircraft.

Criteria 2 – Consistent with Best Safety Practices

Alternative 2 – Optimize AIAS includes removing the portion of Taxiway G northeast of the Taxiway K / G / G1 intersection to potentially eliminate FAA-identified Hot Spot 1 at Taxiway K / G / G1, and decoupling the Runway 33 and Runway 7L ends to eliminate overlapping runway pavement ends and runway safety area. Decoupling the runway ends would also minimize the need to close both runways during times of snow removal and maintenance.

Efficiency

Criteria 1 – Maintains or Enhances Operational Efficiency

The untenable peak delay threshold is the point at which peak hour airplane delays in excess of 30 minutes can be expected to occur at least 10% of the time. In Alternative 2, this threshold would be anticipated to be reached at about 282,000 annual takeoffs and landings. Alternative 2

results in increased efficiency because it relies on both the Airport and Fairbanks International Airport.

The 2013 AIAS Planning Study (AIAS Planning Study) did not calculate average annual delay for Alternative 2, but it is estimated to be less than 10 minutes per landing and takeoff on average.

Criteria 2 – Supports Adaptable Facilities

With the availability of land in the North Airpark, tenants would have some flexibility within the North Airpark to develop and expand their facilities. However, development opportunities are somewhat limited and may be farther away from the airfield. In the South Airpark, tenants may develop either in the Kulis Business Park or to the west.

Criteria 3 – Ease of Implementation

Optimizing the AIAS and shifting cargo operations to Fairbanks International Airport would result in few changes to facilities at the Airport. This would have little to no impact on existing operations at the Airport. However, encouraging airlines to use Fairbanks International Airport is challenging. Airfield safety enhancement projects would pose limited impacts to operations.

Environmental Awareness

Criteria 1 – Noise

Alternative 2 – Optimize AIAS is anticipated to have little to no impact on noise at the Airport, as some landings and takeoffs would be accommodated at Fairbanks International Airport. The GRE would reduce noise generated from aircraft engine run-ups. Several potential GRE sites were identified during the Master Plan Update process. However, a separate site study is recommended following the completion of the Master Plan Update to select a preferred GRE site.

Criteria 2 – Recreation

Alternative 2 – Optimize AIAS is not anticipated to impact recreation areas on and near the Airport.

Criteria 3 – Environmental Compatibility

Alternative 2 – Optimize AIAS is anticipated to have little to no environmental impacts around the Airport. However, environmental impacts to facility development at Fairbanks International Airport would require further study.

Fiscal Sustainability

Criteria 1 – Funding

The estimated cost of airfield development in Alternative 2 – Optimize AIAS is \$89 million. This cost includes upgrades of Runway 15-33, realignment of taxiways, and development of additional cargo parking positions. This cost does not include costs required to upgrade apron and fueling facilities at Fairbanks International Airport and does not include potential incentives required to encourage greater use of Fairbanks International Airport.

Modest airline delay savings of about \$18 million per year are estimated for Alternative 2 – Optimize AIAS relative to existing conditions.

Criteria 2 – Supports Revenue Generation

Alternative 2 – Optimize AIAS may reduce the Airport's economic benefit to the Anchorage region, but may maintain the economic benefit to the state. In addition, FAA entitlements may be reduced for the Airport due to decreased operations.

Land Management

Criteria 1 – Supports Aeronautical Use

Alternative 2 – Optimize AIAS would not maximize use of Airport land.

Criteria 2 – Land Use Compatibility

Alternative 2 – Optimize AIAS is not anticipated to create any land use compatibility issues.

Criteria 3 – Supports Adaptable Land Use

Alternative 2 – Optimize AIAS would be somewhat adaptable to unforeseen changes in levels of demand, as it would accommodate land use requirements through the 20-year planning horizon but not beyond.

Public Input

The Master Plan Update team obtained feedback from members of the public at several public meetings. A web-based comment database was also created to track public comments and provide responses to the comments. The public comments and their responses are available on the Master Plan Update website, www.ancmasterplan.com, and in Appendix A, Public Involvement Summary.

Public comments noted that this alternative would minimize impacts, and also still benefit Alaska as a whole. Other public comments stated that it was a speculative proposition since the Airport cannot control

where flights go if they do not land in Anchorage. Generally, public comments noted that if this works, it would be a great choice, and were supportive of Alternative 2 – Optimize AIAS. Many were pleased that it was included as an alternative to evaluate. Others noted that it would result in economic benefits transferred to Fairbanks rather than retained in Anchorage.

A sampling of public comments includes:

- “There would be a negative economic impact to Anchorage.”
- “Airlines would leave Alaska before going to Fairbanks.”
- “Alternative 2 is by far the most logical.”
- “Gas-n-go planes to Fairbanks make complete sense.”
- “This is the very definition of optimize.”
- “Fairbanks airport is an okay alternative with me if it means we keep the coastal trail.”

8.3.3 ALTERNATIVE 3 – OPTIMIZE ANC

Safety

All alternatives were designed to meet the established criteria for the Safety Goal.

Criteria 1 – Meets or Exceeds Design Standards

Alternative 3 – Optimize ANC includes several improvements to meet airport geometric design standards established in AC 150 / 5300-13A. This includes realigning the angled taxiways between the east / west parallel runways to increase pilot situational awareness when pilots taxi across runways and enhance overall airfield safety, and widening Runway 15-33 to 200 feet to accommodate ADG-VI aircraft.

Criteria 2 – Consistent with Best Safety Practices

Alternative 3 – Optimize ANC includes removing the portion of Taxiway G northeast of the Taxiway K / G / G1 intersection to potentially eliminate FAA-identified Hot Spot 1 at Taxiway K / G / G1, and decoupling the Runway 33 and Runway 7L ends to eliminate overlapping runway pavement ends and runway safety area. Decoupling the runway ends would also minimize the need to close both runways during times of snow removal and maintenance.

In addition, Alternative 3 – Optimize ANC proposes realigning a new publicly accessible Postmark Drive east of the existing Postmark Drive. The existing Postmark Drive would no longer be publicly accessible. This improvement would allow service vehicles to safely access the U.S. Post Office.

Efficiency

Criteria 1 – Maintains or Enhances Operational Efficiency

The untenable peak delay threshold is the point at which peak hour airplane delays in excess of 30 minutes can be expected to occur at least 10% of the time. In Alternative 3, this threshold would be anticipated to be reached at about 243,000 annual takeoffs and landings. This threshold is not increased in Alternative 3 because the alternative would not increase Airport capacity during the poor weather that limits Airport capacity 10 to 20% of the time.

Technical analysis showed that at the highest demand levels, airplane takeoff and landing delays would be 7.2 minutes on average. This is an improvement over Alternative 1 by about 3 minutes.

In addition, there would be increased air traffic control flexibility, as the preferential runway use program policy would be modified to increase departures from Runway 7L during peak times.

Criteria 2 – Supports Adaptable Facilities

With the availability of land in the North Airpark, tenants would have some flexibility within the North Airpark to develop and expand their facilities. However, development may be farther away from the airfield. In the South Airpark, tenants may develop either in the Kulis Business Park or to the west along Taxiway Z.

Criteria 3 – Ease of Implementation

Alternative 4 – Optimize ANC would result in increasing airfield capacity while requiring no substantial investments in new airfield infrastructure, and would have little or no impact on existing operations. Airfield safety enhancement projects would pose limited impacts to operations.

Environmental Awareness

Criteria 1 – Noise

Alternative 3 – Optimize ANC includes a GRE that would reduce noise generated from aircraft engine run-ups. Several potential GRE sites were identified during the Master Plan Update process. However, a separate site study is recommended following the completion of the Master Plan Update to select a preferred GRE site.

Alternative 3 – Optimize ANC also proposes modifying the preferential runway use program. An evaluation of noise exposure was conducted for Alternative 3 – Optimize Anchorage International Airport using FAA's INM to determine the noise impacts associated with the modification to the preferential runway use program to accommodate increased takeoffs

using Runway 7L. This was compared to a condition with no change in the preferential runway use program. Peak month average day operations data were annualized to reflect average annual day operations.

The noise evaluation was completed for PAL 2 activity levels when aircraft operations reach 242,275. Today, the Airport accommodates approximately 220,000 aircraft operations, or takeoffs and landings. At PAL 2 demand levels, approximately 55 additional jets would take off using Runway 7L between 7 a.m. and 10 p.m. on an average annual day.

The results of the noise evaluation anticipates that 25 additional homes would fall within the 65 day-night average sound level (DNL) contour that were not previously insulated through the Residential Sound Insulation Program. Eligibility of these homes for participation in a new Residential Sound Insulation Program would be determined at a future date after completion of both the Master Plan Update and Federal Aviation Regulations Part 150 Noise Study. The number of homes that were not previously insulated that fall within the 60 DNL and 75 DNL contours are presented in Table 5.7. The noise contours with Alternative 3 fully implemented in comparison to the 65 DNL contour without the implementation of Alternative 3 are illustrated in Figure 5.29.

Table 5.7
Noise Impact of Runway Use Modifications – PAL 4¹

Noise Levels	Baseline / No Action (2020)			Alternative 3 (2020)		
	Population	Housing Units	Non-Insulated Housing Units	Population	Housing Units	Non-Insulated Housing Units
75 DNL	0	0	0	0	0	0
65 DNL and Greater	95	35	25 ²	225	100	50 ²
60 DNL and Greater	1,880	870	N/A	7,390	3,090	N/A

Source: Mead & Hunt, Part 150 Study, based on US Census numbers rounded.

1 - PAL = Planning Activity Level; Future 1 / PAL 2 occurs in 2020 as forecasted when aircraft operations reaches 242,275.

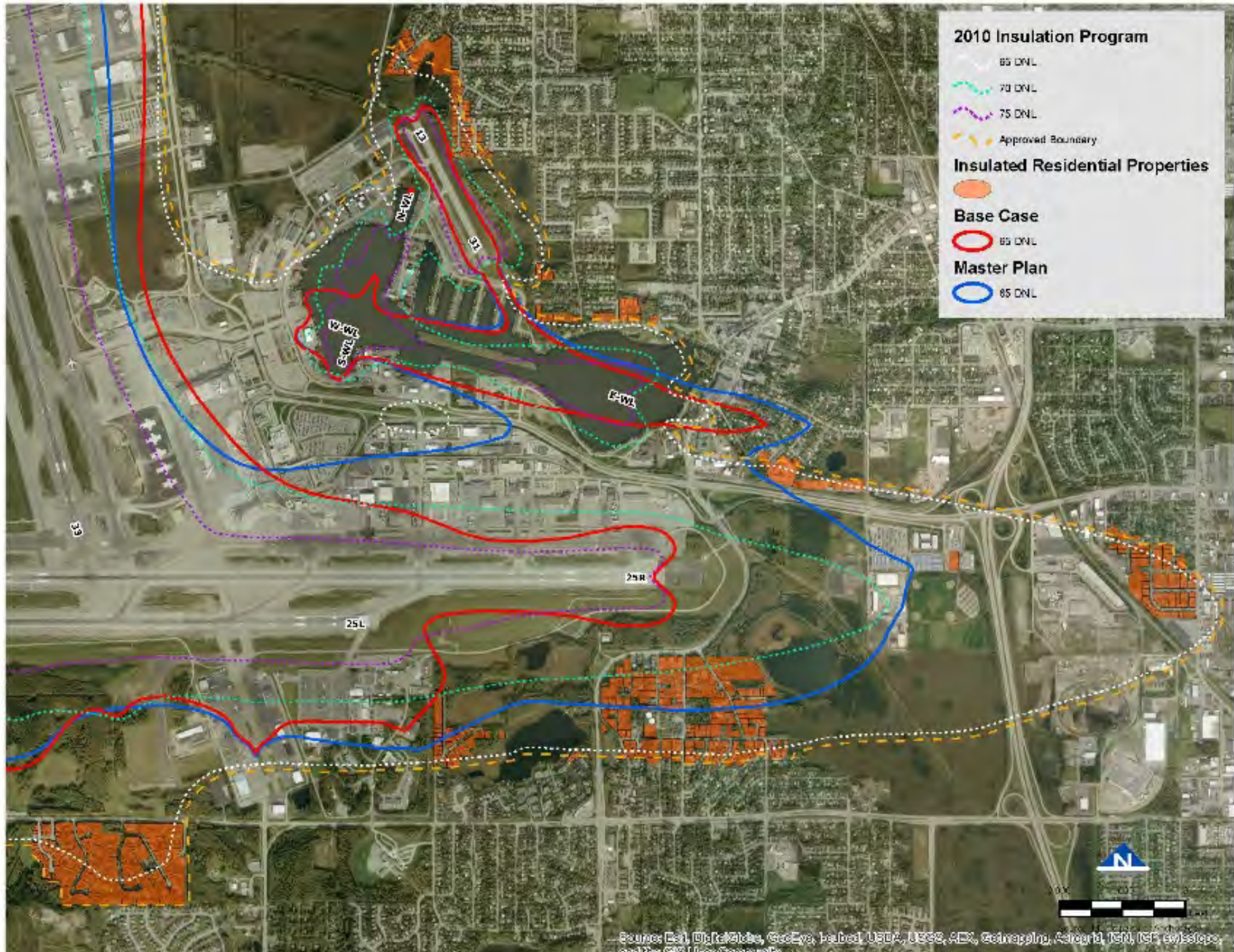
2 - This number was calculated using land use parcel data.

Note: All numbers are estimates; no residential uses are located within the 75 DNL or greater contours.

N/A = not applicable. Residences within the 60 DNL noise contour are not eligible for insulation.

DNL = Day-Night Average Sound Level.

Figure 5.29 Future Location of 65 DNL Noise Contour at 242,275 Annual Operations without (Base Case) and with Alternative 3



Source: Mead & Hunt, *Part 150 Study*, based on US Census numbers rounded.

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Criteria 2 – Recreation

Alternative 3 – Optimize ANC is not anticipated to impact recreation areas on and near the Airport.

Criteria 3 – Environmental Compatibility

Alternative 3 – Optimize ANC would reduce congestion at the Airport, which may reduce air quality impacts. Relocation of Postmark Drive and development of the North Airpark may impact the Postmark and Turnagain Bog areas.

Fiscal Sustainability

Criteria 1 – Funding

The estimated cost of airfield development in Alternative 3 – Optimize ANC is \$131 million. This cost includes upgrades of Runway 15-33, realignment of taxiways, development of additional cargo parking positions and associated taxiways, and full realignment of Postmark Drive.

Alternative 3 – Optimize ANC airline delay savings are estimated to be about \$89 million per year. This is a fairly high number, reflecting the relative low cost as compared to the relative reduction in average delay.

Criteria 2 – Supports Revenue Generation

Alternative 3 – Optimize ANC would provide some economic benefit to the Anchorage region and some opportunities for increased revenue generation due to increased tenant development potential.

Land Management

Criteria 1 – Supports Aeronautical Use

Alternative 3 – Optimize ANC would not maximize use of Airport land.

Criteria 2 – Land Use Compatibility

Alternative 3 – Optimize ANC is not anticipated to create any land use compatibility issues.

Criteria 3 – Supports Adaptable Land Use

Alternative 3 – Optimize ANC is somewhat adaptable to unforeseen changes in levels of demand, as it would accommodate land use requirements through the 20-year planning horizon but not beyond.

Public Input

The Master Plan Update team obtained feedback from members of the public at several public meetings. A web-based comment database was also created to track public comments and provide responses to the comments. The public comments and their responses are available on the Master Plan Update website, www.ancmasterplan.com, and in Appendix A, Public Involvement Summary.

Increased noise over neighborhoods was raised as a consistent theme in almost all comments on Alternative 3 – Optimize ANC. Some noted that the alternative would be very inexpensive to implement and would do the most to optimize use of existing infrastructure.

A sampling of public comments includes:

- “Alternative 3 will adversely impact homeowners on the east and southeast ends of the airport”
- “Alt. 3 makes the most sense except it increases noise issues with the citizens of West Anchorage”
- “Option 3 is not tenable because of the noise impacts”
- “Anchorage residents would benefit greatest from alternative 3.”
- “Of the five alternatives, I support Alternative 3. But there should be plans to mitigate the impact to neighboring residential areas.”

8.3.4 ALTERNATIVE 4 – CLOSELY SPACED RUNWAY

Safety

All alternatives were designed to meet the established criteria for the Safety Goal.

Criteria 1 – Meets or Exceeds Design Standards

Alternative 4 – Closely Spaced Runway includes several improvements to meet Airport geometric design standards established in AC 150 / 5300-13A. This includes realigning the angled taxiways between the east / west parallel runways to increase pilot situational awareness when pilots taxi across runways and enhance overall airfield safety, and widening Runway 15-33 to 200 feet to accommodate ADG-VI aircraft.

In addition, with Alternative 4 - Closely Spaced Runway, the new North / South Runway and associated taxiways would be designed to meet ADG-V standards. Specifically, the runway would be designed at a width of 150 feet. A new Modification of Standard to allow ADG-VI aircraft to operate would need to be in place. Should the runway be designed to accommodate ADG-VI aircraft, the parallel taxiway west of the new runway would need to be shifted west, impacting several tanks at the fuel farm.

Criteria 2 – Consistent with Best Safety Practices

Alternative 4 – Closely Spaced Runway includes removing the portion of Taxiway G northeast of the Taxiway K / G / G1 intersection to potentially eliminate FAA-identified Hot Spot 1 at Taxiway K / G / G1, and decoupling the Runway 33 and Runway 7L ends to eliminate overlapping runway pavement ends and runway safety area. Decoupling the runway ends would also minimize the need to close both runways during times of snow removal and maintenance.

In addition, Alternative 4 – Closely Spaced Runway proposes rerouting Postmark Drive to the east, around the U.S. Post Office and other businesses to the north. That portion of the existing Postmark Drive would no longer be publicly accessible. This improvement allows service vehicles to safely access the U.S. Post Office.

Efficiency

Criteria 1 – Maintains or Enhances Operational Efficiency

The untenable peak delay threshold is the point at which peak hour airplane delays in excess of 30 minutes can be expected to occur at least 10% of the time. In Alternative 4, this threshold would be anticipated to be reached at about 243,000 annual takeoffs and landings. This threshold is not increased in Alternative 4 because the alternative would not increase airport capacity during the poor weather that limits Airport capacity 10 to 20% of the time.

Technical analysis showed that at the highest demand levels, airplane takeoff and landing delays would be 8.2 minutes on average. This is an improvement over Alternative 1 by about 2 minutes. It is notable that this is actually less efficient than Alternative 3, which does not include a new runway.

Criteria 2 – Supports Adaptable Facilities

Tenants have the flexibility to grow either to the east of Postmark Drive in the North Airpark or to the west in the expanded West Airpark. However, access limitations may delay West Airpark development. Regardless, the West Airpark allows for development opportunities beyond the 20-year planning horizon. In the South Airpark, tenants may develop either in the Kulis Business Park or to the west along Taxiway Z.

Criteria 3 – Ease of Implementation

Alternative 4 – Closely Spaced Runway may be difficult to implement as it would be located close to the existing Runway 15-33, which may impact operations. Airfield safety enhancement projects would pose limited impacts to operations.

Environmental Awareness

Criteria 1 – Noise

Alternative 4 – Closely Spaced Runway would move operations away from noise-sensitive residential areas east and south of the Airport. The GRE would reduce noise generated from aircraft engine run-ups. Several potential GRE sites were identified during the Master Plan Update process. However, a separate site study is recommended following the completion of the Master Plan Update to select a preferred GRE site.

Criteria 2 – Recreation

Alternative 4 – Closely Spaced Runway would require relocation of the access road to the Point Woronzof Overlook. However, the Point Woronzof Overlook is anticipated to remain available to public use. Alternative 4 – Closely Spaced Runway would also require moderate realignment of the Coastal Trail around Point Woronzof to accommodate the north end of the runway.

Criteria 3 – Environmental Compatibility

Alternative 4 – Closely Spaced Runway would require realignment of the Coastal Trail in the area of Point Woronzof. Alternative 4 – Closely Spaced Runway would reduce congestion at the Airport, which may reduce air quality impacts. Rerouting of Postmark Drive and development of the North Airpark may impact the Postmark and Turnagain Bog areas.

Fiscal Sustainability

Criteria 1 – Funding

The estimated cost of airfield development in Alternative 4 – Closely Spaced Runway is \$421 million. This cost includes upgrades of Runway 15-33, realignment of taxiways, development of additional cargo parking positions and associated taxiways, partial realignment of Postmark Drive, and the cost of building a new closely spaced North / South Runway and taxiway system.

Alternative 4 – Closely Spaced Runway airline delay savings are estimated to be about \$39 million per year. This is a fairly low number, reflecting the relative high cost as compared to the relative reduction in average delay.

Criteria 2 – Supports Revenue Generation

Alternative 4 – Closely Spaced Runway would provide increased economic benefit to the Anchorage region and state, and opportunities for revenue generation due to increased tenant development potential.

Land Management

Criteria 1 – Supports Aeronautical Use

In Alternative 4 – Closely Spaced Runway, existing and future Airport land would be somewhat maximized for aeronautical use. However, the development may limit the future use potential of remaining undeveloped areas.

Criteria 2– Land Use Compatibility

Alternative 4 – Closely Spaced Runway is not anticipated to create any land use compatibility issues. West Airpark land development would require mitigation of potential impacts to recreational facilities on- and off-Airport.

Criteria 3 – Supports Adaptable Land Use

Alternative 4 – Closely Spaced Runway would be somewhat adaptable to unforeseen changes in levels of demand, as it would provide some opportunity for future development in the West Airpark.

Public Input

The Master Plan Update team obtained feedback from members of the public at several public meetings. A web-based comment database was also created to track public comments and provide responses to the comments. The public comments and their responses are available on the Master Plan Update website, www.ancmasterplan.com, and in Appendix A, Public Involvement Summary.

Public comments focused on whether a second runway alternative would actually ever be needed and negative impacts of the alternative. Concerns raised included the potential for the alternative to impact the Coastal Trail, Point Woronzof Park, and the Anchorage Water and Wastewater Utility's (AWWU) Asplund Wastewater Treatment Facility. Some comments claimed that Alternative 4 – Closely Spaced Runway would destroy the Coastal Trail and Point Woronzof Park, and cause the AWWU facility to be relocated, while others felt that the Coastal Trail could be relocated successfully and that impacts to other properties could be minimized and mitigated with cooperation.

A sampling of public comments for Alternative 4 – Closely Spaced Runway includes:

- “There doesn’t seem to be much ‘bang for your buck’ with this alternative. It will not do as much to meet demand.”
- “I am opposed to a potential north / south runway interfering with the existing trail.”

- “This alternative feels like a ‘band aid’ fix - we are only halfway there.”
- “In Alternatives 1, 2, and 3 – there is still the opportunity to develop a widely spaced runway should the need ever arise. With this alternative, we would not have that option. We need to think strategically about future land use.”

8.3.5 ALTERNATIVE 5 – WIDELY SPACED RUNWAY

Safety

All alternatives were designed to meet the established criteria for the Safety Goal.

Criteria 1 – Meets or Exceeds Design Standards

Alternative 5 – Widely Spaced Runway includes several improvements to meet airport geometric design standards established in AC 150 / 5300-13A. This includes realigning the angled taxiways between the east / west parallel runways to increase pilot situational awareness when pilots taxi across runways and enhance overall airfield safety, and widening Runway 15-33 to 200 feet to accommodate ADG-VI aircraft.

Criteria 2 – Consistent with Best Safety Practices

Alternative 5 – Widely Spaced Runway includes removing the portion of Taxiway G northeast of the Taxiway K / G / G1 intersection to potentially eliminate FAA-identified Hot Spot 1 at Taxiway K / G / G1, and decoupling the Runway 33 and Runway 7L ends to eliminate overlapping runway pavement ends and runway safety area. Decoupling the runway ends would also minimize the need to close both runways during times of snow removal and maintenance.

In addition, the separation between the two North / South Runways allows for simultaneous operations, increasing separation of aircraft in the air and on the ground, and minimizing potential aircraft-to-aircraft interactions.

Efficiency

Criteria 1 – Maintains or Enhances Operational Efficiency

The untenable peak delay threshold is the point at which peak hour airplane delays in excess of 30 minutes can be expected to occur at least 10% of the time. In Alternative 5, this threshold would be anticipated to be reached at about 323,000 annual takeoffs and landings. This threshold would be substantially increased relative to Alternatives 1, 3, and 4, reflecting the operational benefit of a widely spaced runway in all weather conditions.

Technical analysis showed that at the highest demand levels, airplane takeoff and landing delays would be 5.7 minutes on average. This is an improvement over Alternative 1 by about 5 minutes. It is notable that this would be the most efficient alternative overall.

Criteria 2– Supports Adaptable Facilities

Tenants have the flexibility to grow either to the east of Postmark Drive in the North Airpark or to the west in the newly developed West Airpark. In addition, the West Airpark allows for development opportunities beyond the 20-year planning horizon. In the South Airpark, tenants may develop either in the Kulis Business Park or to the west along Taxiway Z.

Criteria 3– Ease of Implementation

Alternative 5 – Widely Spaced Runway may be difficult to implement, as a tunnel under the existing Runway 15-33 would require strategic phasing to limit impacts to operations. Airfield safety enhancement projects would pose limited impacts to operations.

Environmental Awareness

Criteria 1 – Noise

Alternative 5 – Widely Spaced Runway would move operations away from noise-sensitive residential areas located east and south of the Airport. The GRE would reduce noise generated from aircraft engine run-ups. Several potential GRE sites were identified during the Master Plan Update process. However, a separate site study is recommended following the completion of the Master Plan Update to select a preferred GRE site.

Criteria 2 – Recreation

Alternative 5 – Widely Spaced Runway would require acquisition of some public parkland, including Point Woronzof Park. Alternative 5 – Widely Spaced Runway would also require realignment of a portion of the Coastal Trail between Point Woronzof and Kincaid Park to accommodate the new runway. However, the Coastal Trail would be maintained, and public input would be necessary to guide realignment.

Criteria 3 – Environmental Compatibility

Alternative 5 – Widely Spaced Runway would require realignment of the Coastal Trail between Point Woronzof and Kincaid Park. Alternative 5 – Widely Spaced Runway would also reduce congestion at the Airport. However, air quality impacts are unclear at this time because the alternative would enable substantial operations growth. Relocation of Postmark Drive and development of the North Airpark may impact the Postmark and Turnagain Bog areas. Alternative 5 –

Widely Spaced Runway would also require acquisition of Municipality of Anchorage Tracts A-1 and D-1, including all or portions of Point Woronzof Park. The alternative would also impact the Anchorage Coastal Wildlife Refuge and would require coordination with AWWU's Asplund Wastewater Treatment Facility.

Fiscal Sustainability

Criteria 1 – Funding

The estimated cost of airfield development in Alternative 5 – Widely Spaced Runway is \$887 million. This cost includes upgrades of Runway 15-33, realignment of taxiways, development of additional cargo parking positions and associated taxiways, partial realignment of Postmark Drive, the cost of building a new closely spaced North / South Runway and taxiway system, and construction of a cross-Airport tunnel.

Alternative 5 – Widely Spaced Runway airline delay savings are estimated to be about \$102 million per year. This is the highest savings evaluated, reflecting that Alternative 5 would provide the greatest increase in capacity as well as the greatest reduction in delays and congestion.

Criteria 2 – Supports Revenue Generation

Alternative 5 – Widely Spaced Runway would provide increased economic benefit to the Anchorage region and state, and opportunities for revenue generation due to increased tenant development potential.

Land Management

Criteria 1 – Supports Aeronautical Use

In Alternative 5 – Widely Spaced Runway, existing and future Airport land would be maximized for aeronautical use.

Criteria 2 – Land Use Compatibility

Alternative 5 – Widely Spaced Runway is not anticipated to create any land use compatibility issues. West Airpark land development would require mitigation of potential impacts to recreational facilities on- and off-Airport.

Criteria 3 – Supports Adaptable Land Use

Alternative 5 – Widely Spaced Runway would be highly adaptable to unforeseen changes in levels of demand, as it would provide the greatest opportunity for future development in the West Airpark.

Public Input

The Master Plan Update team obtained feedback from members of the public at several public meetings. A web-based comment database was also created to track public comments and provide responses to the comments. The public comments and their responses are available on the Master Plan Update website, www.ancmasterplan.com, and in Appendix A, Public Involvement Summary.

Public comments focused on whether a second runway alternative would actually ever be needed and negative impacts of the alternative. Concerns raised included the potential for the alternative to impact the Coastal Trail, Point Woronzof Park, the Anchorage Coastal Wildlife Refuge, and the AWWU Asplund Wastewater Treatment Facility. Some comments claimed that Alternative 5 – Widely Spaced Runway would destroy the Coastal Trail and Point Woronzof Park, and cause the AWWU facility to be relocated, while others felt that the Coastal Trail could be relocated successfully and that impacts to other properties could be minimized and mitigated with cooperation. Public comments did indicate that Alternative 5 – Widely Spaced Runway provided more capacity, but had greater negative impacts.

A sampling of public comments for Alternative 5 – Widely Spaced Runway includes:

- “I find Alternative 5 to be particularly untenable. Not only does that alternative radically alter the coastal trail, it would fundamentally alter the marsh that sits below and along the coastal trail.”
- “In my opinion design proposal 5 would be the optimal approach.”
- “I especially oppose Alternative 5, which would destroy a section of the existing Coastal Trail and Pt. Woronzof Park which is dedicated parkland, and would require a massive fill deposit in the northern end of the Anchorage Coastal Wildlife Refuge.”
- “I support the Airport plan to build another runway. I use and enjoy the coastal trail, however, I feel we can be flexible in where the exact route goes.”

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Table 5.8 Alternatives Evaluation Matrix

	SAFETY		EFFICIENCY			ENVIRONMENTAL AWARENESS			FISCAL SUSTAINABILITY		LAND MANAGEMENT		
	Meets or Exceeds Design Standards	Consistent with Best Practice Standards	Maintains or Enhances Operational Efficiency	Supports Adaptable Facilities	Ease of Implementation	Noise Mitigation	Recreation	Environmental Compatibility	Funding	Supports Revenue Generation	Supports Aeronautical Use	Land Use Compatibility	Supports Adaptable Land Use
Alternative 1 Minimize Airport Development	<ul style="list-style-type: none">• Rwy 15-33 widened to 200 ft for ADG-VI• Angled taxiways realigned to enhance safety• Hot Spot 1 potentially eliminated	<ul style="list-style-type: none">• Rwy 15-33 and Rwy 7L-25R decoupled	<ul style="list-style-type: none">• Untenable Delay Threshold - 243,000 Operations• Annual Avg. Delay - 10.3 minutes• Limited runway use flexibility	<ul style="list-style-type: none">• Somewhat adaptable to unforeseen changes and levels of demand as it accommodates land use requirements for the 20-year planning horizon but not beyond	<ul style="list-style-type: none">• Least difficult to implement• Land development and airfield safety enhancements pose limited impacts to operations	<ul style="list-style-type: none">• Aircraft ground run-up enclosure would reduce aircraft engine run-up noise• Little to no impacts to noise	<ul style="list-style-type: none">• No anticipated environmental impact to recreational areas and trail	<ul style="list-style-type: none">• Potential air quality issues as airfield congestion increases	<ul style="list-style-type: none">• \$95 Million Implementation Cost• No annual delay savings	<ul style="list-style-type: none">• Some economic benefit to the region and State• Limited opportunities for increased revenue generation	<ul style="list-style-type: none">• Does not maximize use of Airport land	<ul style="list-style-type: none">• No anticipated land use compatibility conflicts	<ul style="list-style-type: none">• Somewhat adaptable to unforeseen changes in level of demand as it accommodates land use requirements through the 20-year planning horizon and beyond
Alternative 2 Optimize AIAS	<ul style="list-style-type: none">• Rwy 15-33 widened to 200 ft for ADG-VI• Angled taxiways realigned to enhance safety• Hot Spot 1 potentially eliminated	<ul style="list-style-type: none">• Rwy 15-33 and Rwy 7L-25R decoupled	<ul style="list-style-type: none">• Untenable Delay Threshold - 282,000+ Operations• Annual Avg. Delay - <10 minutes• Limited runway use flexibility	<ul style="list-style-type: none">• Somewhat adaptable to unforeseen changes and levels of demand as it accommodates land use requirements for the 20-year planning horizon but not beyond	<ul style="list-style-type: none">• Relatively easy to implement at Anchorage International Airport but difficult to encourage cargo carriers to choose Fairbanks International Airport• Land development and airfield safety enhancements pose no or minimal impact to operations	<ul style="list-style-type: none">• Aircraft ground run-up enclosure would reduce aircraft engine run-up noise• Little to no impacts to noise	<ul style="list-style-type: none">• No anticipated environmental impact to recreational areas and trail in Anchorage	<ul style="list-style-type: none">• Little to no anticipated environmental impacts at Anchorage International Airport	<ul style="list-style-type: none">• \$47 Million Implementation Cost• \$18 Million annual delay savings	<ul style="list-style-type: none">• May reduce Anchorage International Airport's benefit to the Anchorage region but may maintain benefit to the State• May reduce / limit FAA entitlements at Anchorage International Airport	<ul style="list-style-type: none">• Does not maximize use of Airport land	<ul style="list-style-type: none">• No anticipated land use compatibility conflicts	<ul style="list-style-type: none">• Somewhat adaptable to unforeseen changes in level of demand as it accommodates land use requirements through the 20-year planning horizon and beyond
Alternative 3 Optimize ANC	<ul style="list-style-type: none">• Rwy 15-33 widened to 200 ft for ADG-VI• Angled taxiways realigned to enhance safety• Hot Spot 1 potentially eliminated	<ul style="list-style-type: none">• Rwy 15-33 and Rwy 7L-25R decoupled• Realign Postmark Dr. to improve service vehicle access to Post Office	<ul style="list-style-type: none">• Untenable Delay Threshold - 243,000 Operations• Annual Avg. Delay - 7.2 minutes• Increased ATC runway use flexibility	<ul style="list-style-type: none">• Somewhat adaptable to unforeseen changes and levels of demand as it accommodates land use requirements for the 20-year planning horizon but not beyond	<ul style="list-style-type: none">• Minimal challenges to implement• Land development and airfield safety enhancements pose no or minimal impact to operations	<ul style="list-style-type: none">• Aircraft ground run-up enclosure would reduce aircraft engine run-up noise• Modification of preferential Rwy use program would increase noise impacts to residential areas during daytime hours• 25 additional non-insulated homes in 65 DNL in PAL 2	<ul style="list-style-type: none">• No anticipated environmental impact to recreational areas and trail	<ul style="list-style-type: none">• Reduced congestion may reduce air quality impacts• Potential environmental impact with development in Postmark and Turnagain Bog areas	<ul style="list-style-type: none">• \$110 Million Implementation Cost• \$89 Million annual delay savings	<ul style="list-style-type: none">• Some economic benefit to the region and State• Some opportunities for revenue generation due to increased tenant development potential	<ul style="list-style-type: none">• Does not maximize use of Airport land	<ul style="list-style-type: none">• No anticipated land use compatibility conflicts	<ul style="list-style-type: none">• Somewhat adaptable to unforeseen changes in level of demand as it accommodates land use requirements through the 20-year planning horizon and beyond
Alternative 4 Closely Spaced Runway	<ul style="list-style-type: none">• Rwy 15-33 widened to 200 ft for ADG-VI• Angled taxiways realigned to enhance safety• Hot Spot 1 potentially eliminated• Modification of Standards required for ADG-VI aircraft to operate on new Rwy	<ul style="list-style-type: none">• Rwy 15-33 and Rwy 7L-25R decoupled• Realign Postmark Dr. to improve service vehicle access to Post Office	<ul style="list-style-type: none">• Untenable Delay Threshold - 243,000 Operations• Annual Avg. Delay - 8.2 minutes• Increased ATC flexibility + runway redundancy	<ul style="list-style-type: none">• Somewhat adaptable to unforeseen changes and levels of demand as it provides some opportunity for future development in the West Airpark	<ul style="list-style-type: none">• May be difficult to implement• Proximity of new Rwy to existing Rwy 15-33 may impact operations• Land development and airfield safety enhancements pose no or minimal impact to operations	<ul style="list-style-type: none">• Aircraft ground run-up enclosure would reduce aircraft engine run-up noise• Additional runway to the west may push some aircraft noise away from residential areas	<ul style="list-style-type: none">• Impacts Point Woronzof Park• Impacts Point Woronzof Overlook access• Requires realignment of Coastal Trail	<ul style="list-style-type: none">• Requires relocation of Coastal Trail• Reduced congestion may reduce air quality impacts• Potential environmental impact with development in Postmark and Turnagain Bog areas• Impact to Municipality's Tracts A-1 and B	<ul style="list-style-type: none">• \$422 Million Implementation Cost• \$39 Million annual delay savings	<ul style="list-style-type: none">• Increased economic benefit to the region and State• Many opportunities for revenue generation due to increased tenant development potential	<ul style="list-style-type: none">• Airport land somewhat maximized for aeronautical use• May limit the use potential of remaining undeveloped areas	<ul style="list-style-type: none">• No anticipated land use compatibility conflicts• West Airpark land development would require mitigation of potential impacts to recreational facilities on- and off-Airport	<ul style="list-style-type: none">• Provides some opportunity for future development in the West Airpark
Alternative 5 Widely Spaced Runway	<ul style="list-style-type: none">• Rwy 15-33 widened to 200 ft for ADG-VI• Angled taxiways realigned to enhance safety• Hot Spot 1 potentially eliminated	<ul style="list-style-type: none">• Rwy 15-33 and Rwy 7L-25R decoupled• Realign Postmark Dr. to improve service vehicle access to Post Office• Increased separation between the two runways would allow simultaneous VFR and IFR operations	<ul style="list-style-type: none">• Untenable Delay Threshold - 323,000 Operations• Annual Avg. Delay - 5.7 minutes• Increased ATC flexibility + runway redundancy	<ul style="list-style-type: none">• Highly adaptable to unforeseen changes and levels of demand as it provides greatest opportunity for future development in the West Airpark	<ul style="list-style-type: none">• May be difficult to implement• Tunnel under existing Rwy 15-33 requires strategic phasing• Land development and airfield safety enhancements pose no or minimal impact to operations	<ul style="list-style-type: none">• Aircraft ground run-up enclosure would reduce aircraft engine run-up noise• Additional runway to the west may push some aircraft noise far away from residential areas	<ul style="list-style-type: none">• Impacts Point Woronzof Park as some land acquisition would be required• Requires realignment of Coastal Trail	<ul style="list-style-type: none">• Requires relocation of Coastal Trail• Air quality impacts currently unclear• Potential environmental impact with development in Postmark and Turnagain Bog areas• Impact to Municipality's Tracts A-1 and D-1• Potential impact to Anchorage Coastal Wildlife Refuge• Requires coordination with AWWU Asplund Wastewater Treatment Facility	<ul style="list-style-type: none">• \$887 Million Implementation Cost• \$102 Million annual delay savings	<ul style="list-style-type: none">• Increased economic benefit to the region and State• Many opportunities for revenue generation due to increased tenant development potential	<ul style="list-style-type: none">• Airport land maximized for aeronautical use	<ul style="list-style-type: none">• No anticipated land use compatibility conflicts• West Airpark land development would require mitigation of potential impacts to recreational facilities on- and off-Airport	<ul style="list-style-type: none">• Provides greatest opportunity for future development in the West Airpark

Source: RS&H, 2014.
Notes: ADG = Airplane Design Group, AIAS = Alaska International Airport System, ANC = Anchorage International Airport, ATC = Airport Traffic Controllers, AWWU = Anchorage Water and Wastewater Utility, DNL = Day-night Average Sound Level, FAA = Federal Aviation Administration, IFR = Instrument Flight Rules, PAL = Planning Activity Level, Rwy = Runway, VFR = Visual Flight Rules.

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8.3.6 EVALUATION RESULTS SUMMARY

Evaluation results are summarized below and in Figure 5.30.

Safety

All alternatives mostly or fully met the safety goal, which is to be expected since the alternatives were designed with this intent. Alternative 5 – Widely Spaced Runway was recognized to be the most consistent with best safety practices because the separation between the two runways would allow for safe, simultaneous operations, which gave it a slight safety advantage over the other alternatives.

Efficiency

Alternative 1 – Minimize Development was noted as the easiest to implement, but was not as successful at meeting the criteria for maintaining or enhancing operational efficiency or supporting adaptable facilities. Alternative 5 – Widely Spaced Runway best met the criteria for maintaining or enhancing operational efficiency and supporting adaptable facilities; however, it was noted as likely the most difficult to implement.

Environmental Awareness

Alternative 1 – Minimize Development and Alternative 2 – Optimize AIAS were successful in overall meeting the environmental awareness goal. It was noted that Alternative 3 – Optimize ANC was not as successful in meeting the noise criteria and performed the worst of all alternatives against this measure. Alternative 5 – Widely Spaced Runway was rated as the best to reduce noise impacts because it would move operations farther away from existing neighborhoods, but was rated the least environmentally compatible due to the negative impacts on other resources. Some noted that a low score on environmentally compatible was not necessarily a show stopper, but rather that a greater effort would be needed to mitigate impacts.

Fiscal Sustainability

Alternative 1 – Minimize Development, Alternative 2 – Optimize AIAS, and Alternative 3 – Optimize ANC were most successful as the easiest to fund, since all would require relatively low to no capital expenditures. Alternative 4 – Closely Spaced Runway and Alternative 5 – Widely Spaced Runway were perceived as doing the most to enhance the Airport's ability to generate revenue by developing the airfield as more land becomes available and being attractive for development.

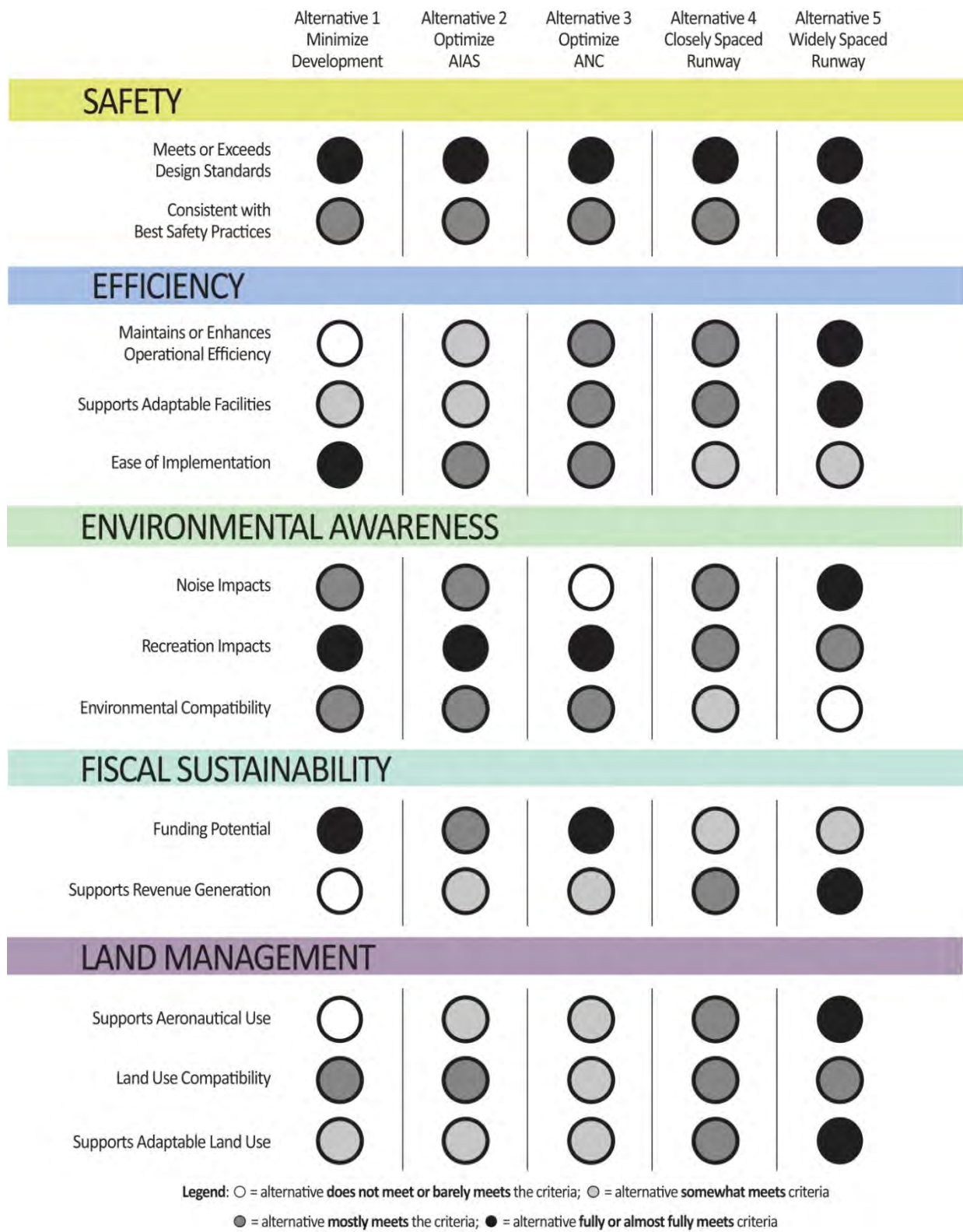
Land Management

Alternative 5 – Widely Spaced Runway was most successful in meeting the criteria to support aeronautical use of Airport lands and support adaptable land use. Alternative 1 – Minimize Development, Alternative 2 – Optimize AIAS, Alternative 4 – Closely Spaced Runway, and Alternative 5 – Widely Spaced Runway performed similarly for land use compatibility. All these alternatives may have some conflicts with off-Airport land uses.

Summary

When presented to the general public, most agreed that there were pros and cons to each alternative. Some members of the public felt that one goal or criteria should outweigh other criteria, but most recognized that all the goals and criteria were relevant. Based on the results of the evaluation and public input requesting that development should match actual need, the Airport proposed a demand-dependent, phased approach to the Master Plan Update rather than the selection of a single preferred alternative.

Figure 5.30
 Airport Alternatives Evaluation Results at Planning Activity Level 4 (282,000 operations)



Source: RS&H, 2013.

Note: AIAS = Alaska International Airport System, ANC = Anchorage International Airport.

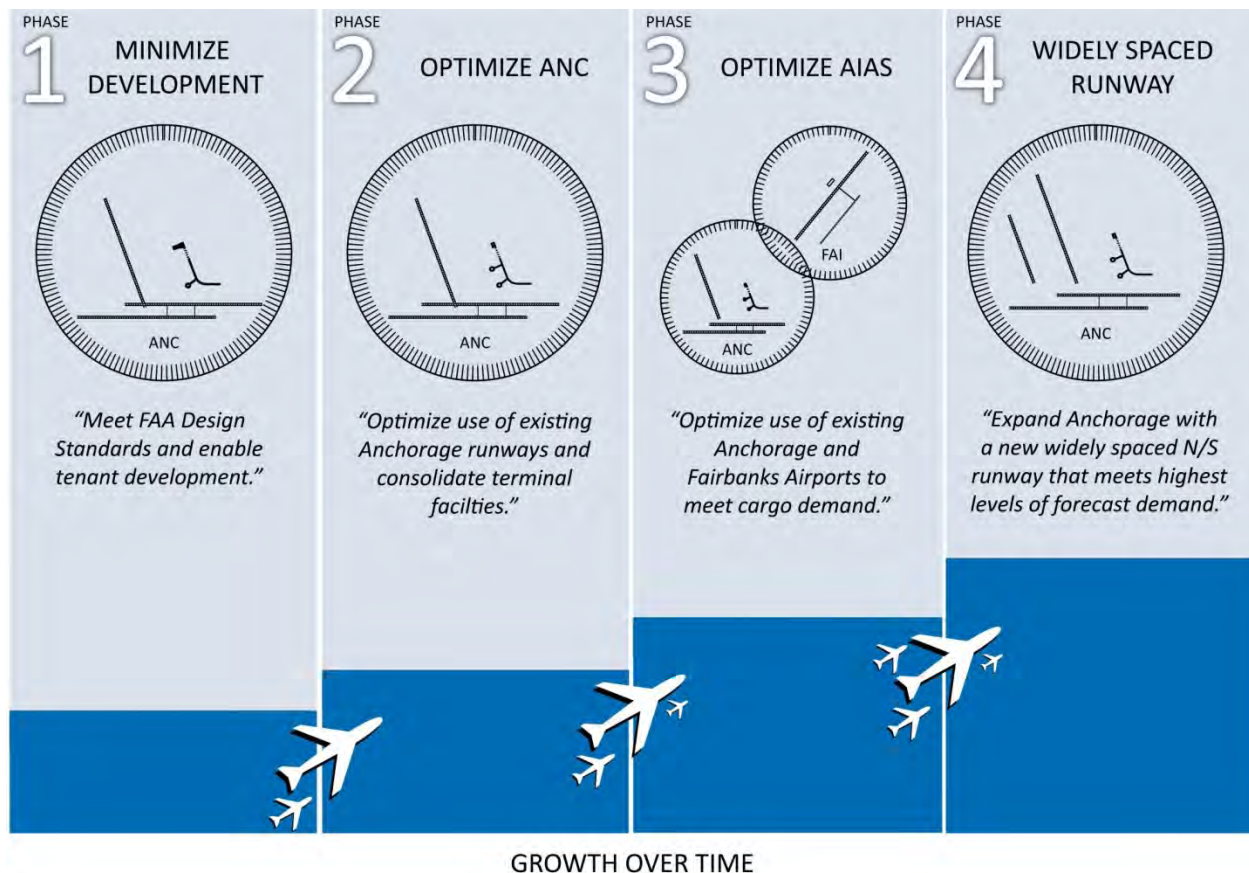
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SECTION 9 RECOMMENDED DEVELOPMENT PLAN

A demand-dependent, phased approach to airport development was selected to enable the Ted Stevens Anchorage International Airport (Airport) to adapt to an uncertain future and manage growth in a financially responsible manner. The recommended development plan, illustrated in Figure 5.31, would enable the Airport to operate efficiently at today's levels of demand and continue to operate efficiently at the highest levels of forecast demand. The demand-dependent, phased approach has the following advantages:

1. It is adaptable to future demand levels because the Airport would implement improvements only as necessitated by actual demand.
2. It is financially responsible because it prioritizes low- or no-cost enhancements over high-cost enhancements.

Figure 5.31
Plan for Future Development



Source: RS&H, 2013.

Note: AIAS = Alaska International Airport System, ANC = Anchorage International Airport, FAA = Federal Aviation Administration, FAI = Fairbanks International Airport, N/S = North / South.

The aviation forecast predicts that growth in landings and takeoffs will occur gradually over time. Today, demand levels are a little less than 220,000 annual landings and takeoffs, and the airport operates efficiently. Technical analysis found that if no changes are made to the current airport airfield, delays in excess of 30 minutes per peak hour operation could occur more than 10% of the time when annual landings and takeoffs number about 258,000.

The recommended development plan is therefore dependent on demand and provides a series of four development phases appropriate for future changes in demand levels (see **Figure 5.31**). Airport investments in new facilities will be driven by growth in passengers, cargo, and landings and takeoffs. The investment in infrastructure is dependent on growth, not a defined timeline.

The Airport would minimize development and optimize existing facilities before investing in new infrastructure at the Airport. The plan is fiscally responsible and maximizes all other alternatives prior to having to construct another runway.

The recommended development plan would enable the Airport to reserve and preserve land for potential future development, as recommended by the Federal Aviation Administration (FAA).

It is important to understand how the phased approach is anticipated to occur. The Airport would implement some elements of Phase 1 immediately. Phase 1 includes modifying existing infrastructure to meet FAA design standards and identifies preferred tenant development locations (see **Figure 5.32**). When existing facilities are in need of rehabilitation, the rehabilitated infrastructure would be required to meet current FAA standards. These projects would be undertaken only when the facilities need to be replaced or if mandated by FAA regulation. Should sufficient growth in operations not occur, Phase 1 would accommodate the Airport's needs.

The Airport would implement elements of Phase 2 if there is sufficient growth in operations or passengers. Phase 2 would enhance the efficiency of the Airport in the most fiscally responsible manner possible by making better use of existing assets (see **Figure 5.33**). Should growth in operations or passengers not warrant, the Airport would not need to implement elements of Phases 3 and 4.

The Airport, in cooperation with the Alaska International Airport System (AIAS) and Fairbanks International Airport, would fully implement Phase 3 only if there is sufficient growth in operations. Phase 3 would enhance the efficiency of the AIAS and would require expansion of Fairbanks International Airport and possible airline incentives (see **Figure 5.34**). The Airport has already begun a program to encourage new airlines flying to Alaska to consider operating at Fairbanks International Airport. The public has advocated this program through the Ted Stevens Anchorage International Airport Master Plan Update

(Master Plan Update) public involvement process. Should growth in operations or passengers not warrant additional development, the Airport would not fully implement any further phases.

The Airport would implement Phase 4 only if there is sufficient growth in operations. Phase 4 represents a substantial undertaking, as the additional runway considered in Phase 4 is very expensive and has substantial impacts (see Figure 5.35).

Only if consistent, sustained high numbers of operations are demonstrated over several years would there be justification to consider building a new runway. The Airport would be required to conduct an environmental analysis, evaluate alternatives, seek airline and legislative approvals, and complete permitting before Phase 4 could be implemented. However, it is the Airport's responsibility to plan proactively to prepare for the potential need for a new runway. The Master Plan Update simply defines the least impactful, most beneficial place to construct a new runway if it is eventually needed.

It is also essential to understand that each phase of development corresponds to an objective, and elements of different phases may begin immediately and occur concurrently. The demand-dependent, phased approach should be considered a continuum of development. As an example, the Airport has already begun a program to encourage new airlines flying to Alaska to consider operating at Fairbanks International Airport. Therefore, elements of Phase 3 are currently under way.

Each element of each phase has a unique trigger point. A trigger point is defined as a point at which an action is required in order to maintain the safe, efficient, and compliant operation of the Airport. See Chapter 6, Implementation Plan, for more details on trigger points.

Public Input

The demand-driven, phased approach was shared with the public for input at the following meetings:

- Working Group Meeting #7 (September 11, 2013)
- Technical Advisory Committee Meeting #5 (September 12, 2013)
- Public Open House #6 (September 12, 2013)
- Online Open House (September 13 to 27, 2013)
- Public Open House #7 (December 11, 2013)
- Online Open House (December 12 to 26, 2013)

Public response to the phased approach was generally positive. Many comments noted that it was a reasonable approach that would allow the Airport to respond to whatever future conditions may arise, based on actual aviation demand. Some comments questioned the timing of the

phasing and whether Phases 2 and 3 should be switched in order of implementation.

Comments on the individual phases largely reflected the same concerns that were raised during the alternatives phase and largely focused on the airfield improvements:

- Comments received on Alternative 1 were replicated as comments on Phase 1
- Comments on Alternative 2 were replicated as comments on Phase 3
- Comments on Alternative 3 were replicated as comments on Phase 2
- Comments on Alternative 5 were replicated as comments on Phase 4.

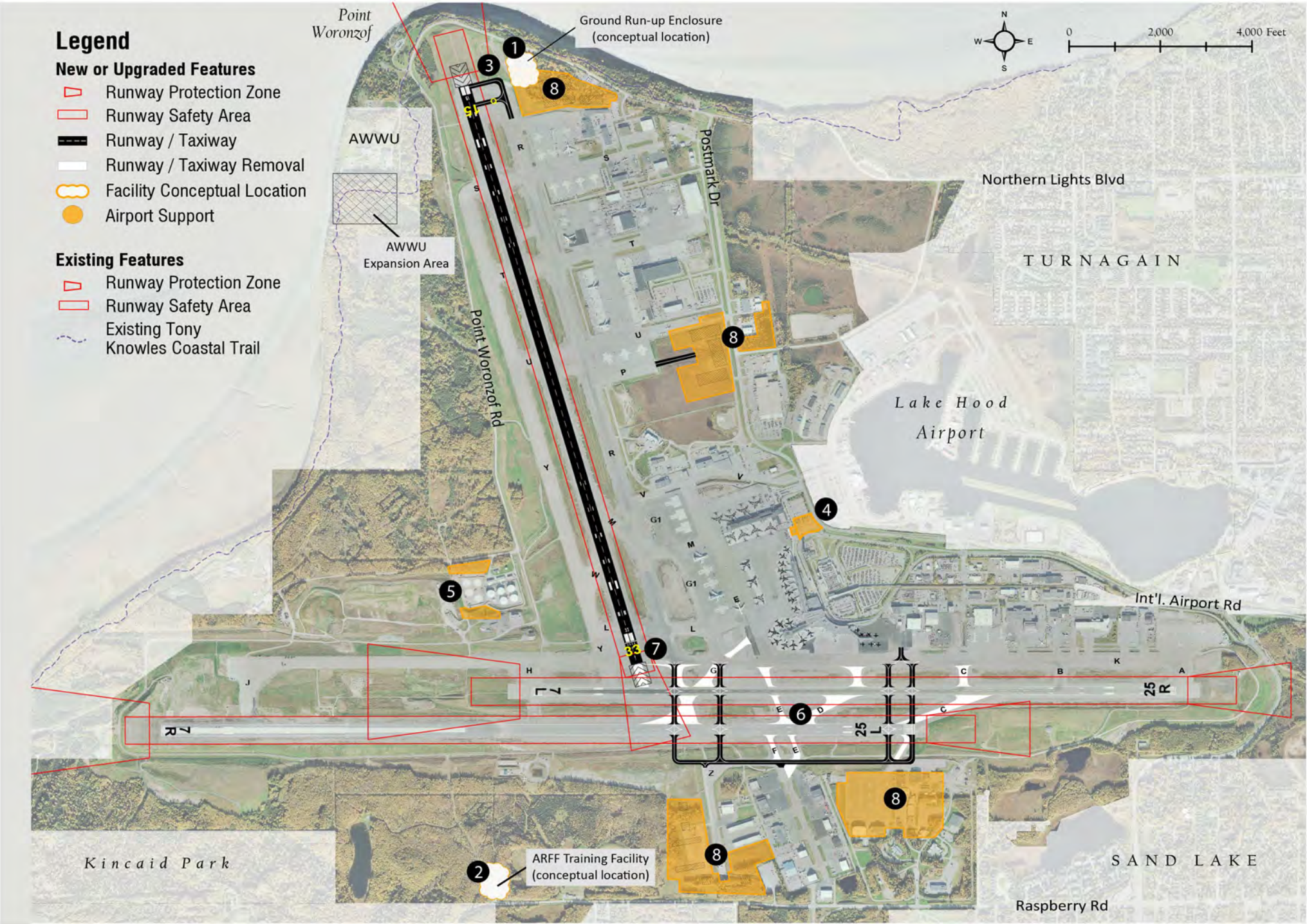
Some commenters requested removing Phase 2 due to noise and safety concerns.

Many commenters requested removing Phase 4 due to environmental concerns and disbelief that aviation demand would materialize to support the need. Most of these comments implied that any change to the Tony Knowles Coastal Trail would be negative and unacceptable. Many of these comments also addressed impacts to birds and the Anchorage Coastal Wildlife Refuge.

Relatively few comments were received on the terminal proposal, and those were mainly supportive of the proposal to add a new concourse on the South Terminal and demolish the North Terminal.

Relatively few comments addressed landside elements. Some commenters were concerned that realigning Postmark Drive would change public access; however, when it was clarified that public access would be maintained, the concern was somewhat lessened.

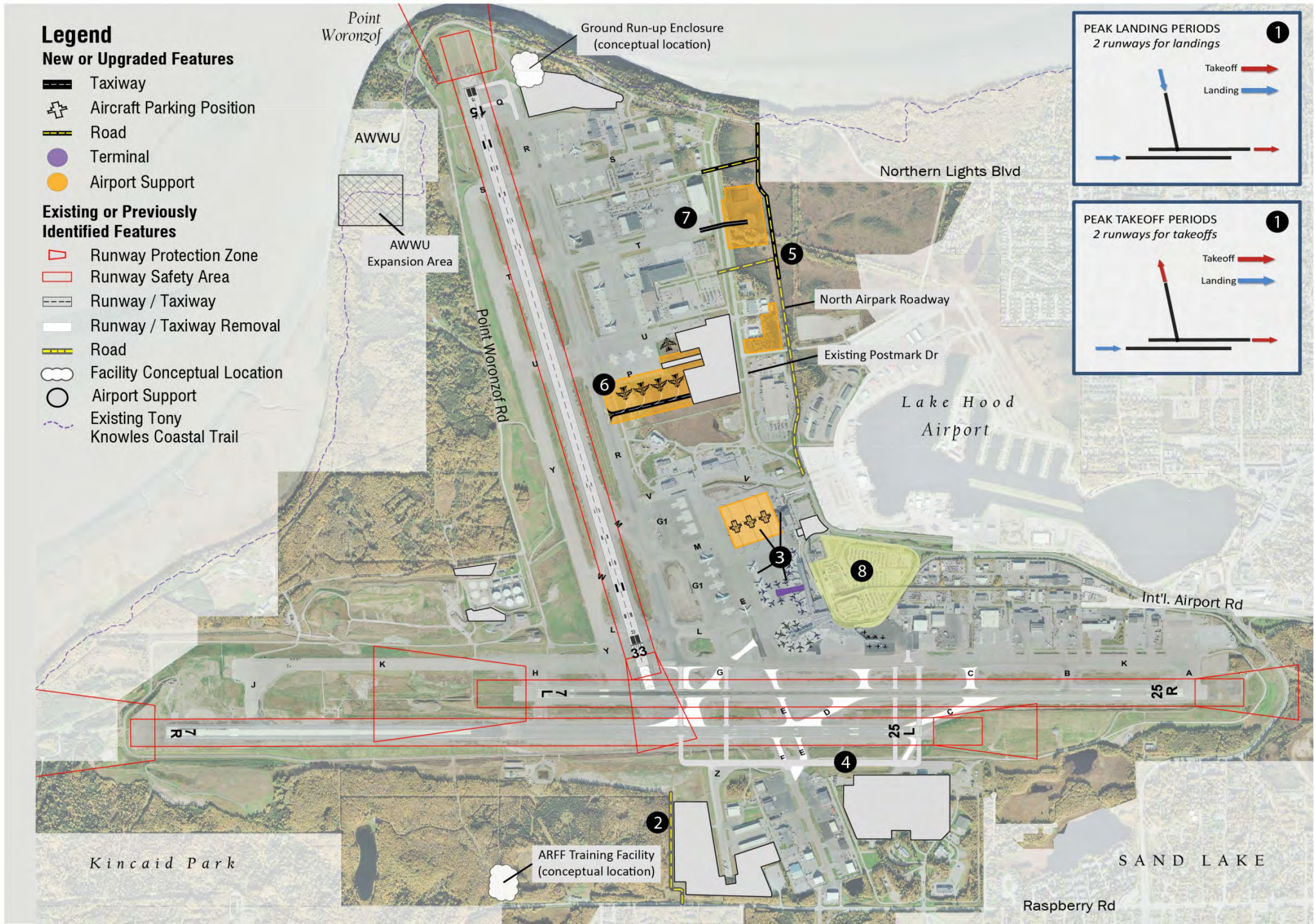
Figure 5.32 Phase 1



Source: RS&H, HDR, 2014.
Notes: ARFF - Aircraft Rescue and Fire Fighting, AWWU - Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility.

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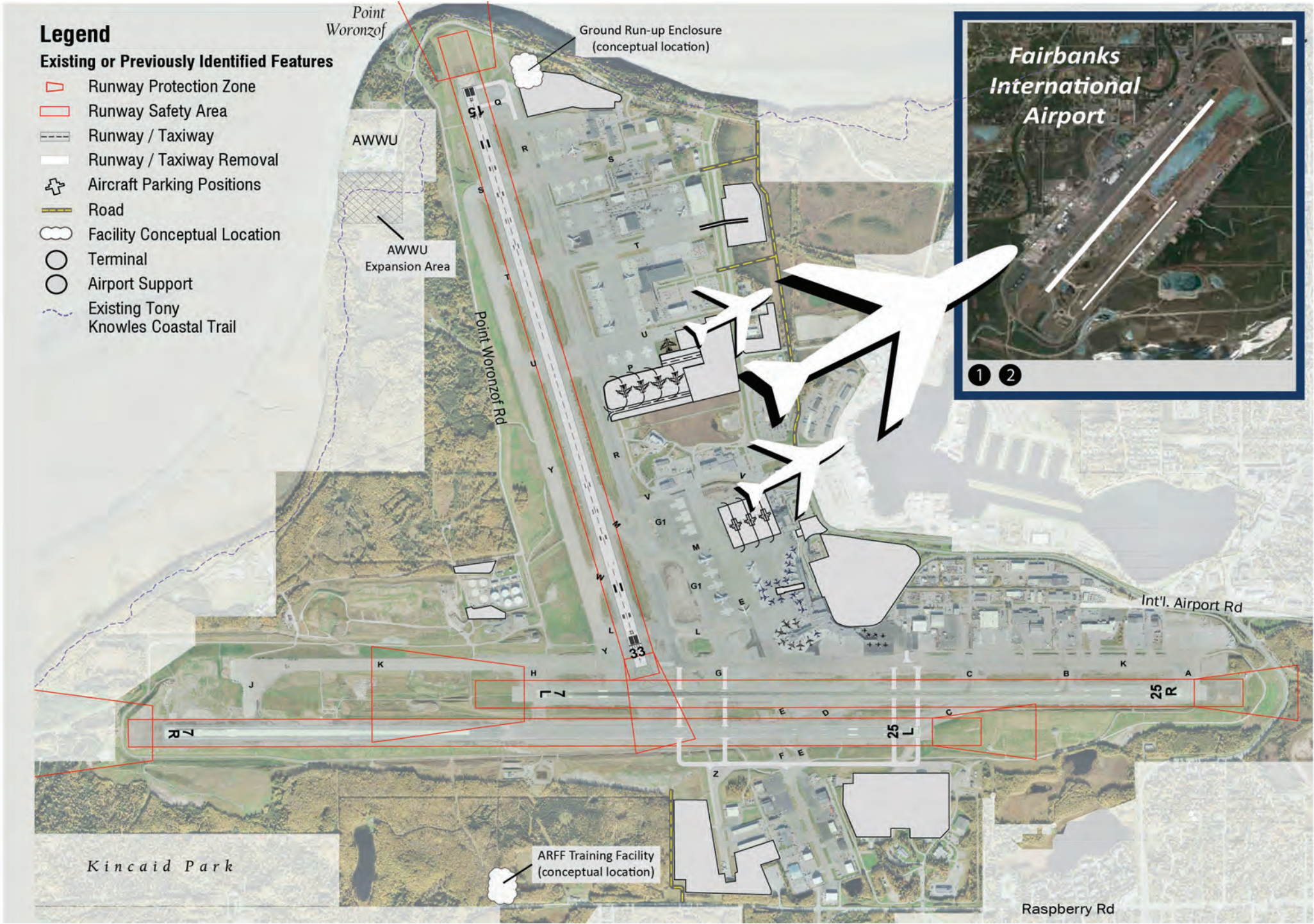
Figure 5.33 Phase 2



Source: RS&H, HDR, 2014.
Notes: ARFF = Aircraft Rescue and Fire Fighting, AWWU = Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility, RON = Remain Overnight.

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Figure 5.34 Phase 3



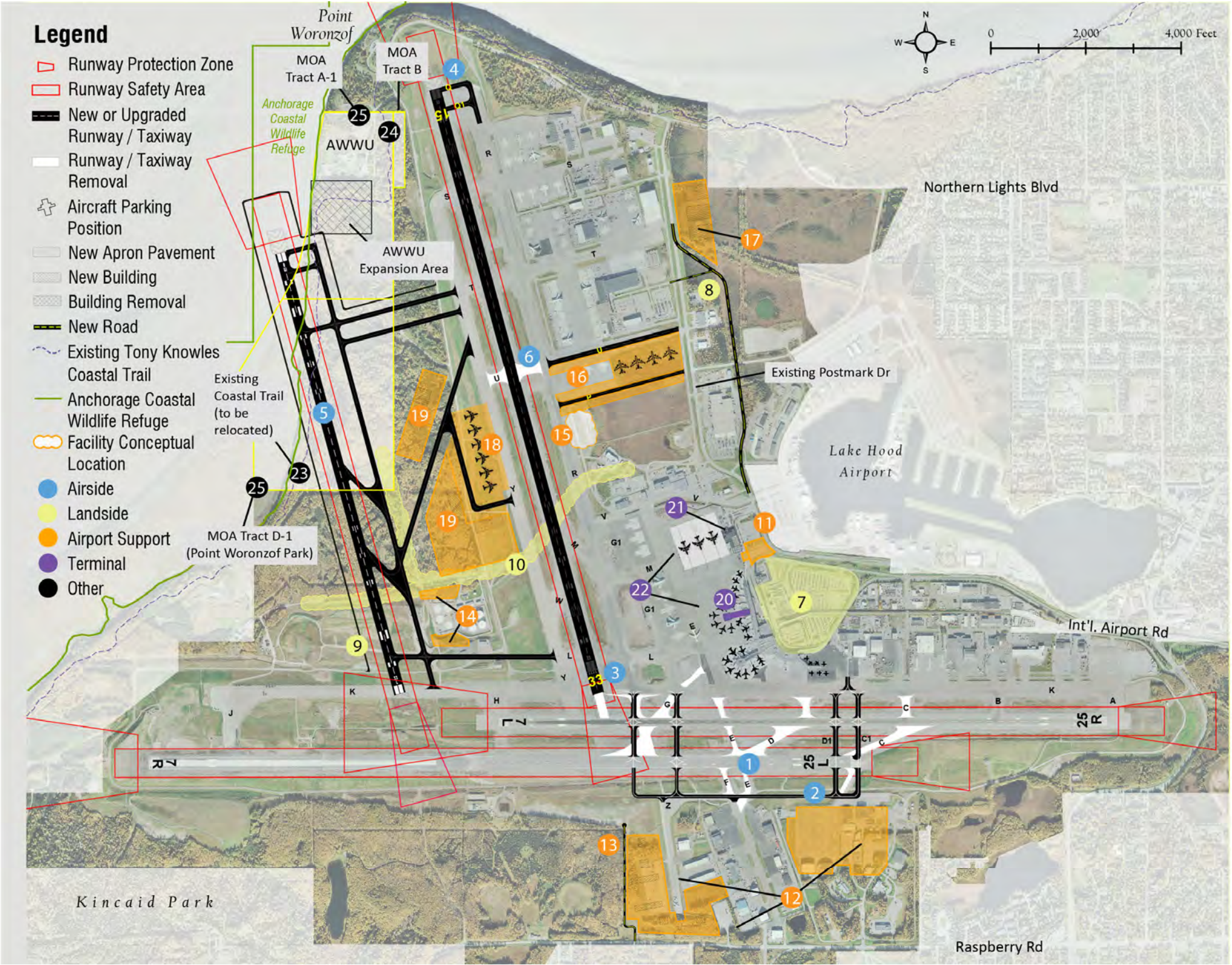
Projects

- 1 Enhance Use of Fairbanks International Airport for Technical Stop Cargo Flights (Optimize AIAS Strategy [OAIASS])
- 2 Implement Fairbanks International Airport Improvements

Source: RS&H, HDR, 2014.
Notes: AIAS - Alaska International Airport System, ARFF - Aircraft Rescue and Fire Fighting, AWWU - Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility.

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Figure 5.35 Phase 4



Source: RS&H, HDR, 2014.

Notes: ARFF = Aircraft Rescue and Fire Fighting, AWWU = Asplund Wastewater Treatment Facility, owned and operated by the Anchorage Water and Wastewater Utility, MOA = Municipality of Anchorage.

- 1 Angled taxiways replaced with 90-degree taxiways
- 2 East / West Parallel Taxiway (Taxiway Z) extended east and west to provide South Airpark access
- 3 Runway 15-33 decoupled to eliminate overlapping RSAs; widened to meet ADG-VI standards
- 4 Taxiway R extended to Runway 15 end, Taxiway Q realigned and new bypass Taxiway Q1 constructed
- 5 New 8,000' x 150' runway with associated taxiway connections (ADG-VI, TDG-7)
- 6 Taxiway U segment removed
- 7 Existing parking and rental car demand managed or facilities reconfigured within existing footprint
- 8 Postmark Drive realigned to the east
- 9 Point Woronzof Road and service road realigned around new runway
- 10 New West Airpark access tunnel
- 11 Tenant developed hotel site identified
- 12 Tenant development in South Airpark as warranted by demand
- 13 New South Airpark Access Road to support tenant development as warranted by demand
- 14 Fuel storage facility expanded as warranted by demand
- 15 Potential site for Ground Run-up Enclosure identified
- 16 Taxiways P and U extended; 4 pull-through cargo parking positions added as warranted by demand
- 17 Tenant development in North Airpark as warranted by demand
- 18 Six pull-through cargo parking positions added in West Airpark
- 19 Tenant development in West Airpark as warranted by demand
- 20 New South Terminal Concourse added
- 21 Remove North Terminal Concourse; maintain building core
- 22 Three cargo parking positions relocated; former North Terminal site used for cargo parking positions
- 23 Requires realignment of a portion of the Coastal Trail
- 24 Existing access to AWWU maintained
- 25 Requires acquisition of a portion of land owned by the Municipality of Anchorage

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SECTION 10

NEXT STEPS – IMPLEMENTATION PLAN

The concept / alternative development and screening / evaluation process included an in-depth issues and considerations identification task in order to best address stakeholder concerns captured within the Ted Stevens Anchorage International Airport (Airport) Master Plan Update (Master Plan Update) Goals and Objectives and evaluation criteria, and meet forecast demand throughout the Master Plan Update planning horizon and beyond. In a step-wise fashion, concepts were developed by functional or geographic area, refined by combining the best elements that met the established Goals and Objectives, and a final plan for future development was developed. The resulting phased, demand-dependent approach is discussed further in **Chapter 6**, Implementation Plan.