

Chapter 1: Introduction

Purpose and Scope

The information presented in this report represent the study findings for the 2013 Sioux Falls Regional Airport Master Plan Update prepared for the Sioux Falls Regional Airport Authority. Airport Master Plans are prepared in accordance with Federal Aviation Administration (FAA) Advisory Circular (AC) 150/5070-6B, *Airport Master Plans*. This project was funded in part by the Federal Aviation Administration (FAA) through grant number AIP 3-46-0050-045-2013 and complies with Federal requirements.

This Airport Master Plan Update for the Sioux Falls Regional Airport will serve as an updated guide for identifying future development necessary to accommodate existing and future aviation demand. The airport's current and forecast safety, capacity and compatibility needs are addressed in this study. Many projects have been completed and new planning considerations have developed since the previous Master Plan study in 2006.

The scope of the study was developed by the Airport Authority, Goldsmith-Heck Engineers and Kadrmas, Lee & Jackson (KLJ) in cooperation with FAA and state officials to identify the specific needs and objectives of the airport owner. The scope includes work tasks with the purpose of documenting existing conditions, forecasting future aviation activity levels, identifying future facility requirements, formulating and evaluating airfield alternatives, and preparing implementation plans. Recommendations will be made for improvements that are triggered by safety requirements or demand thresholds.

The project received notice to proceed in September 2013. The baseline project data is from inventory efforts completed in October 2013. Baseline airport operational data is from Federal fiscal year 2013 (October 2012 - September 2013). This time period selected best captures the latest airport operational figures of this growing airport after a significant runway shutdown in July 2012. The Federal fiscal year time period aligns directly with the FAA Terminal Area Forecast. Discrepancies in historical data will be noted throughout the document.

This Master Plan was adopted by the Sioux Falls Regional Airport Authority on [DATE].

Airport Master Plan Format

The required and recommended contents of Airport Master Plans are detailed per FAA standards. Effective airport master plans are based on the analysis of significant amounts of data, and many airport master plans typically present not only the planning conclusions, but all data and accompanying analysis in considerable detail.

This Master Plan presents extensive data to support the plan in a series of appendices. As the reader moves through the narrative descriptions, there are frequent references to specific appendices to provide additional details and information. In addition, internet hyperlinks are included to reference documents that are current as of the time of this report.

Background

Sioux Falls Regional Airport - Joe Foss Field has been owned and operated by the Sioux Falls Regional Airport Authority since 1986. The airport was established on the current site since 1937. The airport was developed in the mid-1940s by the U.S. government during World War II constructing the current runway configuration and establishing the Sioux Falls Army Base. The airport is named after military aviator and former South Dakota governor Joe Foss. The airport now encompasses 1,570 acres of land. The airport is located three miles northwest of the Sioux Falls central business district. See **Figure 1-1: Airport Location Map**.

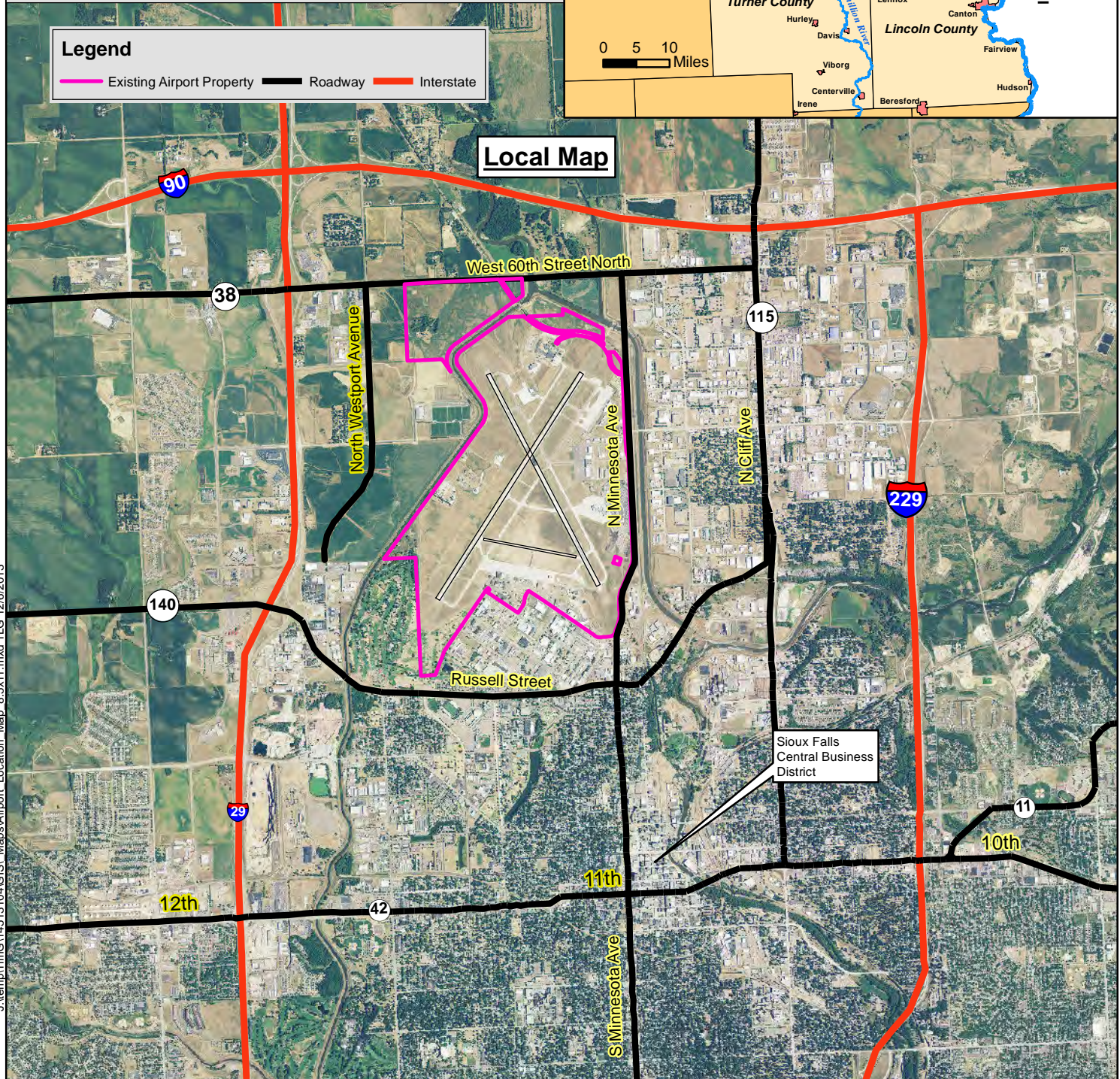
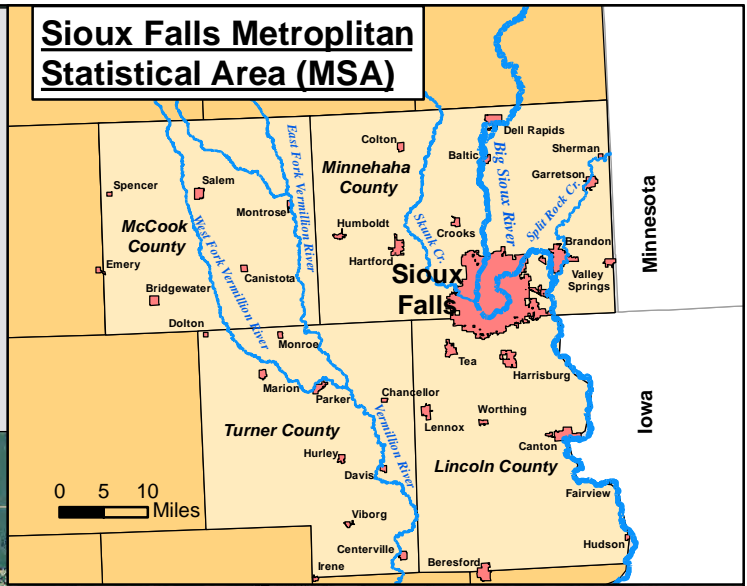
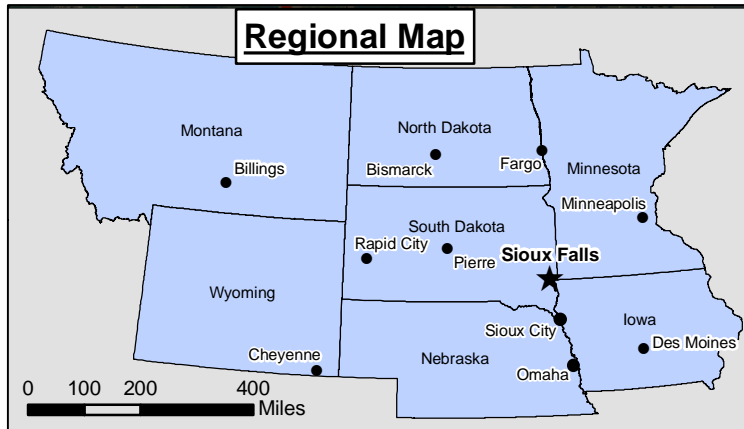
Since 1937, Sioux Falls Regional Airport has expanded to accommodate the aviation needs of the community, and has helped support the social and economic vitality of the City of Sioux Falls and the Sioux Empire region. The City is a regional commercial and business hub within an agricultural region of the country. Sioux Falls has grown from a community of approximately 40,000 to a city of nearly 160,000 people. The City enjoys no state corporate income tax and has a low unemployment rate. Sioux Falls is home to a number of diversified industries including growing banking and health care companies. Sioux Falls is also a tourism gateway for those visiting South Dakota, particularly in the fall months for pheasant hunting. Growth in tourism and thriving local businesses in health care, financial, and agricultural-related businesses are seen locally as significant contributors to increased airport use and passenger enplanements.

As a result of this community growth and proximity to downtown Sioux Falls, commercial, industrial and recreational land uses now surround the majority of the airport. The Big Sioux River and diversion channel surrounds the airport environs, and the Big Sioux Aquifer is located directly under the airport. Twenty one water wells installed prior to the airport are located within what is now airport property.

Sioux Falls Regional Airport is the largest in the state of South Dakota serving five domestic airlines flying to eleven non-stop destinations. The airport enplaned 474,118 passengers in Federal fiscal year 2013 making the airport classified as a small hub commercial service airport by FAA. The terminal building has been rehabilitated several times to accommodate growing passenger demands.

Planning Considerations

Planning considerations for an airport master plan are features, elements or events that should be evaluated because they have the potential to affect the airport facility over the long term.

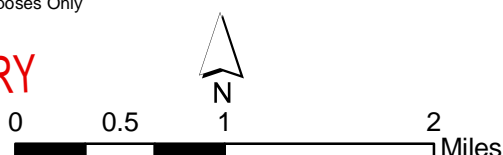


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*Intended for Planning Purposes Only



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Sioux Falls Regional Airport
Joe Foss Field
Airport Location Map
Figure 1-1

Previous Master Plan

Since 1995, the Airport Authority has historically completed Master Plan studies or updates every five to seven years. The last Master Plan for Sioux Falls Regional Airport was completed in 2007 which included an in-depth review of the passenger terminal complex. This study recommended several improvements including:

Projects Completed

- Terminal building upgrades including ticketing expansion and In-line baggage screening
- Terminal concourse upgrades including expanded departure hold rooms
- Expansion of airport curbside access, public parking and rental car parking
- Construct cross-field taxiway
- Develop west general aviation area and taxiways
- Relocation of snow removal equipment and maintenance facilities

Projects In-Process

- Runway 3 Runway Safety Area improvements
- Continued rehabilitation of airfield pavements in deteriorating condition
- Terminal building upgrades including security checkpoint expansion

Projects Not Completed

- Upgrade airfield lighting and equipment for Category II approaches
- Construct holding aprons Runway 3 and 33
- Expand the east general aviation apron
- Relocate Runway 21 perimeter road

Since, many of the improvements proposed in the 2007 master plan have been constructed by the airport, there is a need to update the Master Plan study to identify priority projects to meet on-going aviation needs.

Local Considerations

Between 2007 and 2013, the airport has seen many changes that affect airport planning. Some planning considerations from the previous Master Plan are still applicable today.

Obstructions

Joe Foss Field has several runway approaches with obstructions to air navigation including Runway 3, 21, 15 and 33. The airport is taking steps to remove natural growth obstructions to the Runway 3 end by 2014. Other obstructions that are man-made present more challenging planning issues. Obstructions need to be identified and a plan identified to address these obstructions. Obstructions that are not adequately addressed can potentially affect the usability and future enhancement of airport facilities. Special attention should be placed on maintaining airspace compatibility with the future 60th Street North improvements as identified in a May 2012 feasibility study.

Compatible Land Use

The airport needs to take steps to control land uses outside of airport property for the safety of those in the air and on the ground. The current airport overlay zoning addresses airspace and aircraft noise land uses but does not address other land use zoning including FAA's interim Runway Protection Zone policy issued September 27, 2012. These standards will be reviewed in the plan and recommendations will be provided to maximize compatible land use around the airport.

Airport Access

All existing airport access points initiate from Minnesota Avenue on the east edge of the airport. With airport development occurring on the west side of the airport to include a new Fixed-Base Operator (FBO) in 2010, an additional access point from the west for user convenience and safety should be considered. Local improvements including the Sanford athletic and sports complex, and planned expansion of the 60th Street North corridor creates potential opportunities for a westward connection.

Development Constraints

The airport is surrounded on all sides by development. Constraints include major roadways, railroads, waterways, development, recreational land uses, and rising terrain. These elements are constraining the airport from major development. Future facility requirements will be calculated to determine what “footprint” is needed for the facility to meet aviation demands and if they can be safely realistically accommodated. This includes considerations for air carrier, general aviation, and air cargo needs.

Passenger Terminal Complex

Sioux Falls Regional Airport has seen growing passengers as a result of increased demand and additional flights provided by the airlines. As a result, the airport has completed significant enhancements to the access roads, curbside areas and parking lot. Even after these improvements, the airport is projecting a need for additional parking areas to be constructed in the near future. An airport hotel connected to the terminal building is planned to be constructed in 2014. This area is constrained on the southeast side of the airfield by Minnesota Avenue, the runway complex and the east general aviation area. Demands like this will be re-evaluated through this master plan and realistic methods to meet the needs will be identified to meet these growing demands on infrastructure. For example, parking lot expansion needs may affect the previously planned additional airport concourse and air carrier apron expansion. Alternatives need to be developed that consider the highest and best use of the space that remains.

The terminal building has been remodeled and expanded several times to meet growing passenger demands. Enhancements are on-going; however a comprehensive plan is needed to solve other expansion issues including the location of Federal Inspection Services and baggage carousel area. The terminal building and concourse plan needs to be completed in concert with other surrounding improvements.

Air Cargo, General Aviation and Air/Army National Guard

Air Cargo operations now utilize the entire dedicated apron space located in the northeast area of the airport and based on current users need to be expanded. Any cargo apron expansion affects other airfield facilities which need to be reviewed. Because the location of air cargo operations is collocated with general aviation development this Master Planning effort will focus on determining a long term solution for both activities.

The missions of the National Guard facilities at the airport have not changed, however each facility has recently completed a Master Plan and any planned facilities need to be incorporated into the airport planning efforts.

Community Growth

The City of Sioux Falls and surrounding area is projected to continue to grow at a steady rate of about 2 percent per year. This increase in population and business growth will likely translate into additional demand for the passenger terminal, air cargo, general aviation and support aviation facilities at the Sioux Falls Regional Airport. Updated facility requirements are necessary for the airport to continue to grow to meet these community aviation needs.

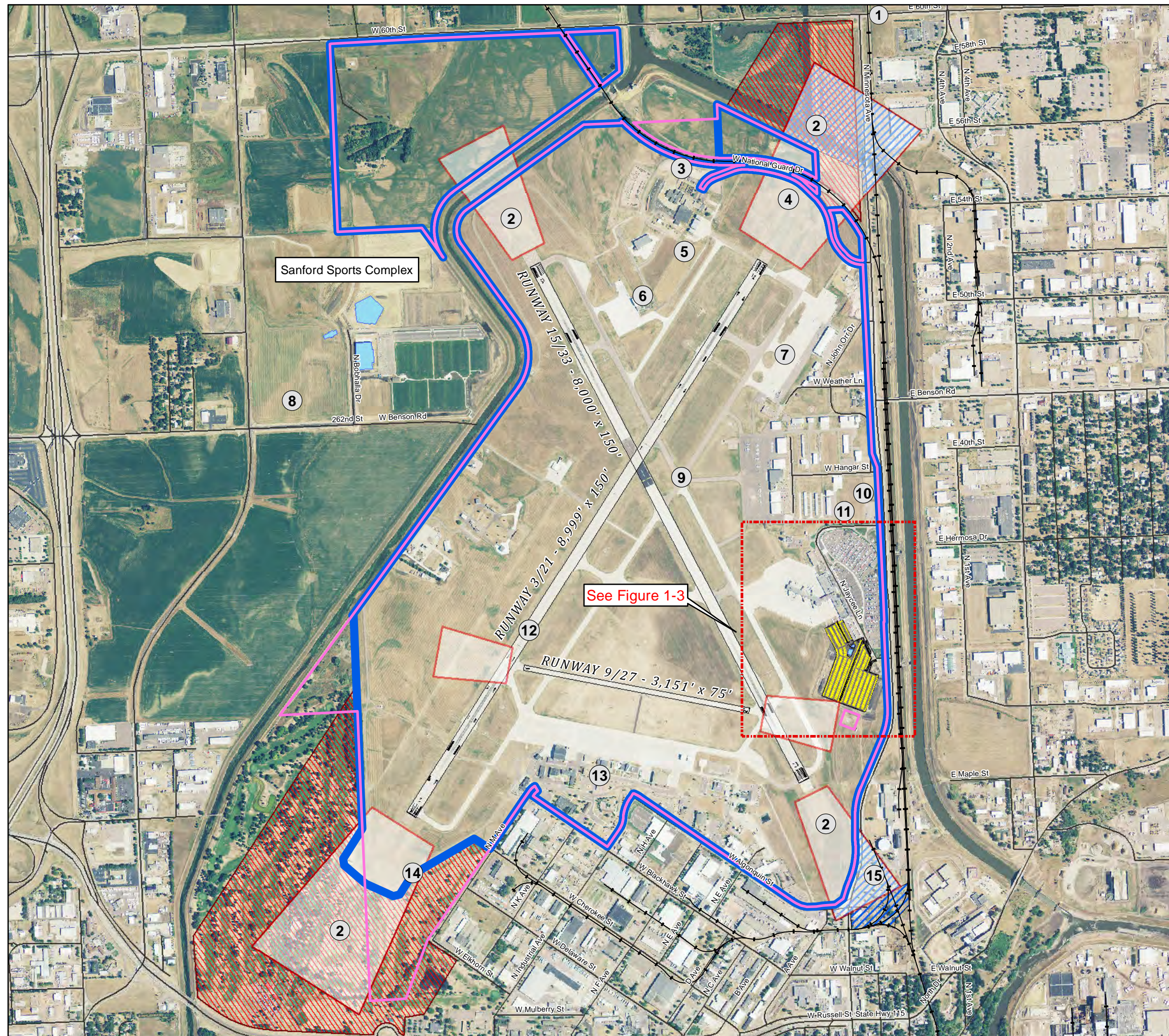
A graphical representation of the planning considerations for this Master Plan study is shown on **Figures 1-2 and 1-3: Planning Considerations Map**.

Planning Objectives

With the completed Master Plan projects, continued increase in activity, and constraints on airport development, the Sioux Falls Regional Airport Authority authorized an update to the Master Plan. The Airport Authority contracted with Goldsmith-Heck Engineers and KLJ to prepare an update to the Airport Master Plan to examine options for the airport to address the planning considerations, including developing and analyzing alternatives and recommending a course of action.

Based on the background and planning considerations, the planning objectives for this study identify the methods used to meet the airport development goals outlined by the Sioux Falls Regional Airport Authority. The objectives are identified as follows:

- Formulate a clear understanding of the airport's role and the types of aircraft and aviation activities it is expected to serve.
- Develop an integrated, long-term airport development plan that addresses the functional locations and conceptual layouts of facilities such as airport support buildings, parking, general aviation development, taxiways and terminal building.
- Identify and document issues the proposed development will address. Specific issues include:
 - Evaluate road access options for the west General Aviation area
 - Review existing airline passenger terminal area specifically related to:
 - Expansion of terminal and apron for projected passenger demand and evaluate most viable layout



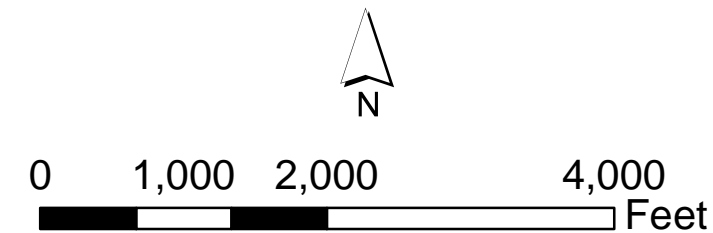
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- Existing Airport Property
- Future Airport Property
- Railroad
- FAA Runway Protection Zone
- Existing Airport Easement
- Future Land Exchange Easements

Overall Planning Considerations:

- Review aviation demand and identify facility needs for the next 20 years.
- Identify a full range of concepts and alternatives considering socioeconomic, environmental and financial impacts.
- Develop a realistic project implementation plan considering financial options.

1. Analyze proposed 60th street improvements for airspace and land use compatibility with existing and future runway use.
2. Evaluate land use compatibility within the existing and planned FAA Runway Protection Zones.
3. Review roadway alignment options to develop a west access roadway to the airport.
4. Evaluate options for on-airport perimeter road(s) around airport.
5. Review future general aviation hangar development requirements.
6. Review roadway access and development needs for west general aviation/support area.
7. Review air cargo requirements and facilities necessary to adequately and safely support growing cargo operations
8. Review existing and planned surrounding land uses for compatibility with airport operations.
9. Review taxiway system and need for any safety and/or capacity improvements.
10. Consider options to maximize use of existing airport property,including non-aeronautical uses.
11. Review general aviation development and enhancement options in the east area.
12. Review existing and future runway system infrastructure and navigational aids and the need for any safety and/or capacity improvements.
13. Coordinate with National Guard to evaluate facility needs.
14. Incorporate ongoing airport safety improvements into future plan.
15. Identify land use and airspace compatibility needs to enhance existing and future planned runways.



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Legend

- Existing Airport Property
- Railroad

1. Analyze location and airfield sight lines of Air Traffic Control tower relative to other future improvements.
2. Consider future hotel in passenger terminal complex planning.
3. Evaluate long-term curbside facility needs.
4. Evaluate need for additional gates and/or concourse expansion and future layout compatible with other passenger terminal complex improvements.
5. Consider recent terminal improvements in planning future facilities.
6. Develop long-term aviation forecasts of future passengers to determine capacity needs.
7. Review need for future terminal building expansion for capacity.
8. Identify future baggage carousel capacity and functionality.
9. Review Air Carrier parking apron access and size to meet normal and abnormal operational needs.
10. Review space modifications for Federal Insepection Services.
11. Develop plan that evaluates the highest and best use of space in the passenger terminal complex.
12. Analyze future automobile parking capacity and infrastructure needs and develop a compatible plan that can be implemented.
13. Develop location and layout of consolidated Rental Car Facility.



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Sioux Falls Regional Airport
Joe Foss Field
Planning Considerations Map
Passenger Terminal Complex
Figure 1-3

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- Expansion or modification of space for Federal Inspection Services
- Baggage carousel capacity and functionality
- Automobile parking capacity (passengers, rental cars, employees)
- Review existing General Aviation development and expansion alternatives
- Review cargo requirements and facilities necessary to support cargo sorting
- Evaluate National Guard facility needs including long range anticipated mission
- Evaluate existing runway length and need for any extensions
- Evaluation options for perimeter roads around airport
- Review financial options for funding Airport Capital Improvement Plan
- Justify the proposed development through the technical, economic, and environmental investigation of concepts and alternatives.
- Provide an Airport Layout Plan identifying existing and proposed airport development.
- Establish a realistic schedule for the implementation of the development proposed in the plan, particularly the short-term capital improvement program.
- Propose an achievable financial plan to support the implementation schedule.
- Identify subsequent environmental evaluations that may be required before a proposed project is approved.

Master Plan Process

Guidelines for completing a Master Plan are set forth in [FAA Advisory Circular 150/5070-6B](#). Each master plan study scope and level of effort is customized to fit each individual airport's needs and address critical issues. The recommendations made in the study allow airports to address key issues to allow for safety, capacity and compatibility to meet airport demands and community needs. Plans are flexible to provide demand-driven triggers for improvements.

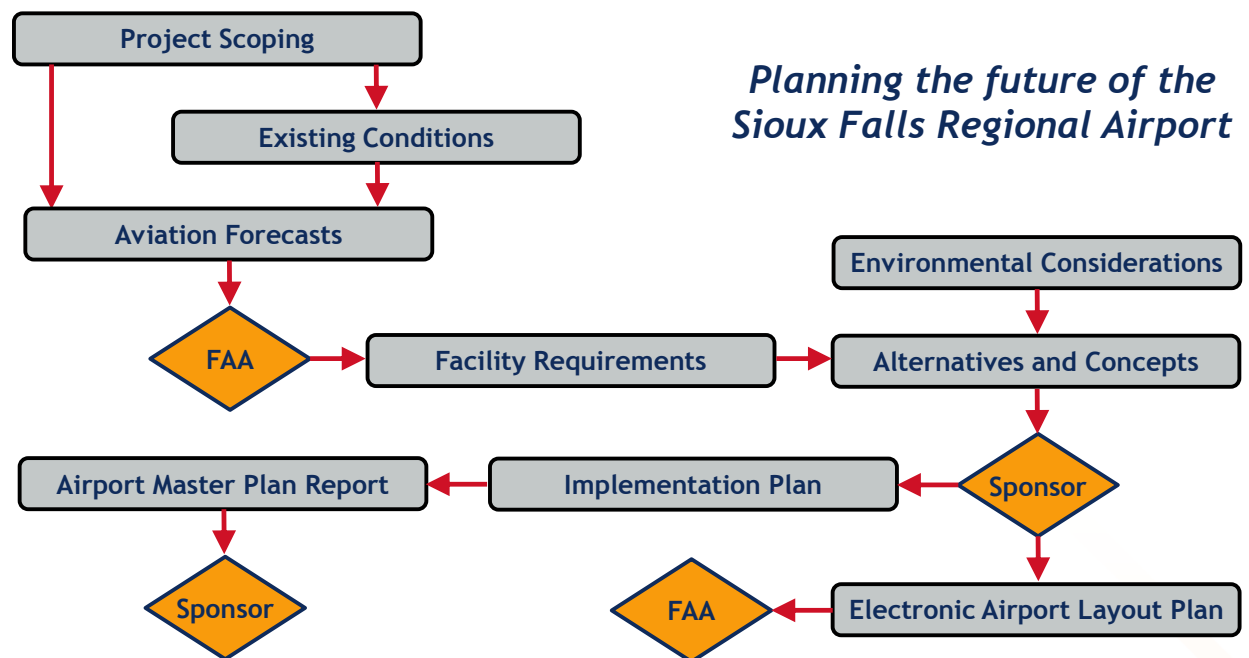
The Airport Master Planning process involves several coordinated steps. The master plan study for Sioux Falls Regional Airport consists of the following elements:

- **Pre-Planning** - Airport development concerns are identified and planning objectives prepared to address these issues. An overall vision for the study is formulated that will guide the process.
- **Inventory of Existing Conditions** - Overview of airport setting, infrastructure and assets which includes airside, landside and support facilities; airspace, navigational aids and airport access.
- **Forecast of Aviation Demand** - Using established forecasting methods, estimate current and project future airport activity for general aviation, air cargo, and passenger enplanements.
- **Demand/Capacity Analysis and Facility Requirements** - Compare the existing capacity with the future demand and identify the facility requirements to satisfy the aviation safety, capacity and compatibility needs.
- **Alternatives Development and Evaluation** - Identify and evaluates options considering both on-airport and off-airport impacts consistent with the study goals and objectives. A preferred alternative is selected.

- **Environmental Overview** - Provide an overview of anticipated environmental impacts as part of the development of alternatives.
- **Implementation Plan** - Provide a comprehensive plan for implementation of the preferred alternative including project triggers, sequencing, and cost estimates.
- **Land Use Compatibility** - Complete a comprehensive review of land surrounding the airport for potential uses that are incompatible with safe airport operations and provide mitigation recommendations.
- **Airport Layout Plan** - Document the existing and planned airport facilities through a set of drawings approved by the airport sponsor, state and FAA.
- **Stakeholder and Public Involvement** - Prepare and execute a plan to engage important airport stakeholder and the public throughout the study to gather their input and address their concerns.

During this study, a separate FAA Aeronautical Survey was completed. The data collected in this survey was used to prepare an electronic Airport Layout Plan (ALP) drawing set for FAA review and approval.

Exhibit 1-1 - Airport Master Planning Process Flowchart



Source: KLJ

Study Documentation & Approvals

The Master Plan Update was divided into chapters of information to document airport planning data, analysis, findings and recommendation of the study. The chapters included in the narrative report are the following:

- Chapter 1 - Introduction

- Chapter 2 - Existing Conditions
- Chapter 3 - Forecasts
- Chapter 4 - Facility Requirements
- Chapter 5 - Alternatives Development and Evaluation
- Chapter 6 - Implementation
- Chapter 7 - Environmental Review and Solid Waste Plan
- Chapter 8 - Land Use Compatibility

Each narrative report chapter was prepared separately and distributed to the Sioux Falls Regional Airport Authority staff initially for review. After airport staff review, each draft chapter was made available to key airport stakeholders for input prior to a final review and approval by the Sioux Falls Regional Airport Authority. Each approved final draft chapter was then published on the airport's website for any final public comments.

In addition, an Executive Summary report has been prepared at the end of the master plan study to concisely document the recommendations of the study. This document was distributed to airport stakeholders and the general public and is available on the airports website.

The Sioux Falls Regional Airport Authority Board provided master plan study approvals progressively thorough the project during their public meetings. The Master Plan Update was adopted by the Sioux Falls Regional Airport Authority on [DATE]. The Airport Layout Plan was submitted to FAA for review and approval on [DATE].

Public Involvement

Public involvement is a key component to the successful development of an Airport Master Plan study. The purpose is to encourage information sharing and feedback from airport stakeholders including the airport owner, airport users/tenants, local government officials, resource agencies, elected and appointed officials and the general public. Public involvement provides valuable input to assist the airport owner in decision making and develop consensus on study conclusions.

Airport focus groups were established to provide input throughout the life of the study. The purpose of establishing focus groups was to facilitate group discussion and feedback from stakeholders groups. The sponsor chose this method over a technical advisory committee made up of stakeholder representatives. Focus groups represented the following airport stakeholders:

- General public
- Local Government
- Airport/Airlines/TSA/FAA
- Air Cargo
- Airfield Tenants
- Terminal Tenants

- South Dakota Air/Army National Guard

Focus groups were invited and attended kickoff meetings with the purpose of providing a summary of airport inventory items and planning considerations. These meetings were held on October 7-9, 2013. Members of the focus groups received copies of draft study documentation for review and comment. A call for input was made during the inventory, facility requirements and alternatives stage for more detailed input to assist the Airport Authority Board with decision making.

A Public Open House was held at two points during the master plan study; kickoff (October 9, 2013) and recommendations [DATE]. An Open House provided a forum for the Airport to share information on the study and solicit feedback from the public. The public was also invited to Airport Authority Board meetings to provide feedback progressively during this public forum. Draft documents on the study were posted progressively for public review. An online comment form ran throughout the life of the project for provide the public with another forum to provide comments.

Study meetings with the Airport staff were held at key stages throughout the project to facilitate small group collaboration and feedback on study elements.

See **Appendix X - Public Involvement** for copies of public involvement meeting agendas and summaries.

Conclusion

This Airport Master Plan Update study for the Sioux Falls Regional Airport provides the Airport Authority with a usable guidance document to assist with decision making with airport capital improvements to meet aviation demands for the foreseeable future. As with any planning study, assumptions made are subject to change due to unpredictable internal and external events. For this reason, this study should be reviewed periodically to verify project scope and triggering events are still valid to meet the airport needs.