CHAPTER 6: IMPLEMENTATION

Introduction

The implementation and compatibility plan provides guidance on how to carry out the preferred development recommendations identified in **Chapter 5: Alternatives Analysis**. Based on the preferred development plan, the improvement projects needed at the Perham Municipal Airport over the planning period can be formulated. This chapter includes the following sections:

- Project Sequence
- Financial
- Compatibility

Background

Each project is sequenced to balance demand, schedule, other projects, environmental/agency approval, funding, and financial constraints. The project plan may change over time to react to changing conditions, but is flexible so the airport can react to change and re-prioritize projects based on actual demand.

A more detailed implementation and financial plan is identified for short-term projects (i.e. 1-10 years), because needs are more realistically anticipated based on available funding and actual demand. There is more uncertainty in project funding, demand, and local project importance in the long-term. When reaching that point, airport planning documents should be updated.

All planning-level project costs presented are in 2020. Final project costs are subject to change based on actual construction and project formulation.

Many of the projects identified are demand-driven based on the Planning Activity Levels (PALs) established in the approved aviation forecasts. The implementation timing is estimated from the FAA-approved activity forecasts. Changes in airport activity may affect the timing of demand-driven improvements.

Based on the PALs and other regular pavement and safety needs, some airport development capacity projects may not be able to be sequenced to meet PALs within a realistic funding plan. These projects should be initiated within a few years of their PAL demand trigger to account for anticipated available funding.

Project Sequence

Significant individual projects are described in this section along with information about the project purpose, scope, and triggering events. The recommended project phasing at Perham is based on anticipated needs and available funding. This information provides guidance to the airport sponsor and funding agencies on future implementation steps.

Short-Term Projects (0-10 Years)

Short-term projects cover the planning period for the next ten years through 2030, generally corresponding to the forecast Planning Activity Levels (PAL) 1 and 2. Projects in this phase address the highest priority needs justified for funding. Significant short-term projects are further described in **Table 6-1 – Short-Term Projects.** Multiple individual projects were combined for each and are scale-able to the availability of state and local funding. The individual projects are listed in **Table 6-3 – Capital Improvement Plan.**

Table 6-1 - Short-Term Projects

Project		Scope	Estimated Cost		
T-Hangar and Taxilane Extension	Prelim	Documentation as Required by MEPA	$ 1,000,000	Trigger	Demand for additional aircraft storage
		Construct 6-Unit T-Hangar, site development, hangar frontage pavement, extend taxilanes 150'		Justification	Aircraft storage needed to accommodate additional based aircraft. Current hangars at capacity with 7 individuals on waitlist.
Apron Expansion and Pavement Reconstruction	Prelim	Permitting and Documentation as Required by MEPA	$ 3,260,000	Trigger	Pavement Life; demand for transient tie-downs, ADG-II maneuvering separation
		Apron expansion to the south and west, increase aircraft parking area, reconstruct existing apron pavement, add additional access taxiway, relocated aircraft fuel system, reconstruct terminal building		Justification	Pavements must be maintained; Apron expansion and fuel relocation needed to meet design standards.

Source: KLJ Analysis

Long-Term Projects (10+ Years)

Long-term projects cover the remainder of the planning period through the next 11 to 20 years (2040). Projects are identified based on forecast project activity and funding. The project sequencing for demand driven projects in this phase may change because of changes in aviation activity, new standards, funding, or even new local priorities. Long-term projects are important to consider in airport master planning so appropriate steps, funding, and resources can be allocated. It also enables the airport to react to changes in airport activity. Significant long-term projects are further described in **Table 6-2 Long-Term Projects**.

Table 6-2 - Long-Term Projects

Project		Scope	Estimated Cost		
Large Hangar Development and Taxilane	Prelim	Main Apron Expansion, Documentation as Required by MEPA	$ 1,050,000	Trigger	Demand for large aircraft storage
		Construct 35 ft wide taxilane, vehicle access road, and parking.		Justification	Need infrastructure and space for large aircraft storage.

Parallel Taxiway	Prelim	Main Apron Expansion, Documentation as Required by MEPA	$ 3,060,000	Trigger	Available funding, reduce delay
		Construct parallel taxiway (4,100' x 35'), additional exit taxiway.		Justification	Reduces aircraft time on runway

Source: KLJ Analysis

Capital Improvement Plan (CIP)

The CIP is a key element in the implementation plan. The CIP identifies the project title, year, estimated costs, and anticipated funding for airport improvements. Larger projects are often divided into smaller elements that reflect how projects are approved, designed, and constructed. Each project is requested through the CIP project programming and grant application process. The CIP is updated annually to program State grant funding. The proposed updated Perham CIP identifies approximately $2.65 million in airport improvements over the next 10 years see **Table 6-3 Capital Improvement Plan**.

Table 6-3 – Capital Improvement Plan

Year	Project	Scope	Triggering Event	Estimated Cost	State Funds	Local Funds
Near-Term (2020-2025)						
2020	Rehabilitate Pavement	Crack seal and seal coat Runway 13-31	Routine improvements to maintain structural integrity	$110,000	$104,500	$5,500
2021	Install AWOS	Install AWOS-III	Improve information and access to airfield	$200,000	$190,000	$10,000
2021	Acquire Easement	Acquire easement (35 Acres) for AWOS	Installation of AWOS	$100,000	$95,000	$5,000
2022	Acquire Equipment	Acquire SRE - Snow Blower for front end loader	Existing equipment reaches end of useful life	$175,000	$157,500	$17,500
2023	Remove Obstructions	Grade earth (3 acres) north of Runway 13-31	Remove airspace obstructions	$175,000	$166,250	$8,750
2024	Acquire Equipment	Tractor mower and snowblower	Existing equipment reaches end of useful life	$65,000	$58,500	$6,500
			Sub-Total	**$825,000**	**$771,750**	**$53,250**
Mid-Term (2025-2030)						
	Acquire Equipment	Acquire Snowplow	Existing equipment reaches end of useful life	$200,000	$180,000	$20,000
	Acquire Equipment	Acquire Lawnmower	Existing equipment reaches end of useful life	$65,000	$58,500	$6,500
	Fuel System	Replace/Relocate Fuel System	Meet separation standards for new taxilane	$250,000	$175,000	$75,000
	Building Maintenance	Paint buildings	Routine maintenance of existing facilities	$20,000	$15,000	$5,000
	Expand Apron Pavement	Expand apron pavement (4,500 SY)	Accommodate ADG-II aircraft, additional tie-downs	$915,000	$869,250	$45,750
	Reconstruct Apron Pavement	Reconstruct existing apron pavement (6,900 SY)	Sequenced with expansion of main apron	$1,440,000	$1,368,000	$72,000

	Construct Taxiway	Construct taxiway for secondary runway access	Remove conflict on single access taxiway	$180,000	$171,000	$9,000
	Construct Terminal/SRE Building	Construct new terminal/SRE combined facility	Existing facility reaches end of useful life	$475,000	$451,250	$23,750
	Site Development	Site work for future FBO facility	Terminal/SRE Facility	$100,000	$95,000	$5,000
	Construct T-Hangar	Construct 6-Unit T-Hangar, hangar site, and pavement access	Demand for small aircraft storage	$800,000	$0	$800,000
	Construct Taxilanes	Extend north taxilane 150' in small hangar area	Demand for small aircraft storage	$100,000	$95,000	$5,000
	Construct Taxilanes	Extend south taxilane 150' in small hangar area	Demand for small aircraft storage	$100,000	$95,000	$5,000
			Sub-Total	**$4,645,000**	**$3,573,000**	**$1,072,000**
Long-Term (2030-2040)						
	Rehabilitate Pavement	Runway 13-31 mill and overlay	Routine improvements to maintain structural integrity	$400,000	$380,000	$20,000
	Construct Taxilane	Construct 35' wide taxilane for large hangar area	Demand for large aircraft storage	$580,000	$551,000	$29,000
	Construct Vehicle Pavement	Reconstruct parking lot, construct vehicle access for large hangar area	Demand for large aircraft storage	$470,000	$446,500	$23,500
	Acquire Equipment	Acquire SRE - loader and snowblower	Existing equipment reaches end of useful life	$350,000	$315,000	$35,000
	Acquire Equipment	Acquire pickup truck	Existing equipment reaches end of useful life	$30,000	$27,000	$3,000
	Rehabilitate Pavement	Crack seal apron and taxiway	Routine improvements to maintain structural integrity	$50,000	$37,500	$12,500
	Remove Taxiway	Removal of existing taxiway	Pavement reaches end of useful life	$75,000	$71,250	$3,750
	Construct Taxiway	Construct realigned taxiway	Existing pavement reaches end of useful life	$155,000	$147,250	$7,750
	Replace / Relocate Beacon	Replace and relocate airport beacon	Large aircraft hangar area development	$67,500	$64,125	$3,375
	Unpaved Road Realignment	Realign unpaved road outside of Runway 31 Clear Zone	Remove land use from clear zone as opportunity presents	$50,000	$47,500	$2,500
	Construct Parallel Taxiway	Construct full length parallel taxiway	Available funding, reduce runway downtime	$3,060,000	$2,907,000	$153,000
	Construct Taxilane	Extend north taxilane 150' in small hangar area	Demand for small aircraft storage	$100,000	$95,000	$5,000
	Construct Taxilane	Extend south taxilane 150' in small hangar area	Demand for small aircraft storage	$100,000	$95,000	$5,000
	Construct Taxilane	Construct connector taxilane, vehicle parking lot in small hangar area	Demand for small aircraft storage	$290,000	$275,500	$14,500
	Construct Hangar	Construct 6-Unit T-Hangar, hangar site, and pavement access	Demand for small aircraft storage	$800,000	$0	$800,000
			Sub-Total	**$6,577,500**	**$5,459,625**	**$1,117,875**
			TOTAL	**$12,047,500**	**$9,804,375**	**$2,243,125**

Source: KLJ Analysis

Financial

The implementation plan considers the airport's ability to fund the projects identified in this planning study. Projects in the short-term are evaluated in more detail for realistic project sequencing based on identified needs, airport priorities and available funding. Financial feasibility is a major consideration in developing the implementation plan and Capital Improvement Plan (CIP).

Airport funding for projects can come from a variety of sources. Funding sources for Perham can be categorized into either State funding and Local or Private funding.

Detailed information about these funding programs can be found in **Appendix B – General Aviation Airports 101 (Airport Funding)**. A realistic project implementation plan must consider financial resources. The financing strategy for the Perham Municipal Airport provides sufficient state and local funding for future airport improvements. Projected funding sources are based on 2019 legislation.

State Funding

The Minnesota Department of Transportation, Office of Aeronautics (MnDOT Aeronautics) manages the State Airports Fund and administers several grant and loan programs for eligible airports. These programs include the airport construction grant program, airport operations and maintenance program, navigational aids, and the hangar loan revolving account program.

Many of the capital improvements are funded at 95% State funding for non-NPIAS airports with population less than 5,000, like the City of Perham. Fueling systems and trucks, which are revenue producing, are funded at 70%. Hangar buildings however are not eligible for State funding but an interest-free 20-year loan for 80% of the building cost is available.

The State funding will be the primary source of funding to be used for airport development. This is expected to be just over $4,100,000 through year 2030. The City of Perham should stay apprised of the State's funding programs and funding levels to determine the impact of that funding on the projects planned for the Perham Municipal Airport.

Local Funding

Local funding is an essential element of project funding for maintenance and development projects on the Perham Municipal Airport. Although many projects qualify for state funding assistance, some projects must be funded entirely with local funding.

The city's airport operating fund will be used in part to fund a portion of the local share of capital improvement projects. State funded improvements currently require a local funding match typically between 5 to 30 percent. Perham currently collects revenue from leases and fuel sales while also receiving contributions from the city's general fund. Budgeting for significant capital improvements is critical to allow the airport to have sufficient funds to cash flow projects and provide a local matching share. Bonds are an option for debt financing, which are backed by the creditworthiness and taxing power of the municipality.

A local financing plan will be needed to fund a 6-Unit T-hangar in the small aircraft hangar area. Hangar buildings are not eligible for State funding however an interest-free 20-year loan for 80% of the building cost is available. Leasing the available land for private investment may also be an option. Additional

information on funding hangars can be found in **Appendix B – General Aviation Airports 101 (Airport Funding).**

In summary, there is a total local funding need of just over $1,100,000 for the identified airport improvements through year 2030.

Compatibility

Overview

Airports are community assets providing significant benefits. They facilitate the movement of people, goods, and services, promote tourism and trade, stimulate business development, and support a variety of jobs.

The objective of land use planning is to guide on- and off-airport land use development to be compatible with airport operations. The airport directly controls on-airport compatible land uses, which primarily serve aeronautical activities. The airport does not directly control off-airport land uses. Surrounding land uses compatible with airports typically include those uses that can co-exist with a nearby airport without either constraining the safe and efficient operation of the airport or exposing people working or living nearby to unacceptable levels of noise or safety hazards. Compatible land use also considers minimizing potential hazards to aircraft and the flying public. The impact of airport planning decisions extending well beyond the airport property line must be considered.

Land use planning around airports is important to airports and communities for several reasons:

- **Safety** - Compatibility is needed to maintain safety of the general and flying public. Risk should be reduced to an acceptable level. The airport must also maintain operational utility within identified safety and risk criteria.
- **Airport Utility** - Land uses around airport should provide that there are no undue restrictions placed on the airport's existing or planned future arrival and departure procedures. Opportunities for future development identified in the Airport Master Plan and shown on the approved Airport Layout Plan should be considered.
- **Human Environment** - Balancing the human environment with airport operations is important to maintain an acceptable level of airport impacts (i.e. noise and visual exposure) with the surrounding community.
- **Economic Development** – Operational restrictions placed on the airport because of land use compatibilities have the potential to have a trickle-down effect on the community. This reduces the community's ability to accommodate the aviation needs of the public and local businesses, thus limiting economic development opportunities.

Incompatible land uses are one of the largest issues facing airports, often resulting in conflicts between airports and their communities. They also may result in airport operational and grant project funding implications in certain situations. Building consistency between the recommendations in this study with airport land use compatibility standards and area-wide planning is vital for maintaining compatible land use.

The objective of this section is to assist the Perham Municipal Airport in identifying land use standards compatible with the development plan and provide recommendations so the airport can continue to meet safety and compatibility criteria. This chapter should become the framework for future land use planning efforts between the Airport, City of Perham, and Otter Tail County.

Roles and Responsibilities

AIRPORT SPONSOR

As the airport sponsor, the City of Perham is responsible for the protection of the airspace around the Perham Municipal Airport and the safe operation of aircraft using the airport. This responsibility is commonly referred to as ensuring compatible land use around the airport. This is typically accomplished through zoning regulations and easements. In most cases, these tools are a more practical and cost-effective method for a sponsor to affect compatible land use outside the airport's property than through land acquisition.

FEDERAL AVIATION ADMINISTRATION (FAA)

The FAA can provide guidance to promote compatible land development around airports; however, it has no regulatory authority for controlling land uses. State and local governments are responsible for land use planning, zoning, and regulations.

STATE OF MINNESOTA

The State of Minnesota has adopted laws to encourage multi-jurisdictional airport zoning. Minnesota Statute 360.063 is the enabling legislation that allows airport owners to administer and enforce, under the police power, airport zoning regulations for the airport hazard area. Tools include the creation of a multi-jurisdictional joint airport zoning board, extraterritorial zoning authority, and the withholding of state funds for noncompliance airport sponsors. Airport zoning procedural steps are defined in Minnesota Statutes Chapter 360.061 to 360.074.

Minnesota Administrative Rules 8800.1200 defines the criteria for determining air navigation obstructions, which generally follows the federal FAR Part 77 standard. Minnesota Administrative Rules 8800.2400 defines the minimum airport zoning standards. These zones are intended to restrict land uses that may be hazardous to the operational safety of aircraft using the airport, and to protect the safety and property of people on the ground in the area near the airport.

MnDOT Office of Aeronautics advises local governments on land use compatibility issues, as well as monitors and enforces compliance with the state's minimum airport zoning standards and related procedures. Some flexibility is given to the minimum zoning standards based on the specific details and operational uses of the airport. More information is available from the state's Airport Land Use Compatibility Manual.

SURROUNDING JURISDICTIONS

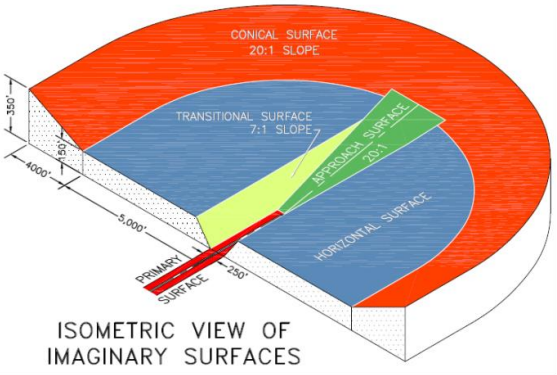
Local jurisdictions are responsible for developing and enforcing land use planning, zoning, and regulations. Development proposals are reviewed and approved at the local level through an established process. The local authority enforces multi-jurisdictional airport zoning regulations for proposed development. Surrounding jurisdictions affected by the Perham Municipal Airport include the City of Perham and Otter Tail County.

Land Use Compatibility Elements

Three key elements should be considered to achieve land use compatibility at any airport:

- Airspace
- Safety
- Compliance

AIRSPACE



Guidelines & Evaluation

Airspace compatibility includes avoiding vertical development that reduces the level of safety, increases risks of aircraft accidents, or measurably reduces the operational utility of airports. 14 CFR Part 77, *Objects Affecting Navigable Airspace* defines obstructions to air navigation. Other airspace requirements are defined in FAA Advisory Circulars and Orders. All Part 77 obstructions are a hazard to air navigation unless an aeronautical study concludes otherwise.

It is important to acknowledge that the FAA's role is limited to evaluating the aeronautical effects of proposed structures; the FAA has no legal authority to stop the construction of any proposed structure. Minnesota's state law requiring airport zoning and associated minimum standards protect FAR Part 77 airspace surfaces.

The City of Perham has an airport zoning ordinance in place from 1996 that protects for airspace obstructions and land use safety zones. The ordinance covers the existing configuration of the airfield at the time. The primary Runway 13-31 has remained unchanged however the unpaved Runway 9-27 has since been decommissioned. The existing ordinance for Runway 13-31 will align with the proposed Airport Layout Plan as no changes are depicted through the ultimate configuration.

Action Plan & Recommendations

Recommendations to maintain airspace compatibility at Perham include:

- Promote consistent enforcement of the existing Airport Safety Zoning Ordinance between the City of Perham and Otter Tail County.
- During next community zoning consider updating the airport zoning ordinance to reflect the removal of Runway 9-27.
- Consider provisions in building codes to require FAA Form 7460-1 *Notice of Proposed Construction or Alteration* to be submitted and reviewed by the Airport as part of the local building permit approval process.
- Follow through with clearing of obstructions identified in the Airport Layout Plan.

SAFETY

Design standards and regulations prescribe several zones and imaginary surfaces intended to protect aircraft and their occupants while landing or taking off. However, the safety element primarily

associated with compatible land use is focused on minimizing risks to persons and property on the ground.

MnDOT Clear Zone

MnDOT Office of Aeronautics implemented Runway Clear Zone (CZ) requirements to restrict land uses which may be hazardous to the operational safety of aircraft and protect life and property in runway approach areas. See **Chapter 4: Facility Requirements** for definitions. The MnDOT Clear Zone is a defined land use protection area.

MnDOT Aeronautics expects airport sponsors to directly control land within the CZ. The airport currently owns the land within the Runway 13-31 CZ, however there is a private driveway within Runway 13 CZ and an unpaved road / snow mobile trail within Runway 31 CZ. MnDOT Aeronautics currently encourages airports to relocate roadways from the CZ if opportunities exist as they consider roadways to be hazardous to the operational safety of aircraft. During this study, it was determined that the private driveway would remain due to infrequent use and no other feasible alternative to connect the private property to County Highway 80. The unpaved road / snowmobile trail should be located outside the Runway 31 CZ as the opportunity arises.

Wildlife Hazards

The FAA is focused on minimizing safety risks associated with wildlife near an airport. Hazardous wildlife uses natural or artificial habitats on or near an airport for food, water, or cover. Wildlife near airport operations may result in an aircraft-wildlife strike. It is recommended that airport sponsors implement the standards and practices contained in AC 150/5200-33, *Hazardous Wildlife Attractants On or Near Airports* to mitigate wildlife risks. The airport does not have currently have a wildlife perimeter fence in place. As wildlife hazards become present on or near the Perham Airport, it is recommended to enclose the airfield with an effective deer-proof perimeter fence.

Action Plan & Recommendations

Recommendations to maintain safety compatibility at Perham include:

- Review easement or right of access to the two roads through the Clear Zones and update as necessary
- Relocate unpaved road / snow mobile trail outside the Runway 31 Clear Zone as the opportunity arises.
- As wildlife hazards become present, enclose the airfield with a wildlife perimeter fence.

COMPLIANCE

Airports that participate in the National Plan of Integrated Airports System (NPIAS) and receive FAA funds are subject to FAA grant assurances (obligations). These airports must abide by these grant assurances or they are subject to withholding of FAA grant funding. As Perham is not part of the NPIAS and does not receive federal funding, they are not held to the federal grant. MnDOT however prefers

that state airports develop agreements for through-the-fence operations. These agreements minimize conflict and provide clarification on expectations as described below.

Through-the-fence Operations

Agreements that permit access to the airfield by aircraft based on land adjacent to, but not a part of, the airport property are commonly referred to as a “through-the-fence'' operation (even though a perimeter fence may not be visible). Agreements for this type of operation are established to ensure the safety of the airfield and aircraft are maintained and to set rates that create a fair playing field for access to the airport facility.

Access to the airfield exists from the private property and agricultural operator directly west of Runway 13 with no agreement in place. It should also be noted that in addition to the airfield access, helicopter operations are also departing and arriving from the adjacent property. It is recommended an agreement should be established between the agricultural operator and the airport for this through-the-fence operation.

Action Plan & Recommendations

Recommendations to address airport compliance at Perham include:

- Establish an agreement between the airport and the adjacent agricultural operation for the through-the-fence operation.