Trails Master Plan

Town of Edson

February 2017

Trails Master Plan

Prepared For

Edson

Prepared By

EDS
environmental design solutions

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Executive Summary

With a strong affinity for active recreation in the community, residents in the Town of Edson enjoy an existing network of trails that span throughout Town limits. In 2016, EDS Group Inc. (EDS) was retained by the Town to complete a Trails Master Plan, with a focus on expanding the trails network to meet current community demands. Other priorities within the master plan included making trails more attractive, safe and user friendly for all seasons and all abilities.

Current trail conditions were assessed and the existing trails network appears to be very well maintained. Some of the current challenges with existing trails include perceived and actual safety concerns such as encounters with wildlife and having long segments of trail without any way finding devices or refuge points back into the urban areas. This plan recommends several new trail segments of various

types. This plan also includes Best Management Practices (BMP) to mitigate for actual and perceived safety concerns, such as an improved signage program, additional trail segments to create more refuge points along long trails, and educational signage that addresses concerns such as ways to protect yourself from dangerous wildlife and educational information on local vegetation.

The plan was primarily based on engagement with local residents and interest groups, including outputs from a local stakeholder workshop, online communications, a public open house and a project survey. A workshop was completed that included approximately 30 participants, where a series of topics were covered such as safety and security, existing trail concerns, proposed trail segments and ways to better engage stakeholders to promote trails. A public open house was conducted that included approximately 35 residents in attendance. Over 130 surveys were completed at the conclusion of the open house, primarily through an on-line survey forum as well as through paper copy surveys. Survey responses showed a consistent and overwhelming amount of support to expand the trails network in Edson, and a strong preference for more gravel trails opposed to focusing on a network of paved surfaces.

This exercise included the development of a preferred signage concept for trail heads and other signage within the trails network. Four options were provided to the public for input, and a preferred option was arrived upon. It is recommended that the Town pursue the detailed design of trail signage in the near term and implement the array of proposed signage, given this was a high priority amongst stakeholders and residents that completed a project survey.

This report includes a phasing strategy that establishes near, medium and long term recommendations for implementing the various features of the trails master plan. Phasing will be directly correlated with available funding and also human resources to implement and maintain the trails network. Overall, near term development focused on eliminating dead end trails and creating loops within the existing trails system, with long term trails being located in undeveloped areas of Town where area structure plans and other overarching planning documents have yet to be completed. A conceptual level cost estimate has been provided to demonstrate an opinion of probable cost for each of the phases of development.

1.0 Definitions & Acronyms

1.1 Definitions

ACCESSIBLE TRAILS

These trails are developed so that assisted modes of transportation, such as a wheelchair or mobility scooter, are permitted to continue along the trail. Trail surface material is firm and stable, usually of an asphalt or compacted granular surface. Americans with Disabilities Act (ADA) guidelines identify a minimum trail width of 915mm (36") free of any obstacles or protruding objects.

AMERICANS WITH DISABILITIES ACT GUIDELINES (ADA) / UNIVERSAL ACCESSIBILITY

Although not Canadian legislation, trail planners in Canada often refer to the ADA guidelines for universally accessible trail development. These guidelines provide a set of design and implementation strategies to promote accessible trails for various disabilities. In the United States, the Act protects the rights of people with a condition or disorder that has a substantial affect on one or more major life areas. This includes physical impairments, cognitive impairments, and sensory impairments such as

hearing and vision loss. The asphalt trails proposed herein comply with the ADA set of standards. (Exception: where site conditions dictate a linear trail slope greater than 8%).

ASPHALT TRAIL

The asphalt trail is the most formalized trail, both existing and proposed for the Town of Edson Trails Master Plan. This trail is to be a multi-use trail, used as a major pedestrian connector to a variety of local points of interest. Desired widths for these trails are to be no less than 3 meters to accommodate two-way traffic for various modes of transportation, including bikes, wheelchairs, roller blades and skateboards. While the surfacing of an asphalt trail is appropriate for wheelchair-assisted transportation, steep grades may inhibit such use. For this, a linear slope of less than 8% is recommended on all trails designated for wheelchair accessibility and safe conditions for all modes.

BOARDWALK

In environmentally sensitive areas or locations that experience periods of standing water, it is necessary to install a boardwalk trail to limit erosion from pedestrian traffic. These structures provide accessibility for a variety of modes of pedestrian movement, including foot traffic, bicycles, wheelchairs and stroller access. Rollerblade and skateboard access is impaired by decking.

DIRECTIONAL SIGN

These signs would provide visual cues at minor intersections to guide users along the appropriate trail, as well as provide key information, such as trail segment lengths and distances to key locations.

FIRESMART PROGRAM

This is a best management plan developed for the Town to identify possible forest fire hazard areas and pose mitigation strategies to decrease the risk of fires in the Edson area, protecting the community from the spread of fire from surrounding lands into Town limits. Search for “firesmart” on the Government of Alberta Agriculture and Forestry website for more information www.wildfire.alberta.ca (website current as of February 2017).

GAP

Is identified as an area where an improved trail has ended though users' desire to continue on in the same direction. A gap can be a small space in an existing trail that has been washed out, or it can be a large expanse between an existing trail and a desired location. Gaps often make pedestrian navigation difficult to certain areas, putting strain on shortcuts and unorthodox crossings. A large gap in a trail system will usually produce the occurrence of unimproved trails, as users will attempt to access the desired location via the shortest route possible.

GRAVEL TRAIL

Surfaced with a compacted granular material, these trails will accommodate bikers, walkers and cross country skiers. Devices with small wheels, such as strollers or inline skates may have difficulty navigating these trails. The gravel trail standard has identified a width of 2 meters, but can vary between 1.5-2.5 meters depending on site conditions. A gravel trail is necessary when an unimproved trail has worn the earth beyond reclamation. This application will help reduce erosion and decrease the chances of washouts and muddy areas.

HIGHWAY 16 REGIONAL ALTERNATIVE ROUTE

A long term plan for the realignment of Highway 16 to the south of the Town of Edson. It is currently identified on Town maps to start planning for municipal infrastructure. The alignment is subject to change beyond control of the Town as this is an initiative of Alberta Transportation.

IMPROVED TRAIL

These trails are segments that have been constructed with an imported surface material such as loose or compacted aggregate material, concrete or asphalt. Improved trails provide a more uniform surface that is free of rutting. The intent of improving a trail surface is to accommodate larger volumes of users in a variety of seasonal conditions. Improved trails provide access for a variety of use types.

PROTRUDING OBJECTS

Any object, such as a branch, fence, sign or other natural or non-natural structure, which penetrates into the vertical plane leading upward from the outermost edge of the trail tread surface is a protruding object. These objects can cause harm to trail users and can reduce the usable width of

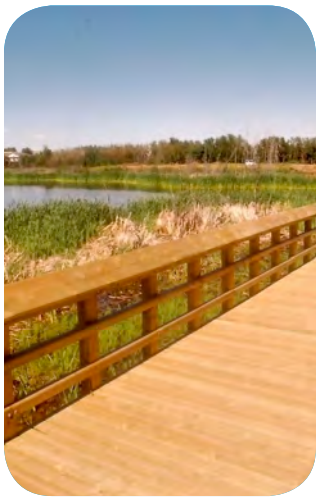
the trail provided. Any overhead protruding objects on trails shall have 2.4 meters (8ft) minimum clear head room from grade to ensure clear passage for all trail users.

REGIONAL TRAIL

A regional trail system exists outside the Town boundaries and fringe area lands that are not maintained by the Town. This type of trail commonly links to the Town trail system and provides access to more naturalized and rugged recreation opportunities (e.g. Willmore Park trails).

SAFE

Safety and security of trail users include both perceived safety and actual safety conditions. Trails will be designed in such a way that both perceived and actual safety is enhanced through improved access, safe trail surfacing, removal of obstructions and hazards, minimized environmental impacts and proactive management of the trail system. CPTED principles used.



SINGLE TRACK TRAIL

This type of trail has been historically used throughout Town as a compacted 0.5-2.0 meters wide trail of naturally existing surface material, made by removing organic soils and roots and then packing and sculpting native mineral soils. These trails are often preferred in natural areas to maximize a natural area experience, or for mountain bikers to provide more rugged terrain.

STAGING AREA

A staging area is a formalized area that accommodates all users in the preparation and navigation of trails specific to their interests. These areas can be used by several related groups (bikers, walkers). Staging areas may help alleviate safety issues by separating high impact users from low impact users. A staging area may provide parking and trail head signage or other way finding devices that help introduce the trail system and provide orientation to an outlying trail system. Seating is often found here to facilitate resting or preparation for an upcoming journey, as well as washroom facilities and garbage bins.

SUSTAINABLE

The trails will be developed in such a way that environmental assets are protected for years to come, and that trail development is both financially responsible and encourages opportunities for partnerships between various stakeholders and the Town.

TRAILHEAD

A trailhead is the formal start to a trail system. It is often found in conjunction with a formal staging area. Trailheads often include features such as signage, waste / recycling receptacles, educational signage, benches and access control devices such as bollards.

TRAILHEAD SIGN

A trailhead sign is the largest and most expensive sign in the proposed signage strategy for the Trails Master Plan. This sign is to be located at major staging areas and locations where multiple trails converge on one point. The information found on a trailhead sign would include a large scale context of multiple trail systems, distances for each trail loop, safety information, wildlife warnings and any other information pertinent for users to understand before they embark on the trails.

TRAILS MASTER PLAN

This is a general, holistic strategy to accommodate a comprehensive pedestrian trails system within the existing boundary of the Town. This plan will be used as a planning tool to identify existing trail conditions and to provide suggestions as to future trail placements, upgrades, connections and crossings. The Trails Master Plan will not include site specific comments or detailed design, but will feature general comments on how to approach a variety of trail related issues, such as erosion and sediment control, gap analysis and trail and signage standards.

UNIMPROVED TRAIL

These trails are initially worn into the earth by users accessing a desired location that have not been connected via a formalized gravel or asphalt trail. Unimproved trails have higher potential for erosion and become less accessible in seasonal conditions, (e.g. times of precipitation). Throughout the study area the exposed ground is typically clay and silt - these smaller soil particles are much more susceptible to surface erosion.

The compacted ground is less permeable and often presents irregular surface grades due to the absence of grade modifications. This causes pooling and more trail degradation.

WAY FINDING SIGNAGE

Way finding is a signage strategy that allows for the easy navigation of community trails. A way finding sign may be as simple as an arrow pointing in the relative direction of a desired location, or as complex as an overall map featuring a number of trail possibilities. Way finding techniques are featured at prominent intersections and at the beginning and end of trails.

YEAR-ROUND TRAILS

These are trails that are maintained during the winter by the Town. The Town limits winter maintenance of trails to those along boulevards and arterials (concrete or asphalt walkways) as well as any other paved trail within or adjacent to municipal parkland. Winter maintenance includes clearing snow and ice, as well as the monitoring of any hazards (e.g. ice accumulation and fallen trees).

1.2 Acronyms

ADA - Americans with Disabilities Act

AEP – Alberta Environment and Parks, formerly AESRD - Alberta Environment and Sustainable Resource Development

ASP - Area Structure Plan

BMP - Best Management Practices

CPTED - Crime Prevention Through Environmental Design

EDS - Consultant for this project, EDS Group Inc.

EMS - Emergency Medical Services

ESC - Erosion and Sediment Control

FOC – Fisheries and Oceans Canada, formerly DFO – Department of Fisheries and Oceans Canada

GPS - Global Positioning System

ICA - International CPTED Association

OHV- Off Highway Vehicle

2.0 Project Introduction

2.1 Study Area & Community Profile

The Town of Edson is a community of approximately 8,600 residents located 200km west of the City of Edmonton in Central Alberta. Edson is primarily a resource-based community, with strong reliance on natural resources such as oil, gas, mining and forestry as primary industries. Since its inception, the Town has yet to complete a Trails Master Plan as a tool to guide the development of trails and related amenities within the Town.

This Trails Master Plan includes the inventory of trails and related amenities with the Town of Edson corporate limits. This boundary can be seen as a red line noted on Figure 1 – Existing Features. While the focus is on the internal trails, some discussion in this report will refer to regional connections and trail amenities outside the Town limits. Being a significant recreational amenity in the region, Willmore Park that is located approximately 8km south of Edson is a key feature discussed in this report.

Edson maintains approximately 25 km of existing trails, including those inside Willmore Park. This project also includes an assessment of

approximately 15 km of sidewalks and roads not currently integrated into the trails network itself. The Trails Master Plan includes both off-road/unpaved and on-road/paved portions of the trails network, as well as relevant sidewalks/roads (i.e. those that are integral to pedestrian access to key public spaces, commercial centers, or the trails themselves).

Because the study boundary is limited to the Town limits and OHVs are not permitted within the Town, OHV uses are not considered in this Master Plan. Should OHV uses and policies require investigation, it is recommended that the Town explore a separate study that engages Yellowhead County and conduct an assessment on OHVs.

2.2 Project Principles

The principles by which this study was influenced include:

- providing a solid foundation for future decision-making related to implementing the Plan;
- capturing local knowledge and perspectives, and truly understanding the social dynamics of Edson and how it affects trail use, year-round;
- recognizing that Edson is a winter community, and embracing opportunities for year-round enjoyment of the trails system through activities, programming and event planning;
- having recommendations that are supported by clear actions to ensure they can be easily implemented;
- ensuring that all recommendations coincide with statutory and non-statutory planning instruments such as area structure plans (ASP) and identifying how these concurrent planning instruments may need adjustment;
- respecting the Town's need to be fiscally responsible, and recognizing the merit of protecting and sustaining existing assets where possible;
- exploring alternative funding models to deliver various phases of development; and
- being a process that brings together various parties and develops partnerships between different stakeholders that last beyond the Plan.

The foundation of this project was built upon the following principles:

- creating an inviting system of trails for users which emphasizes and accents the natural beauty of Edson's varying landscapes;
- delivering a project specific engagement strategy with the Town, County and other project stakeholders to realize the full potential of local knowledge;
- reinforcing the mindset of a livable winter community, and presenting the opportunity to integrate concepts of living in Canada with positive, year-round outdoor experiences;
- enhancing current uses of the trail system as it develops, to improve amenities for active uses that are in high demand and to explore opportunities for new uses where appropriate;
- developing a public realm is compassionate to people with limited mobility and physical impairments, through development strategies that allow for a range of users;
- providing universal accessibility for all people, despite their age or ability;
- ensuring safety for people as a primary concern, ensuring that all amenities conform to local, provincial and national safety standards and guidelines. The trail system must also be developed to accommodate access for maintenance, enforcement / patrol and emergency services;
- considering how crime prevention through environmental design (CPTED) and FireSmart principles can be applied to the plan, where possible;
- minimizing ecological impacts from all proposed development and long-term use, while providing a high quality and safe experience for users; and
- developing very clear, accurate and easily understood imagery to represent the final concept plans that accurately captures agreed upon design features.

2.3 Project Purpose

Ultimately, the purpose of this project was to develop a Trails Master Plan, and to help ensure that current recreation infrastructure and any investments are well suited to meet the needs of residents now and into the future. The scope of work and project parameters were as follows:

- communications and engagement - ensuring clear and ongoing communication through email, telephone and live meetings – achieving strong project support from both the Town and the general public;
- education – providing opportunities throughout the study process to educate the public on health benefits of routine contact with nature, and recreational opportunities that are right in their own back yard;
- site assessment – developing a strong understanding of the site conditions and opportunities for optimal trail alignments that respect stakeholder interests and ecological protection;
- conceptual design – completing all of the mapping and reporting required to capture the vision for an expanded trails system in the Town;
- capital cost estimates and phasing strategy – understanding costs for developing near, medium and long term recommended development and also understanding innovative funding models to help establish the partnerships needed to complete the proposed trails system;
- safety assessment – understanding site conditions as well as both actual and perceived risks, applying a series of best management practices to help mitigate for any safety concerns;
- signage plan – developing a hierarchy of signage that includes maps, trail markers, way finders, regulatory and safety signs, and any other signs pertinent to the Trails Plan;

- erosion and sediment control – establishing best management practices to minimize erosion and sedimentation, particularly in natural areas where sediment can have adverse ecological effects; and
- reporting – establishing a very clear, action-oriented report that includes maps, imagery and supporting text to describe the various attributes of the Trails Master Plan.

More specifically, the Plan evaluates the trails system's current condition and functionality and establishes a budgeted plan for its improvement so as to meet the current and prospective needs of the community. Particular focus was placed on the coherence, navigational utility, user-friendliness, hedonistic, and resilience and longevity of the resultant system. The Trails Master Plan should guide the Town's future investments in the trails system. The Plan is oriented towards meeting the recreational needs of current and future residents, increasing the accessibility of public and private spaces within Edson, and ensuring the long-term ecological and financial viability of the system.

This Plan will assist the Town to achieve many of their current goals that are related to trails and open space development, including:

- continued beautification efforts with more benches, site furniture, flowers, weed control and improving the aesthetics of open space;
- continued dialogue with the public and other stakeholders to help complete the Trails Master Plan and other open space improvements;
- setting the course for trail building for years to come;
- developing a regional connection between the Town and Willmore Park;
- creating one of the best mountain bike parks in Western Canada with the potential that Willmore Park be a large community hub and an amenity to help attract visitors to Town; and
- starting a memorial bench program.

2.4 Acknowledgments

This project is a result of considerable input and support from a number of individuals. Thus far, we would like to acknowledge and thank those who have donated their time and knowledge through workshop sessions to help garner a well-produced strategy for the future trails of Edson.

Jim Desautels, Town of Edson (Project Manager)

Ali Broda, Town of Edson

Al Schram, Town of Edson

Ann Dechambeau, Town of Edson

Anne Stoner-Walker, Edson Cycling Association

Athena Tymofichuk, Town of Edson

Christine Savoire, Edson Cycling Association

Christopher Read, Yellowhead County

Garnet Davison, Town of Edson

Keri Mitchell, Town of Edson

Mike Holcomb, Edson Cycling

Mike Stoner-Walker, Edson Cycling Association

Mike Thibault, Town of Edson

Sarah Bittner, Town of Edson

Steve Bethge, Town of Edson

Consulting team members from EDS include John Buchko, Brenda McKinnon, Anne McKinnon and Heather Hodgson.

3.0 Project Background

3.1 Study Process

To complete the deliverables required for this project EDS followed a study and design process composed of the following components:

BACKGROUND RESEARCH

EDS Group reviewed all current literature and information in relation to the current trail system in Edson. In addition our team spent numerous hours exploring the trail system on both foot and bike to experience the trails as trail users. Various current, future and proposed ASP documents were reviewed, and where possible trail alignments in these areas have been proposed in this Plan. It is important to note that in these future growth areas, trails in this Plan have been shown lineal and may not necessarily represent the final alignment of actual trails. Trails may deviate, be curvilinear, or be re-directed due to development at the time of subdivision or development.

PUBLIC ENGAGEMENT

EDS coordinated a variety of public engagement sessions throughout the creation of this report and 3 client meetings with Town representatives from various municipal departments were held. In addition we engaged in dialog with community user groups who utilize the current trail system. EDS also held an evening stakeholder workshop and invited members of the community and employees of the Town to attend. A project website was created to provide information to residents and give them an opportunity to provide feedback on this Plan as it was being developed. A comment box was available to website users to provide one-way feedback for consideration. Comments received showed strong public support for trails in Town, and for the expansion of trails within the community.

The Trails Master Plan went to the Town for input at the community open house on November 29, 2016. The open house provided residents and other stakeholders with the opportunity to hear a formal presentation by the consulting team. Over 130 surveys were received resulting from this open house, predominantly through the project website online survey interface.

On December 14, 2016 a brief presentation of the project and the public engagement program was presented to Town Council.

ENVIRONMENTAL ASSESSMENT

EDS conducted several on-site investigations to identify environmental conditions that would influence trail development and existing trail networks. The following conditions were assessed through a combination of site visits and air photo review;

- key features such as forested areas, ravines, grasslands and other ecosystems;
- unstable or undeveloped land, such as ravine, top of bank, hilly areas, etc;
- locations of known wildlife encounters within Town limits; and
- ground that is susceptible to erosion because of overland water flow, steep slopes, non-vegetated ground etc.

This study did not include any biophysical assessments, wildlife surveys, or other detailed environmental review.

EXISTING CONDITIONS

The network of existing features is shown on Figure 1 – Existing Features. This figure includes the existing network of recreation and open spaces, Town boundaries and exiting water features within the study limits. Overlaid on a current air photo, this image indicates the locations of other surface features such as treed areas, roadways and urban development. Existing trails are not visually apparent on this air photo at the scale in this report.

TRAILS

After the GPS mapping was completed and existing trails were highlighted the trails were categorized into a hierarchy that included the main featured trail types found throughout the Town. Using this hierarchy, a proposed trail network was overlaid onto the existing system to identify future required trail connections. These connections were then categorized via a phasing plan to identify the strategy for installation approximately over the next twenty years. This figure also includes the network of existing and future recreation and open space land areas, and existing water bodies.

SIGNAGE

A signage family was introduced as part of the Trails Master Plan. The purpose of the signage program is to develop a single style for various signs required in the trail system. EDS provided three signage family concepts and a single one was selected and included later in this report. The scope of work for this project did not include the detailed artwork and signage design for each type of trail sign. This report recommends that the Town engage a sign design firm to complete the details of the signage family and to also recommend the placement of each sign type in the trails system.

COST ESTIMATES AND PHASING STRATEGY

Expanding the current trails system is a multiphase approach. EDS has provided cost estimates in this report to help with capital budgeting and future planning. The phasing strategy highlights priority areas for near term versus long term trail development. Having a trails master plan in hand drastically improves a community's ability to access external funding for trail development. See appendix B

SAFETY ASSESSMENT

This study included a cursory summation of environmental, social and perceived safety risks associated with trails using principals from known programs such as BearSmart, FireSmart and CPTED. It also provided a series of best management practices to reduce actual and perceived safety concerns. It is recommended a risk management specialist be engaged by the Town to investigate potential liability concerns throughout the Town trails system. The safety assessment was not a separate task in this study, rather integrated into various other project tasks.

3.2 Statutory and Non-Statutory Plans

The following Statutory and Non-Statutory Plans were reviewed in the development of this study:

- Town of Edson Municipal Development Plan;
- Town and County Intermunicipal Development Plan;
- Town of Edson Land Use Bylaw;
- Alberta Transportation tentative plans for the future alternative route;
- Yellowhead County Land Use Bylaw;
- Various Area Structure Plans passed by Town Council; and
- Previous parks planning documents such as maps and reports.

4.0 Current Conditions

4.1 Environmental Assessment

Figure 1 – Existing Features demonstrates a number of existing natural features within, and surrounding the study area. Notable features include forested patches and existing water bodies that have been included on this plan. Due to the size of this image, the air photo is not at a sufficient size and resolution to discern details such as existing trails, wildlife trails, etc.

Natural occurring ecosystems within the study boundaries include:

- treed areas: a mix of coniferous and deciduous tree stands that appear to be old growth forested areas. These treed areas are predominantly found throughout the northeast and northwest areas of town that are still undeveloped as well as along creek alignments that pass through the Town. In areas where existing trails are found the Town has actively pursued the FireSmart strategies for reducing fuel for fires. This also helps to improve sightlines and perceived safety along trails through forested areas. One challenge with FireSmart strategies of removing understory plant material and dead wood is the loss of habitat that many species thrive in.

- Creeks: there are a series of creek alignments within the study area that convey water within and outside the boundaries of the area. The Town of Edson has a policy of protecting a 20 meters buffer from top of bank on either side of creek features within which trails may be developed. Creek alignments provide excellent opportunities for single track and other passive types of trail and are less compatible with paved trails due to less stable ground and steep slopes.

Firesmart Trail Segment

Non-Firesmart Trail Segment

Trails in the study area pass through many of the forested areas which remain on publicly owned land. Many of the trails have been "fireSmarted" – a term commonly used in our project workshop with stakeholders meaning fireSmart objectives have been used as a maintenance treatment. This treatment included the removal of deadfall and other potential fuels, and the removal of understory vegetation within approximately 3-5 meters on either side of trails. While this practice helps reduce risks of fire caused by trail users and also improves safety though increased sightlines, removing debris reduces habitat value. The Town plans to continue its Firesmart initiative on all trail areas passing through natural tree stands, which is currently an initiative led by the Edson fire department.

There are numerous trails alongside creeks and other water bodies. Our assessment concluded that overall the trails are extremely well maintained, with safe and sustainable creek crossings such as bridges to minimize ecological disturbance to water bodies. There are also very well applied erosion and sediment control (ESC) measures in areas of steep slopes or new trail development near watercourses.

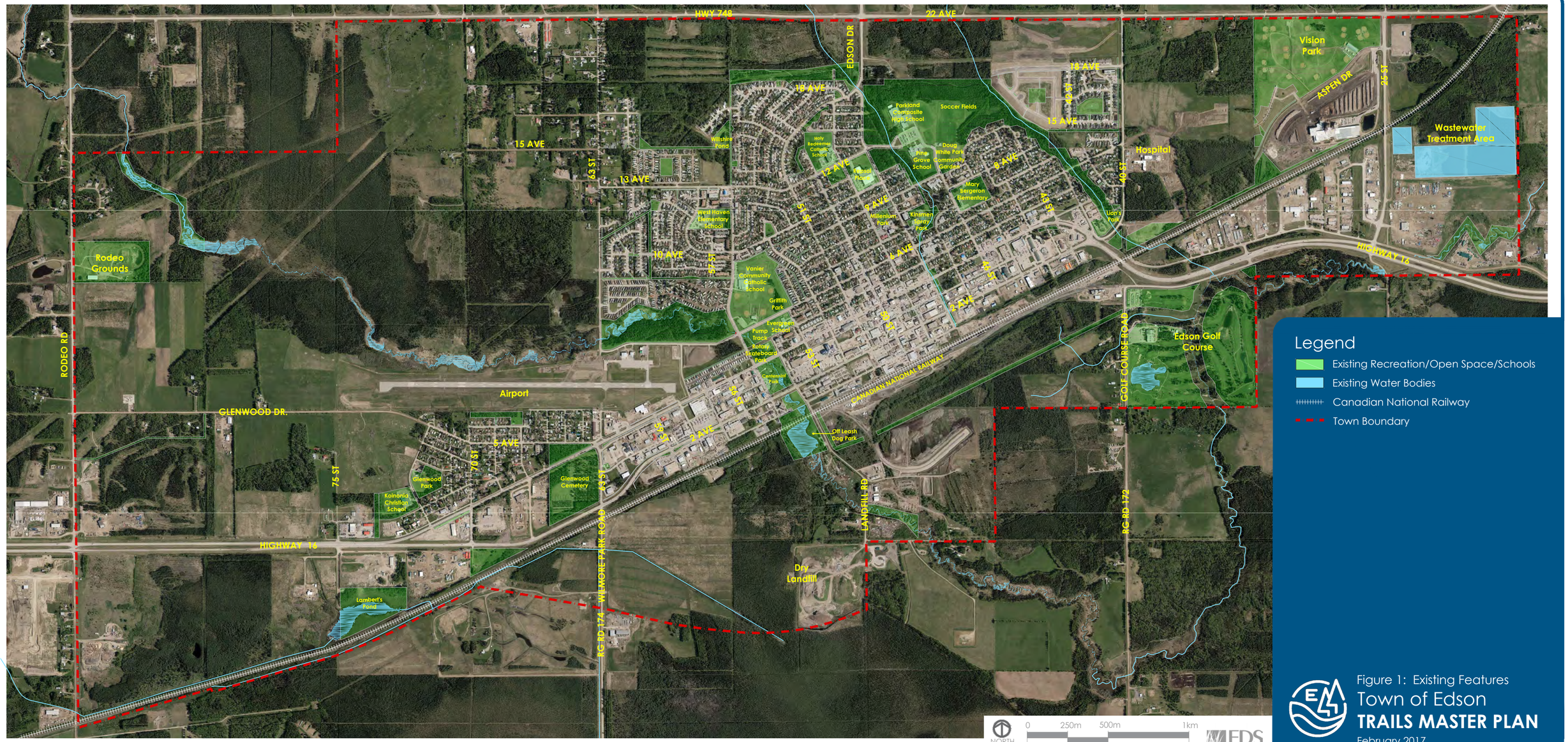
There are no known studies that provide details on local wildlife and prominent habitat areas for specific species. Through the workshop process, local stakeholders identified areas of the most common sightings of large animals such as bear, moose, deer, elk and beaver. It is recommended that the Town continue its partnership with Alberta Environment and Parks (AEP) to monitor potentially dangerous wildlife encounters and to remove unwanted animals as needed. There is also an abundance of wildlife safety signs throughout the Town, such as BearSmart awareness information. Continuing and expanding upon this program is recommended as a shared initiative between the Town and AEP.

4.2 Public Safety

Public safety is important to consider in the creation of a comprehensive trail system. The scope of the Trails Master Plan did not specifically address liability with respect to the implementation of a public safety plan for this study area. It is recommended that a risk management specialist be engaged to review and provide the Town with legal advice regarding potential liability throughout the trail system as it relates to safety or environmental concerns. Liability and case law examples of safety concerns in this type of environment should be addressed by qualified legal professionals on a site-specific basis as development takes place.

Access to all public places by emergency services is a common design objective. It would be unreasonable to suggest that all trail segments be upgraded to allow for emergency vehicle access, or to ensure that all trail segments are safe and passable on a year-round basis. Signage in these areas should inform trail users that there may be site conditions that limit emergency response due to unsuitable conditions. The signage may also provide a map indicating the nearby location of access routes that may be more desirable.

Another option to aid users in the navigation of trails would be to have Global Positioning System (GPS) data for all trails available to the public for downloading to personal GPS units. This would decrease the chances of users becoming lost and also provide valuable information to emergency services should a user require assistance while in the trail network. Current technology also allows trails to be available on smart phone apps, which could be made available on the Town website and at tourism information kiosks.



Legend

- Existing Recreation/Open Space/Schools
- Existing Water Bodies
- Canadian National Railway
- Town Boundary

Figure 1: Existing Features

Town of Edson
TRAILS MASTER PLAN

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4.3 Crime Prevention Through Environmental Design (CPTED)

CPTED is a non-profit organization that bases its success on the implementation of safe design. The basic principle of CPTED is that good design of the environment can reduce the prevalence of fear and crime, improving the quality of life. The International CPTED Association (ICA) is committed to creating safer environments and improving the quality of life through the use of CPTED principles and strategies.

CPTED is an important group to recognize while studying safety concerns throughout the Edson trails system, especially those related to crime and nuisance activity. By identifying neighbourhood and park area crime levels and crime types, trail alignments can be specified addressing usage. Research has shown that people naturally fear places that are isolated, untidy and dark. However, research also confirms that actual risk of crime rarely occurs in these fearful places; many people have fear of places that are actually very safe.

A hierarchy of crime determiners will help assess public spaces and the safety concerns associated with these areas. The determiners are as follows:

FIRST ORDER DETERMINERS

The first order of importance flows from the broader theories. Crime happens on pathways or at activity nodes where there is a presence of "high risk" populations. These high risk populations tend to undertake routine activities, going from one activity node to another along established pathways, whether pedestrian, vehicular or other. The presence of a high risk population on a pathway or at an activity node, such as a convenience store or liquor establishment, will be the first order of importance for whether a crime or nuisance behavior will occur. For example, the choice of what area of a community to undertake a burglary is influenced by where the burglar lives and the routes between daily activities such as work, family commitments and entertainment.

SECOND ORDER DETERMINERS

The second order of importance is the environmental circumstances in which those high risk population finds themselves, as they move along pathways, from one activity node to another. This is where creating a sense of ownership, encouraging watching, eyes on the street, target hardening, access control and building design can have an impact. For example, whether a burglar chooses a specific house on a street depends on environmental cues such as areas of concealment and lack of surveillance from a neighbor.

THIRD ORDER DETERMINERS

A third order of importance involves more passive environmental circumstances such as lighting, weather and landscaping. If these environmental circumstances are used along with the more important determiners of crime, then they may assist in reducing crime. For example, many CPTED related studies show that improved lighting and lowered hedging in public parks have minimal impact on reducing crime. On the other hand, the introduction of formal surveillance by monitored closed circuit television and security personnel that a reduction of crime occurred has been proven far more successful.

In order to create a design that is functional, safe, and beautiful, CPTED strategies outline some basic principles to reduce the opportunities of crime. Maintenance, surveillance and access control are just a few of the main principles that can be applied to trails in Edson. Proactive maintenance of the trails will reduce the risk of injury due to dead fall, exposed culverts and damaged crossings. Also, with increased maintenance, traffic volume may increase creating a safer and more interactive trail.

Surveillance whether formal (ie. security guard, bylaw patrollers, cameras or community crime watch / residents “eyes on the streets”) or informal (ie. natural site lines) can also play a large role in minimizing crime. By creating open site lines to areas where crime occurs, the rate of crime and violence can be lowered significantly and encourage trail users to make use of all areas of the trail system.

FOURTH ORDER DETERMINERS

Access control is the fourth important principle of CPTED. Marking main access points and limiting smaller unmarked access areas will help control crime and give Edson trail users the perception of a safe pathway by notifying users of exit and entrance points. This study makes recommendations for trail head locations that will include a combination of regulatory and way finding signage, along with other amenities such as benches, waste receptacles and trail access control devices.

4.4 Existing Trail Network

Figure 2 – Existing trails includes an account of all existing trails that are paved, gravel and natural segments. This figure also includes existing recreation, open space and school parcels, as well as water bodies, rail corridor and Town boundaries. Key features of the community such as the off leash dog park, schools, parks, airport and hospital have been identified.

General observations of the existing trail systems include:

- trails do not span entire area of Town and focus on select areas in the community;
- trails appear well maintained with minimal environmental impacts such as erosion, surface cracking of asphalt, potholes in gravel, overhanging branches etc;
- waste / recycling receptacles, dog waste bag dispensers and benches are found in various areas. In future placing of these items needs to be more strategic to optimize views, locations, etc;
- current signage is inconsistent and haphazardly placed throughout trails;
- trails within the Town generally link key amenities such as schools, parks and residential areas;
- there is an inconsistency of traffic control devices including bollards, boulders and fencing to limit vehicular access into trails;

- the highway and rail corridor highly restrict pedestrian access between the north and south side of Town. Although the majority of residents live on the north side of the transportation corridor there is a large interest in connecting the trail system to Willmore Park, which is challenged by the transportation corridor, rail corridor, land ownership and extensive distance between challenging terrain; and
- the existing trail network heavily relies on street side trails such as monolithic and detached sidewalks and in some case the road itself where sidewalk is not present. An example of this includes 6th Ave as a predominant east-west connector, as well as 2nd and 4th Ave.

4.5 Current Public Events

The majority of the Edson trail usage is from residents utilizing the trails for recreational use. A limited number of organized events are hosted in the Edson trail system each year. The largest organized event to take place in the trail system is Eddies Big Run, which is an annual event that encompasses a kids fun run, 5km run/walk, 10km run/walk and 21.1km run/walk. This event utilizes parts of the trail system but also utilizes part of the local road networks due to the limitations with the current trail system. Other events held in the trail system are the Terry Fox Run, school cross country races, geocaching, snow golf and the community rides hosted by the Edson Cycling Club. Through the discussions at the stakeholder workshop it was identified that an increase in programming could take place in the trail system with the creation of new linkages and trails. Future programming may include seasonal running and cycling events as well as an increase in sport tourism and school physical activity programming. It is recommended that the Town pursue an assessment on future programming opportunities within the trail system to maximize usage and growth and provide additional recreational opportunities to residents. This review will also align the trail system to future sport tourism hosting opportunities.

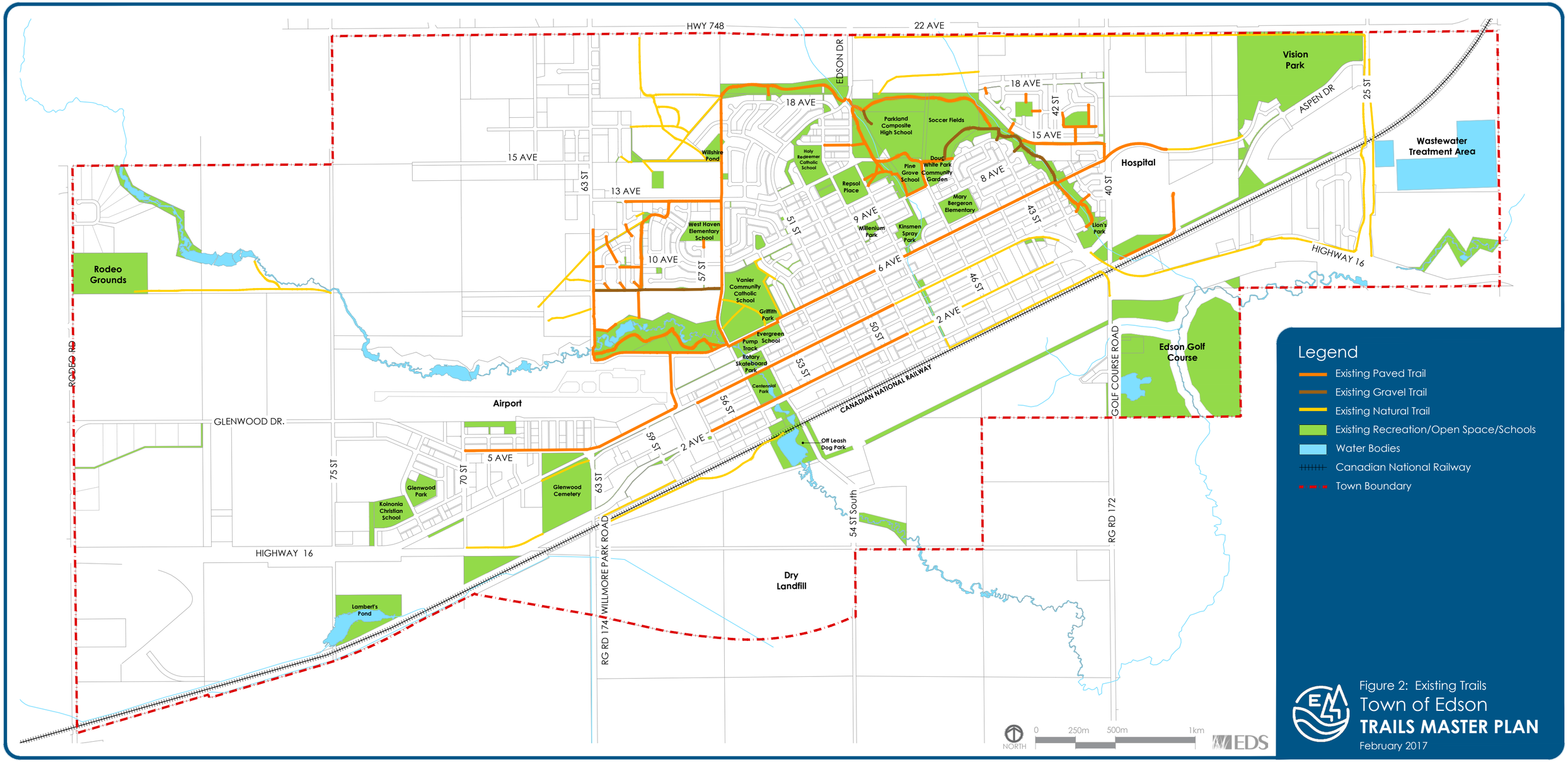

Figure 2: Existing Trails

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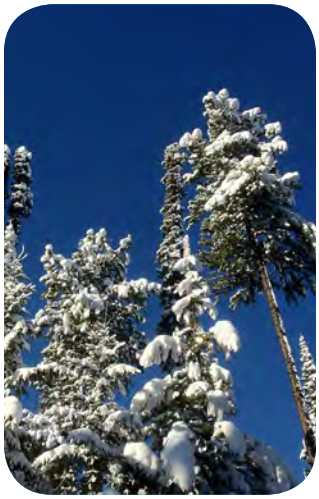
4.6 Challenges and Constraints to Development

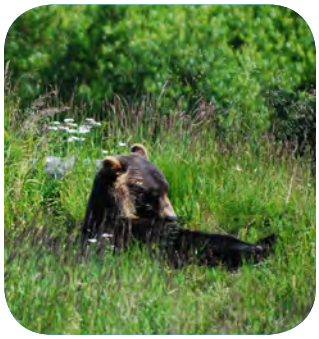
Through the course of this project we have identified the following constraints to development:

i. Financial Commitment: it is unreasonable to expect the proposed trail system to be developed in the short term. This report provides a phased approach to completing the proposed trails network and also suggests strategies to partner with other organizations such as not for profits, local area developers and other levels of government. The phasing strategy is aligned with our knowledge of probable annual financial commitment from the Town.

ii. Human Capital: trail systems require significant human capital to build and maintain. The phasing strategy takes into consideration the capacity of Town staff, volunteers and financial resources available to outsource work.



iii. Wildlife: the balance between providing a natural area experience and safe environments for people is essential. It is important to provide trails that celebrate the various ecosystems but at the same time are compassionate to perceived and actual safety concerns of trail users. Promoting an education and signage program is one strategy to alleviate this constraint. Reducing significant lengths of trail passing through secluded areas without refuge to urban areas is part of this plan.



iv. Erosion: erosion is inevitable when developing trails on any ground with slope. Avoiding areas of unstable ground along with applying ESC measures will minimize erosion.

v. Extreme winter conditions: as Edson is a northern community it is important to consider weather conditions when planning trails. Rest stops, wind shelters and other areas of refuge are important for trail users to ensure human comfort. Varying temperatures, including those that create frost conditions lead to damage to paved surfaces and reduced lifecycle duration.

vi. Transportation Corridors: having one of Canada's busiest rail lines and the Trans Canada Highway bisecting the community leads to considerable challenges in safe pedestrian crossing. Introducing crossings such as pedestrian overpasses and tunneling are essential to provide this safe crossing through busy transportation corridors. Doing so will require extensive negotiations between the Town and regulatory bodies.

vii. Land Ownership: in past generations the community was not necessarily developed with trails in mind. Many of the key linkages or missing trail segments are challenged by long tracts of privately owned land. In many areas the Town will be encouraged to secure land through land purchase, easements or cooperation agreements with these landowners. Moving forward as new land is developed ASP's must support and enhance the proposed trail system shown in this Plan.

viii. Competing Modes of Transportation: with the various trail users such as cyclists, dog walkers, runners etc. there are often conflicts regarding speeds of movement and sightlines available. Trail widths and surfacing is one way of accommodating conflicting users. Education through signage as well as restricting certain types of use in some areas will help minimize these conflicts.

ix. Impacts of Wildlife: some wildlife can have adverse effects on public infrastructure including trails. Two of the most common destructive activities among wildlife include:

- beaver which cut down nearby trees to build dams changing water elevations and flooding trails; and
- deer, elk, moose and other foraging animals that eat woody shrubs, ornamental trees, etc.

There are perceived safety concerns associated with wildlife. Within the study area there are common sightings of bear, moose, deer, cougar, coyote and wolves. Educating trail users is essential to minimize perceived and actual safety concerns. Programs such as BearSmart provide excellent communication tools.

5.0 Stakeholder Engagement

5.1 Stakeholder Workshop

A community stakeholder workshop was held on September 22, 2016 with approximately 30 individuals from various stakeholder groups invited. Individuals from the Town of Edson, Yellowhead County and the Edson Cycling Club were in attendance. This workshop provided an educational component on trail master planning and focused on the current trail system in the study area. This allowed participants to share their knowledge of the current trail system and gave them an opportunity to provide feedback through breakout sessions. Themes of these sessions included:

- breakout session one: areas of concern including wildlife encounters, sightlines and steep slopes, nighttime activities, and perceived versus actual safety concerns; and
- breakout session two: identifying future trails, access points and way finding. This included discussions on: missing trails, locations of trailheads and interpretive areas as well as signage and way finding devices.

Participants responded to a number of live poll questions throughout the evening. Some of the main comments from these questions included:

- the majority of those in attendance are somewhat satisfied with the current trail system and approximately 50% live within a 5 minute walking distance to a trail;
- passive recreation (walking) was the number one reason for trail usage within our study group with active recreation (running, cycling) following closely behind;
- natural trails and regional trails (linking areas in the Town) should be the priority of the region when planning future trails;
- more than 65% of attendees said the biggest challenges with the current trail system is the lack of funding and land ownership;
- limitations with the current trail system include too many dead ends and lack of knowledge of the current trail system; and
- the majority of attendees at this session prefer natural surface trails over paved or gravel surface trails.

Participants helped identify opportunities for future trail development and linkages within the community as well as a discussion around community events and future trail programming.

5.2 Project Website & Online Feedback

A project website www.trailsmasterplan.ca (current to this project as of January 2017) was developed. This website included current project information such as contacts, project purpose, draft plans, schedule for public events and other project details. The site also provided an open comment box where site users could submit random thoughts and ideas on trails in Edson.

5.3 Public Open House

A formal public open house took place on November 29, 2016. Approximately 35 individuals attended this evening event, which included two scheduled presentations of the project background material as well as several printed panels. Printed versions of an exit survey were made available to all attendees.

5.4 Public Open House Survey

Paper versions of a survey were made available at the public open house – a copy of this survey can be found in 9.1 Appendix A – Public Survey. For a period of time after the public open house, the website included the same survey that allowed respondents to use the website to comment on the draft concept plan and to provide other information on trails planning in Edson. Over 130 surveys were collected at the conclusion of the response period. Overall, feedback can be generalized as follows:

- biggest concerns with current trail system include lack of signage, and that existing trails don't interconnect;
- need for more off leash dog areas, and a lack of waster receptacles/ dog waste bag stations along trails;
- majority of users who answered surveys utilize the trails for walking as a mode of movement;

- favorite signage option is #2 (see Section 6.3 – Trail Signage concepts);
- residents are overall impressed with proposed trail system, and they like the mix of paved and gravel/natural trails; and
- very strong feelings from residents for natural and gravel trails – a desire to develop more gravel or natural trails opposed to paving all trails.

6.0 Proposed Trail Network & Amenities

6.1 Trails

Figure 3 – Proposed Trail System identifies existing and proposed trails within the study boundary. It also includes future open space, environmental reserve and pedestrian corridors that the Town has identified for future acquisition. Figure 3b – Air Photo includes identical information however overlaid upon an air photo. These figures show all existing trails as solid lines with proposed trails as dashed lines. Proposed trailheads as well as transportation corridor crossings have been identified. Figure 3 also includes potential parking at certain trailheads. This study includes proposed trails within Town limits. Figure 3 demonstrates two potential access points to Willmore Park, one being a road access for vehicles and bicycles that currently exists down Rge Rd. 74. We understand that the Edson Cycling Club in currently discussion with landowners to find a trail access to Willmore Park that leaves the town limits at Rge Rd. 172 near the Edson Golf Course.

Four types of trails have been proposed for future development:

- street side connector: using either sidewalks or a dedicated lane along the existing roadways. Street side connectors are less preferred because of the high probability of pedestrian/vehicular conflicts. Where possible detached sidewalks where setback from the curb are encouraged. The adjacent image is an example of a street side connector trail;
- paved trail: widths of trail may vary between 2.5 and 3.5 meters depending on intensity of use and surrounding environment. Wider paved surfaces are more favorable in areas of high traffic and areas where multiple uses are likely to occur (walking, cycling, dog walking, all in one location). A standard construction detail for paved trails can be found in Section 7.0 Proposed Construction Details. The adjacent image is an example of a paved trail;
- gravel trail: ADA standards do consider gravel trails as being compliant as accessible but are less favored by individuals with limited mobility. Some maintenance challenges with gravel trail include difficulties clearing snow, potholes, and gravel material migrating off trail into nearby trees. Although these trails cost significantly less to construct they do require additional maintenance to prevent erosion, potholes and other irregular surfaces. The adjacent image is an example of a gravel trail; and
- single track trail: also known as natural or goat trails. Single track trails are undeveloped trail alignments that are a result of infrequent pedestrian usage. Single track trail is a key identifier of desire lines where proposed trails should be developed. A single track trail is favorable in natural areas with limited access for construction of more improved surfaces and in areas of limited use. These trails are not maintained in winter months. Single track trails are favored by certain types of users such as mountain biking, natural area explorers, geocache enthusiasts, etc. The adjacent image is an example of a single track trail.

The Town currently has a widespread network of sidewalks throughout the community that provide good pedestrian connectivity, and contribute to the overall trails network. Unfortunately these sidewalks are usually limited in width, and often do not accommodate multi-modal encounters such as cyclists being able to pass one another. Where higher volumes of pedestrian and cycling traffic is anticipated, the proposed trail plans identify several segments of proposed streetside connectors that can be achieved by a number of strategies such as dedicated pedestrian lanes within the exiting road right-of-way.

Existing 6th Ave. Streetscape

The below three images include an existing photo of a segment of 6th Avenue in Edson, and two conceptual images to show the placement of proposed streetside connector treatments:

- optional street-side dedicated lane: a paved surface built alongside the existing curb of a street to a width of at least 2.0m, and off the existing roadway. This is similar to monolithic sidewalk, however the structure of the trail is independent from the curb and would be paved with asphalt. This treatment would work best where street side parking is essential, such as in a residential area with homes on that side of the street or in areas where road width is limited and the extra dedicated pedestrian lane is prohibitive. A painted line down the middle of the trail would cue users to keep to one side or the other when passing by oncoming traffic. This option is more costly than other options as new trail structure and surfacing is required off the existing paved roadway. This option may not be feasible if sufficient public property is not available behind the curb; and
- optional street-top dedicated lane: painted or otherwise marked laneway on an existing road bed to a width of at least 2.5m. This style is preferred as costs would be reduced by not requiring new trail structure or surfacing, and is feasible for many segments along 6th Avenue and 50th Street. This option works best in areas with excessive road width and where street side parking is not important. This option however does not provide the protection to pedestrians of having a curb separating them from moving vehicles on the road, reducing perceived safety for pedestrians and cyclists.

Optional Street-side Dedicated Lane

Optional Street-top Dedicated Lane

6.2 Trail Heads

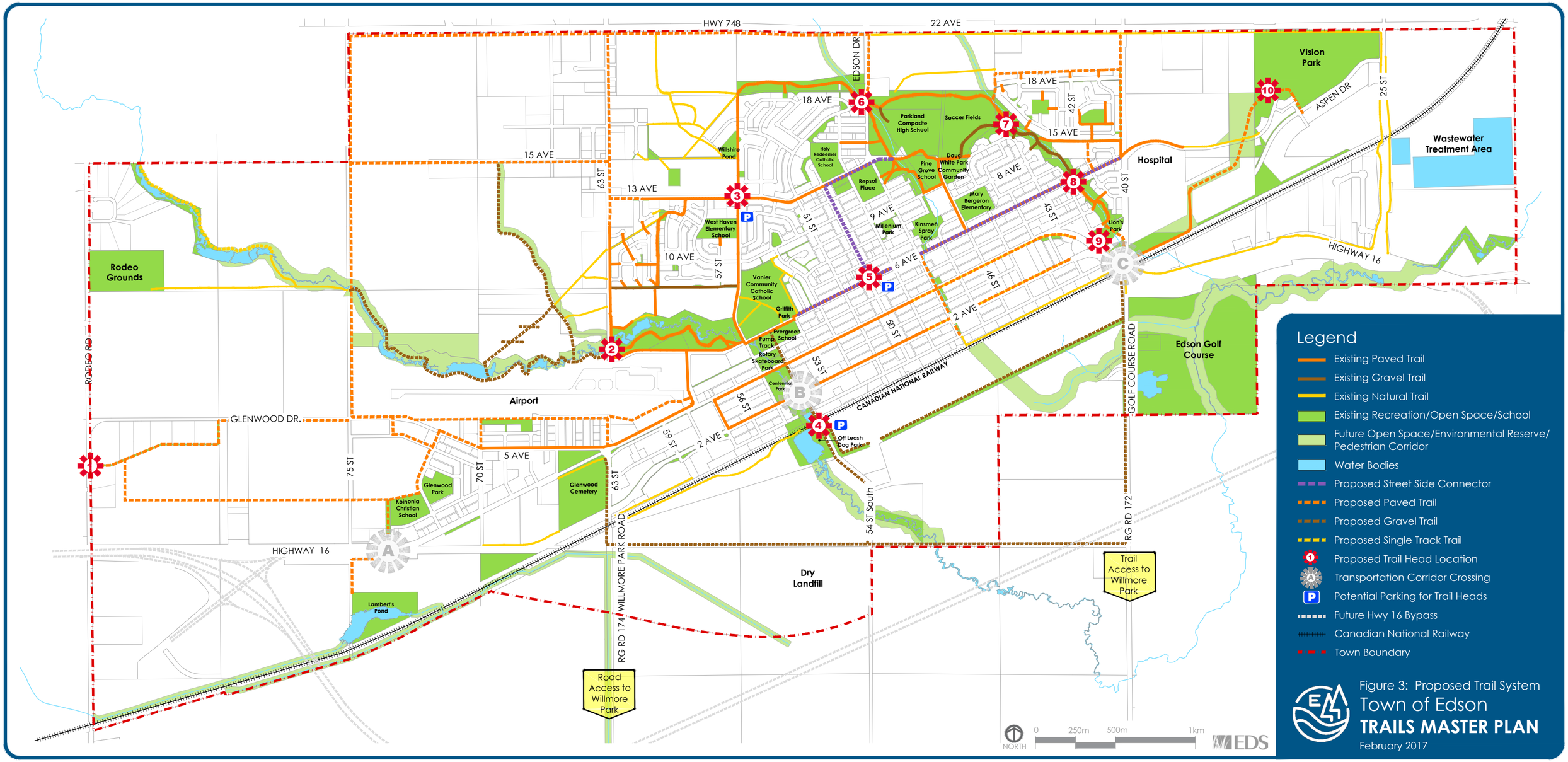
Figure 3 – Proposed Trail System includes ten proposed trail head locations. Trail heads are placed in strategic access points to the trail network depending on their location each trail head will have different amenities available. The following is a summary of which amenities would be included in each of the ten proposed trail heads.

Number	Trail Head Sign	Bench	Waste Receptacle	Educational Signage	Intepretive Signage	Signage Kiosk	Dog Waste Bag Dispenser	Way finding Signage
1	Y	N	Y	N	N	N	N	N
2	Y	Y	Y	Y	Y	Y	Y	Y
3	Y	Y	Y	N	N	N	N	N
4	Y	Y	Y	N	Y	Y	Y	Y
5	Y	N	N	N	N	Y	Y	Y
6	Y	Y	Y	Y	N	N	Y	Y
7	Y	Y	Y	N	Y	N	N	N
8	Y	Y	Y	N	N	N	N	N
9	Y	Y	Y	Y	Y	Y	Y	Y
10	Y	Y	Y	N	N	Y	Y	Y

6.3 Trail Signage

Creating a signage family for the trail system has numerous benefits with some including:

- demonstrating continuity amongst developments throughout the trail system and promoting the Town brand;
- improving perceived safety by providing maps, way finding and educational information;
- identifying distances of long trail segments, allowing users to plan a route and communicate location incase of emergency;
- communicating permitted and non permitted activities such as where cyclists should dismount or direction to nearest public washroom;
- at main trail head kiosks offering paper maps at main trail heads that trail users can take with them;
- identifying physical and environmental hazards such as: steep slopes, water course crossings, seasonal conditions, wildlife encounters, trail surface damages; and
- promoting the trail system to encourage more tourist use.



Legend

- Existing Paved Trail
- Existing Gravel Trail
- Existing Natural Trail
- Existing Recreation/Open Space/School
- Future Open Space/Environmental Reserve/ Pedestrian Corridor
- Water Bodies
- Proposed Street Side Connector
- Proposed Paved Trail
- Proposed Gravel Trail
- Proposed Single Track Trail
- Proposed Trail Head Location
- Transportation Corridor Crossing
- Potential Parking for Trail Heads
- Future Hwy 16 Bypass
- Canadian National Railway
- Town Boundary

Figure 3: Proposed Trail System

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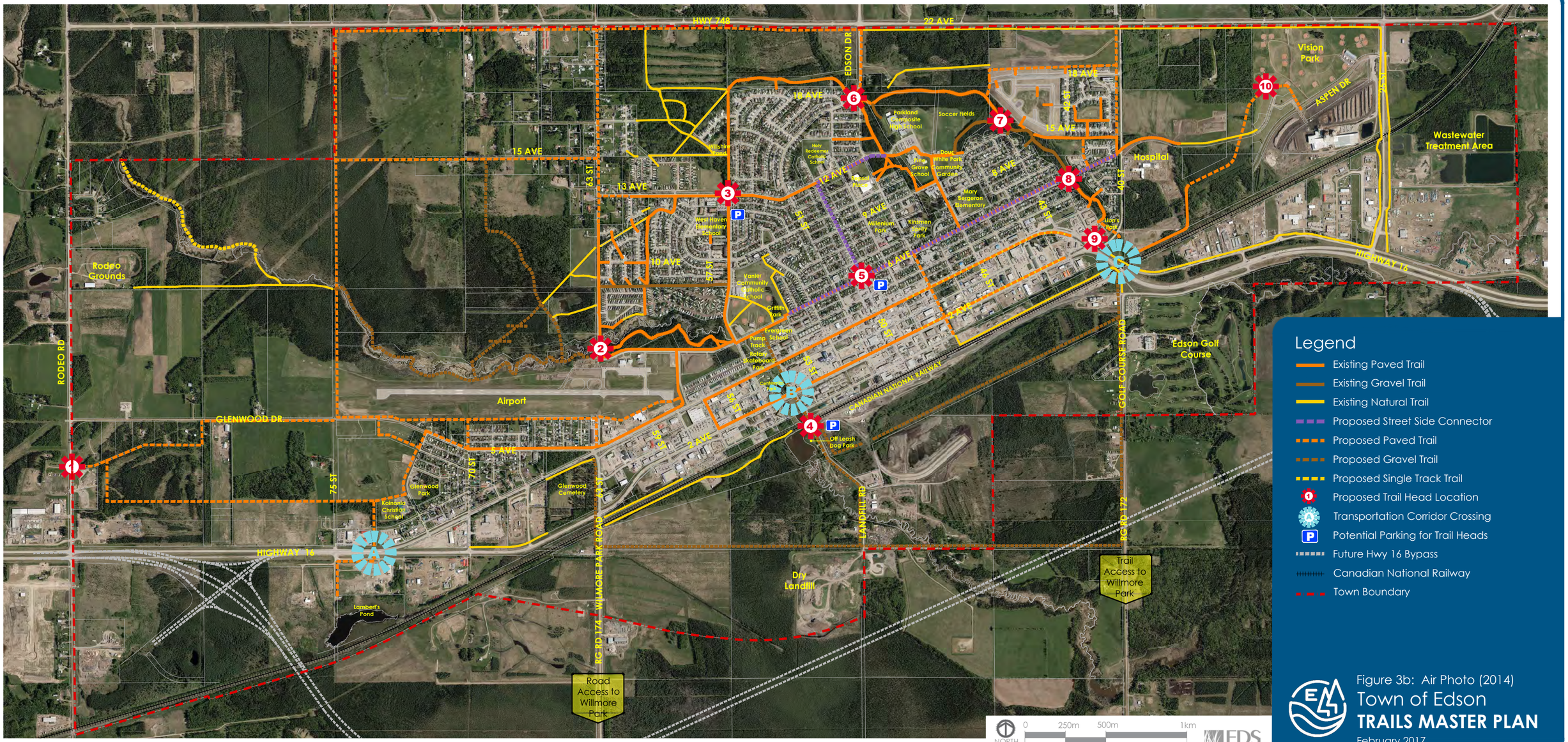

Legend

- Existing Paved Trail
- Existing Gravel Trail
- Existing Natural Trail
- Proposed Street Side Connector
- Proposed Paved Trail
- Proposed Gravel Trail
- Proposed Single Track Trail
- Proposed Trail Head Location
- Transportation Corridor Crossing
- Potential Parking for Trail Heads
- Future Hwy 16 Bypass
- Canadian National Railway
- Town Boundary

Figure 3b: Air Photo (2014)

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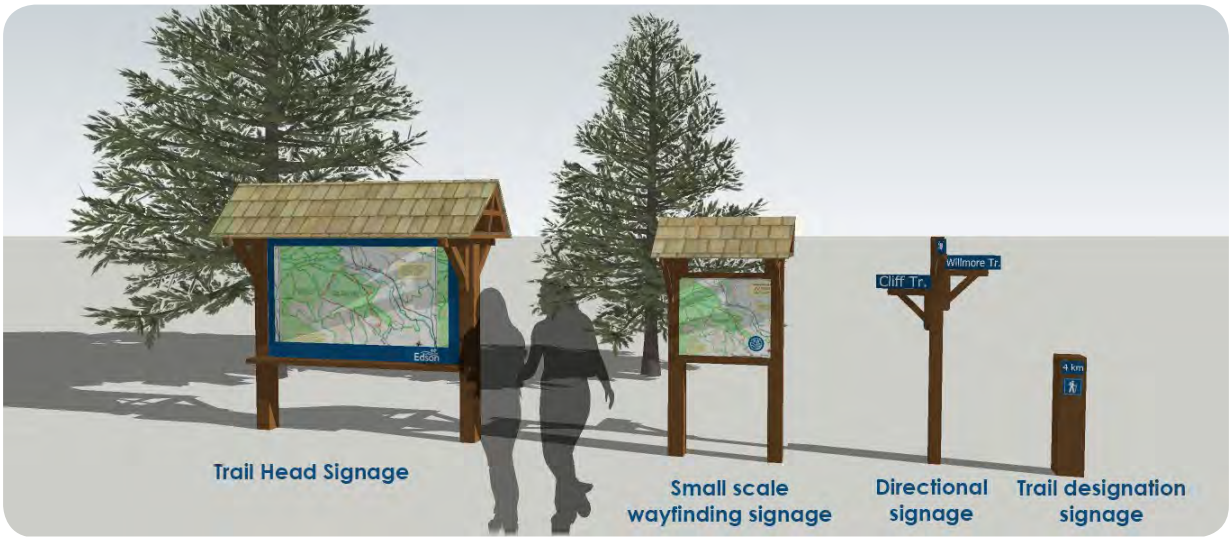
The following three concepts were provided for initial consideration:

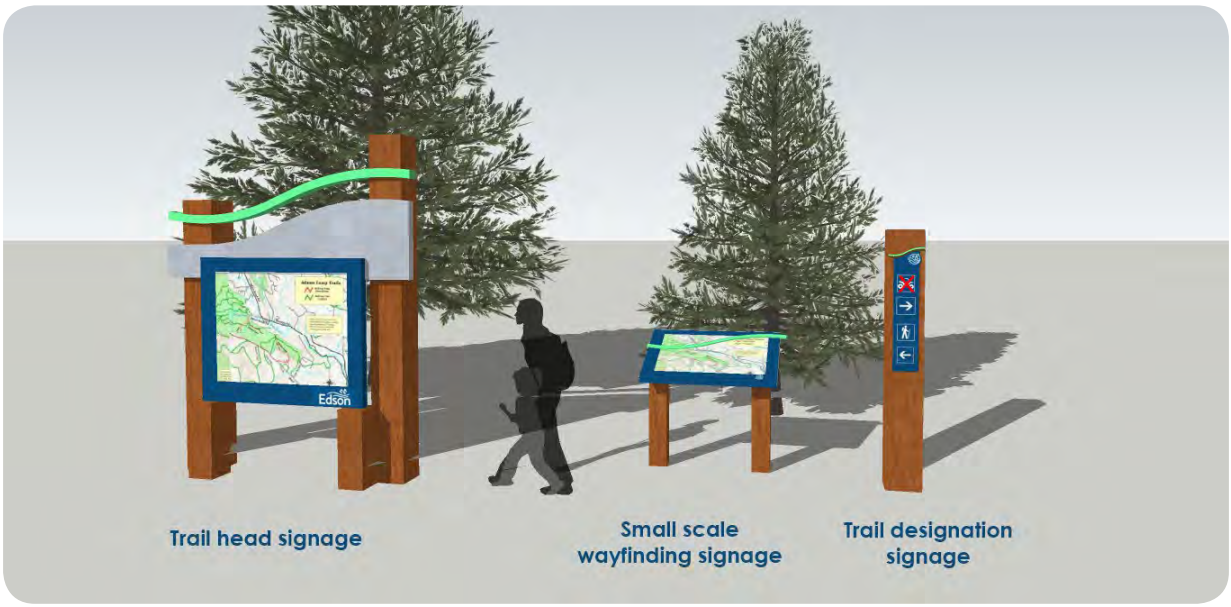
CONCEPT 1

This option includes four types of signs in the family. Materials include predominantly wood, with aluminum signage panels applied to the wood backing.



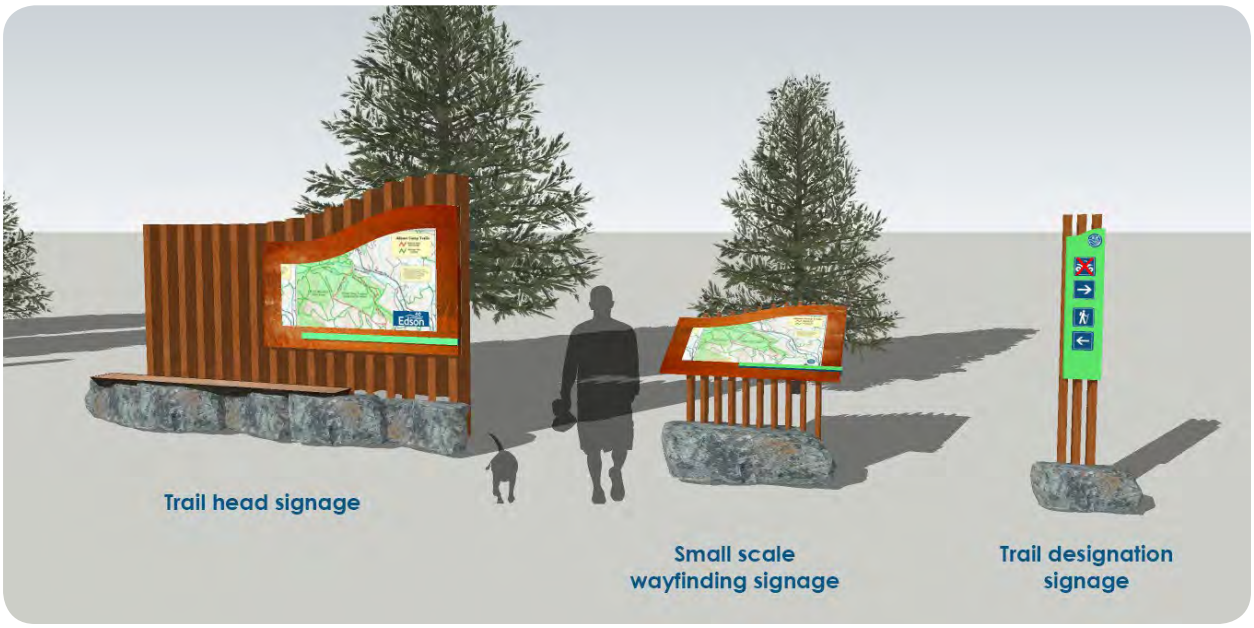
CONCEPT 2

This option includes three components within the signage family, and also includes wood as a primary material for the sign structure with aluminum signage panels. Colours are consistent with the Town of Edson branding strategy that was recently completed in 2016.



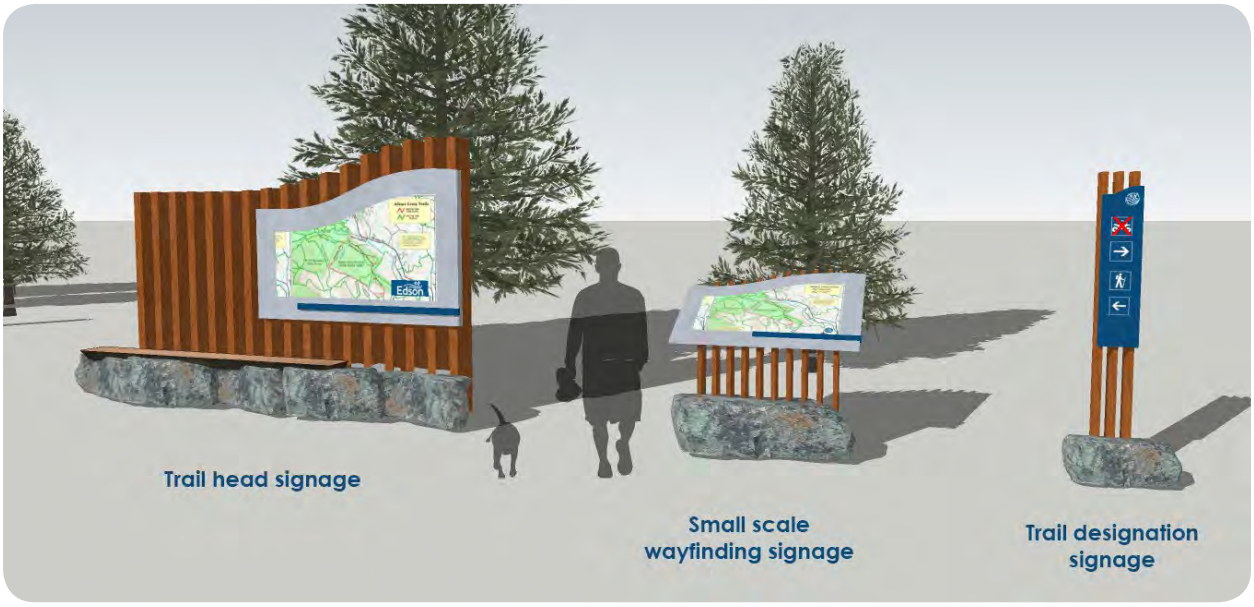
CONCEPT 3A

This option uses a series of either wood or aluminum vertical members that are very prominent and unique to the Edson trails system. Panels would be made of corten steel that appears to be more rustic, with the addition of aluminum panels for maps and signage applications. Colours of all panels are consistent with the Town of Edson branding strategy that was recently completed in 2016.



CONCEPT 3B

This option is aesthetically similar to Concept 3a, however uses different colours for applied panels and substituting aluminum panels for the corten steel that was shown in Concept 3a. This demonstrates how all of the three options can be amended to take on different styles through colours and materials.



6.4 Erosion & Sediment Control

Trail development often requires the removal of native vegetation as well as the alteration of the ground materials to accommodate specified volumes of users. Erosion potential is often accelerated by these two activities. The roots of native vegetation helps hold soil matter together- without live plants to sustain the roots, soil structure is affected. Furthermore, vegetation helps minimize the impact that both precipitation has on the ground, as well as the impact presented by the flow of surface water. To implement modified trail surfacing (e.g. wood chips, gravel or asphalt) native soils are often removed given they may not provide adequate base compaction. As new materials are implemented and surrounding areas are disturbed, maintaining adequate ground compaction is important in reducing erosion potential.

Sedimentation is the process in which eroded particulates that are already moving due to erosion gather in a specific location. The most effective way to protect the environment from erosion and sediment degradation is to prevent the occurrences from happening in the first place. As a result, trail development must incorporate BMPs to help mitigate erosion, and should erosion take place the monitoring and maintenance strategy must then implement complimentary BMPs for sediment control.

Aside from the loss and fragmentation of natural habitat, most Provincial and Federal regulatory concerns are related to erosion and sediment control. Sediment has detrimental impacts on both terrestrial and aquatic environments, the latter of which triggers concerns with a greater number of regulators. A variety of factors that affect erosion and sediment potential, all of which should be considered in the detailed design of trails, can include:

- exposure of the ground to direct wind and falling precipitation;
- slope steepness and length over which surface water will flow;
- material composition – (e.g. proportions of sand / silt / clay);
- ground compaction and permeability of surface water;
- intensity of use throughout the year;
- proximity of ecological features (e.g. still water basins, moving water, etc.); and
- surface vegetation.

BMPs must be selected with strong consideration for their context. The Edson trail system, in many areas, travels through natural areas that host complex ecological systems. As a result, short term BMPs are recommended – those which help minimize erosion potential while the

site returns to a natural state wherein erosion potential is reduced by natural means. To help reduce erosion potential, the following BMPs can be implemented in trail development:

- rapid vegetation of bare soils to quickly establish groundcover and related root mass; use of surface protection BMPs such as mulching or degradable matting to provide ground protection as seed establishes into vibrant turf;
- implementation of understory and upper story vegetation to provide root mass as well as protection of the ground from falling precipitation;
- avoidance of steep slopes;
- minimize ground disturbance by leaving native vegetation intact where possible;
- ensuring adequate ground compaction, while still considering ground permeability to reduce surface flow; and
- avoidance of trail development in areas near streams, rivers, wetlands or other significant environmental features to reduce risk of sedimentation.

The following BMPs will compliment the proposed trail development details:

- rolled erosion control matting;
- silt fence;
- willow staking; and
- subgrade tracking.

6.5 Environmental Compliances

AEP is the primary Provincial body that monitors, regulates and enforces provincial legislation with respect to the recreational use of both water resources and other public land. For example, a provincial officer enforces fishing and hunting regulations, and is also empowered to monitor and enforce legislation under the Navigation Protection Act for boating regulations. Throughout the Edson area, AEP has a strong presence and actively patrols much of the surrounding area.

Fisheries and Oceans Canada (FOC) is the primary Federal agency that monitors and sets compliance standards for environmental effects onto water bodies. The nearest FOC district office is in Edmonton; however, their role is specific to reviewing development proposals and granting permits for proposed infrastructure. They do not have the equipment (e.g. boats, all-terrain vehicles) readily available to access the water for assessment or enforcement; such actions would be prohibitive due to the distance away from Edson. In any development it is important to understand the regulatory implications and rules that can strongly influence development and the process in which development is permitted. Regulatory considerations exist at three levels of government: Municipal (Town of Edson), Provincial (Province of Alberta) and Federal (Government of Canada).

There are various provincial acts that may be relevant to trails development, including but not limited to the Natural Resources Conservation Board Act, Soil Conservation Act, Forests Act and Regulations, Forest and Prairie Protection Act and Regulations, Traffic Safety Act, Railway (Alberta) Act, Municipal Government Act, Occupiers Liability Act, Petty Trespass Act, Building Code 2014 and Public Health Act. The following is a summary of the most applicable legislation at the provincial and federal levels of government that will apply to the development of this trail system:

PROVINCIAL REGULATORY AND PERMITTING PROCESSES

1. Alberta Water Act (AEP)

Any surface water that is permanent is claimed by the Crown, and therefore any activity that involves any proposed use or alteration of this system requires permitting. In the case of alteration or loss of such areas, compensation may be required. A named river or creek, for example, would be a provincially claimed water body, and any trails developed along the shore of the river may be subject to review by Alberta Environment should it demonstrate any affect on the water body. Trail development near other naturally occurring creeks, ravines and water bodies (including wetlands) may also be subject to Water Act review. Any proposed water crossing such as a bridge or boardwalk, or trails that are proposed in close proximity of these water bodies would prompt a Water Act review.

2. Alberta Public Lands Act (AEP)

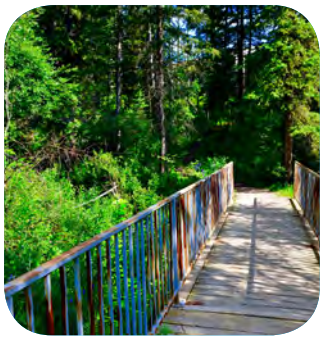
Applies to the bed and shore of naturally occurring waterways.

3. Alberta Wetland Policy (AEP)

Applies to naturally occurring wetland habitat, and may be applicable to the wetlands within this Study Area – each instance should be confirmed with Alberta Environment during the development process.

4. Alberta Wildlife Act (AEP)

Prohibits any disturbance to a nest or den of prescribed wildlife, including the alteration or removal of existing vegetation. A wildlife assessment is recommended to confirm the presence of any nest or den prior to the development of new trails, or the reclamation of disturbed areas.



5. Alberta Weed Control Act (AEP)

Specifies noxious and nuisance weeds that must be controlled within both publicly and privately owned lands. The identification of weed infestations will help establish a work plan for a vegetative reclamation strategy.

6. Alberta Historical Resources Act (Alberta Community Development)

Any fossil or other historical resource located prior to or during site development, as well as during ongoing operations, must be properly protected and reported to proper authorities. Depending on the historical resource identified a variety of mitigation strategies are available to follow through with trail development while respecting the Act's requirements.

7. Alberta Environmental Protection and Enhancement Act (AEP)

Establishes a legislated process for environmental assessments, and ensures potential environmental impacts are identified early in the planning stages. More detailed environmental assessments may be required for sensitive and significant ecological areas.

FEDERAL REGULATORY AND PERMITTING PROCESSES

1. Canadian Fisheries Act (FOC)

Authorizations are required for any habitat that is or has the potential to be fish habitat; triggered when development leads to the harmful alteration, disruption or destruction of this habitat. FOC review would be required for any water body or watercourse, regardless of it being naturally occurring or human created.

2. Navigable Waters Protection Act (Canadian Coast Guard)

In this case would only apply to any alteration to the waters or shoreline of navigable water bodies as defined by the Act (e.g. boat launches, bridges, trails that lead to the water's edge, etc.)

3. Canadian Environmental Assessment Act (Environment Canada)

Would only apply to this development should any federal funding be obtained for development.

4. Migratory Birds Convention Act (Environment Canada)

Prohibits any disturbance to bird species covered under the act, such as removal of vegetation or water from nesting areas. The construction of trails that adversely affect migratory birds will not be permissible at certain times of the year. It is recommended that all proposed trail alignments and sites of reclamation activities be reviewed by a qualified professional prior to any work.

5. Species at Risk Act (Environment Canada)

Prohibits the disturbance to any species listed in the act that are deemed species-at-risk. It is recommended that all proposed trail alignments and sites of reclamation activities are reviewed by a qualified professional prior to any work.

6. Policy on Wetland Conservation (Environment Canada)

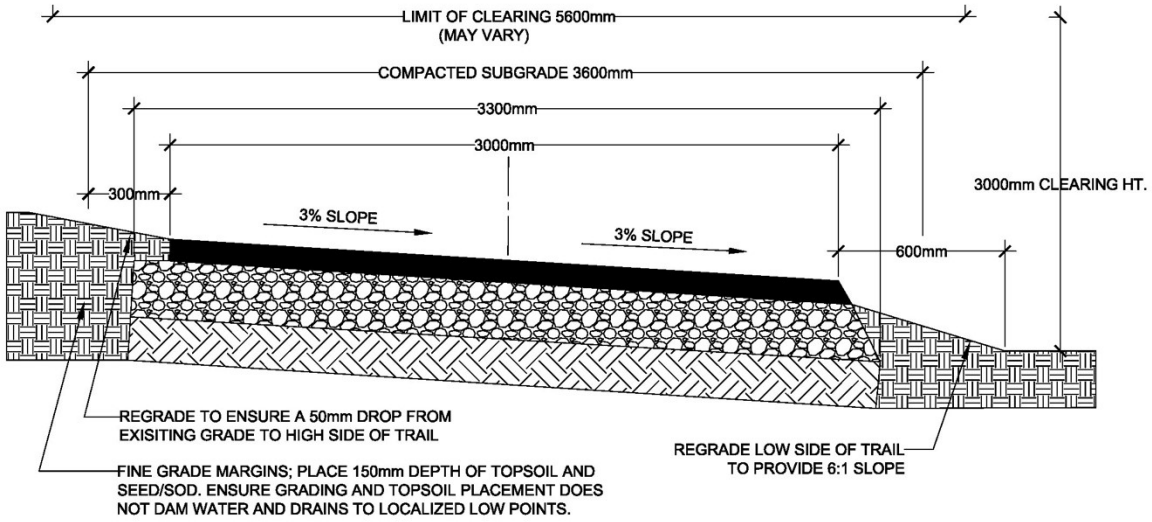
Would only apply should any federal funding be obtained for the development.

7.0 Proposed Construction Details

To aid in the ongoing maintenance and development of Town trails, the following proposed trail details have been proposed to be incorporated into the Town of Edson minimum design standards for the trails system:

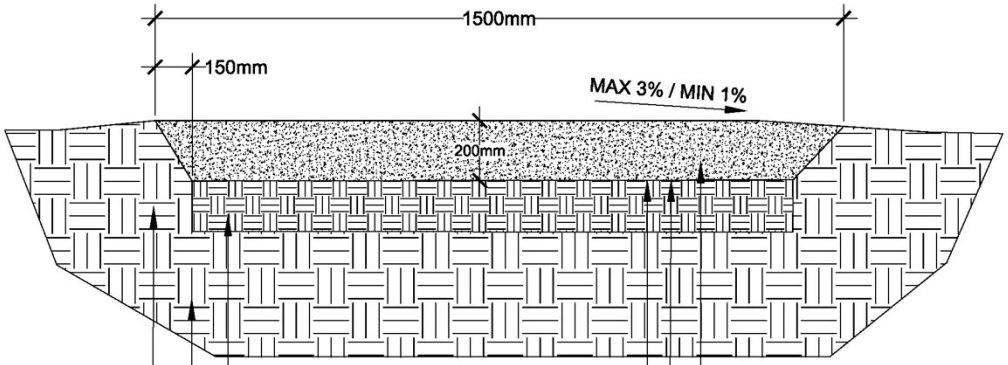
- Asphalt Trail;
- Gravel Trail;
- Trail Clearance and Removal Zone;
- Boardwalk Trail;
- Cross Slope Erosion Control; and
- Lateral Slope Erosion Control.

DETAIL 1 – ASPHALT TRAIL



NOTE: ALL DIMENSIONS IN MILLIMETERS
MAKE ALL JOINS WITH EXISITING VEGETATION SMOOOTH AND CONTINUOUS, WHERE NECESSARY TRIM BACK ROOTS AND CLEAR DEBRIS.

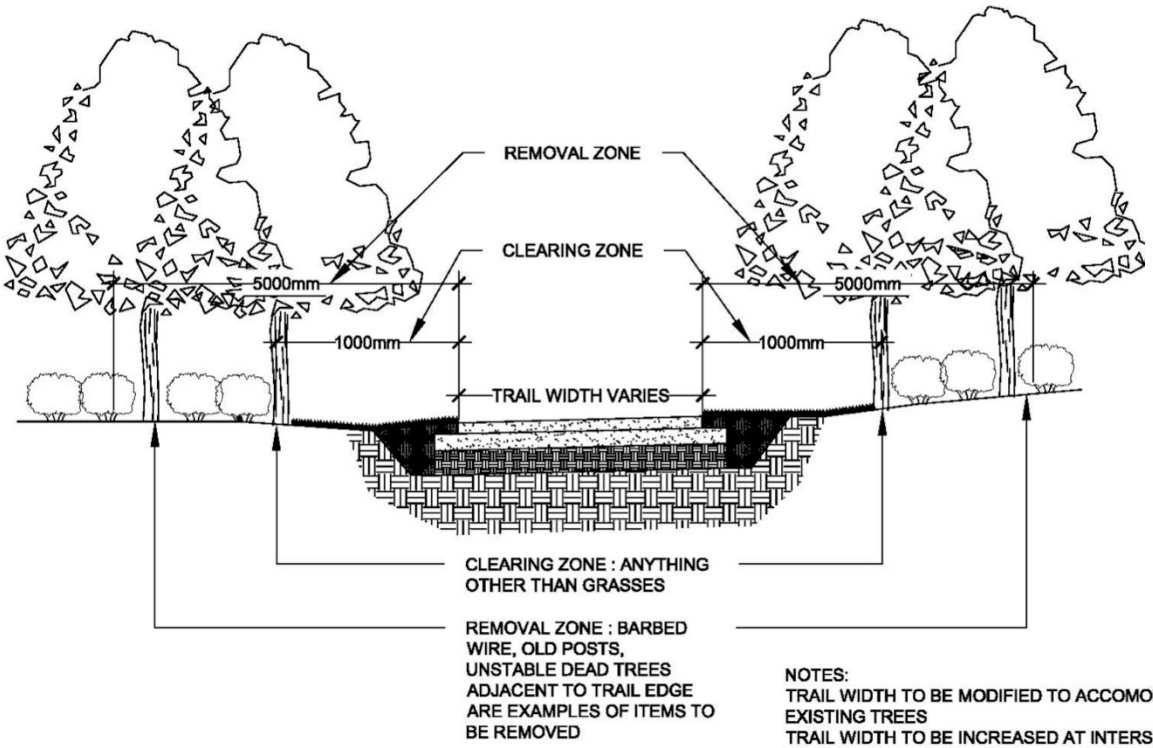
DETAIL 2 - GRAVEL TRAIL



NOTES:

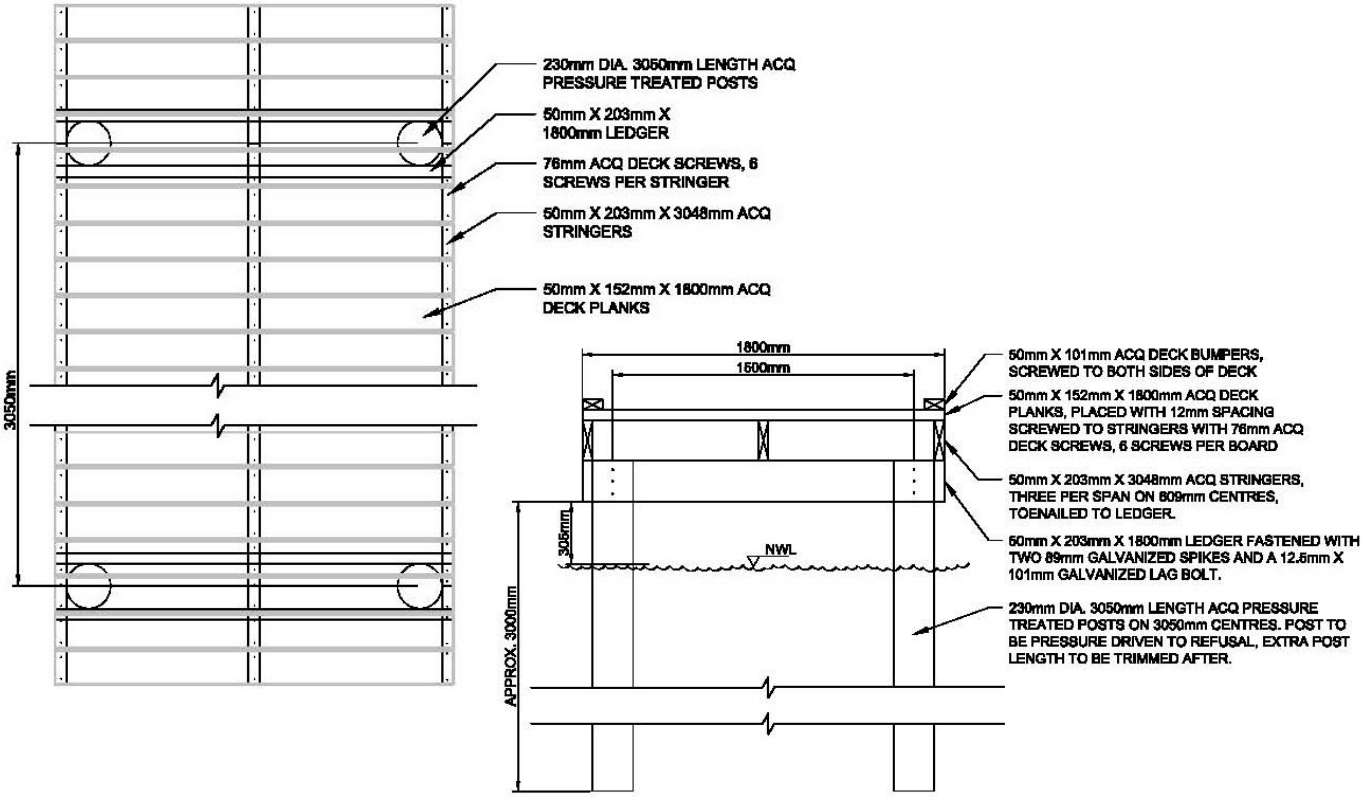
- EXCAVATION OF TOP MATERIAL TO BE DONE TO A WIDTH OF 2400mm
- ALL TRAIL EXCAVATION TO MATCH EXISTING NATURAL GRADE
- ALL DISTURBANCE ALONG TRAIL EDGE TO BE REHABILITATED
- COMPACTION REQUIREMENTS MAY BE MODIFIED ACCORDING TO SITE CONDITIONS
- ENSURE SLOPE ON TRAIL TIES IN WITH EXISTING GRADES (TRAIL CROSS FALL MAX. 3% / MIN 1%)
- TRAIL TO BE 50mm ABOVE ADJACENT GRADE (FOR DRAINAGE)

DETAIL 3 – TRAIL CLEARANCE AND REMOVAL ZONE

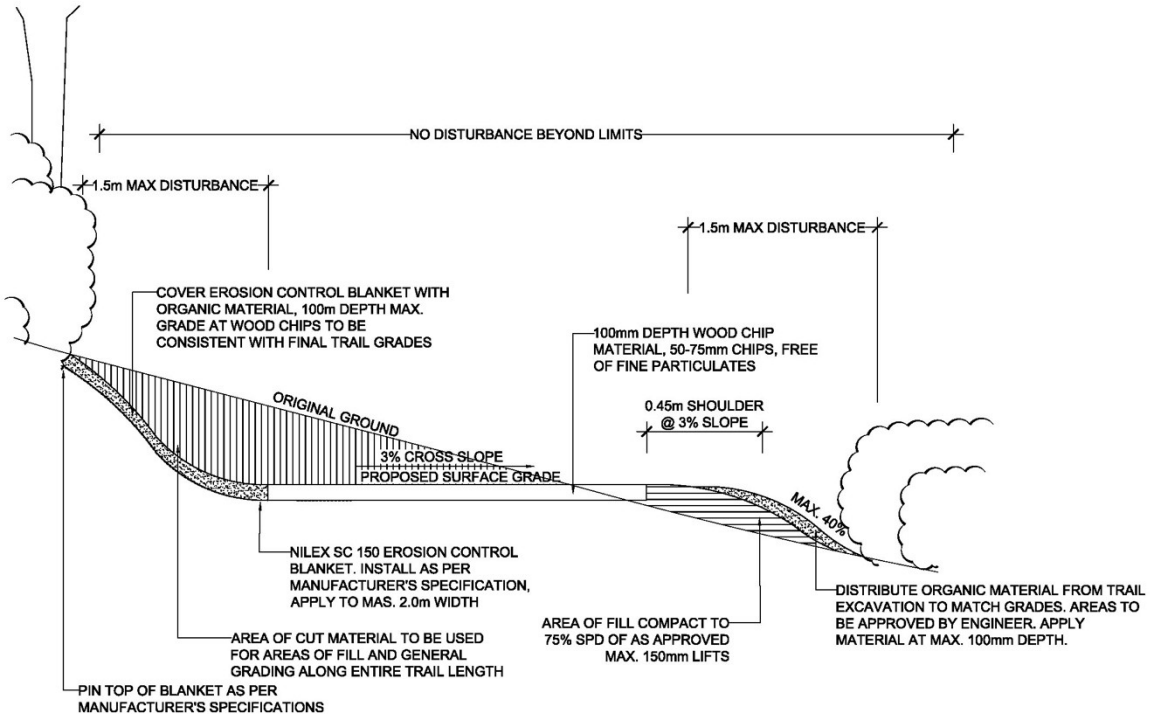


NOTES:
TRAIL WIDTH TO BE MODIFIED TO ACCOMODATE EXISTING TREES
TRAIL WIDTH TO BE INCREASED AT INTERSECTIONS WITH CASUAL PATHS, BLIND INTERSECTIONS AND CORNERS.
CONTRACTORS RESPONSIBILITY TO REHABILITATE ALL DISTURBED AREAS ALONG TRAIL EDGE WITH TOPSOIL AND A NATURAL SEED MIXTURE CLEARING ZONE TO BE 2400mm IN WIDTH, 2600mm IN HEIGHT AT CENTRE OF TRAIL

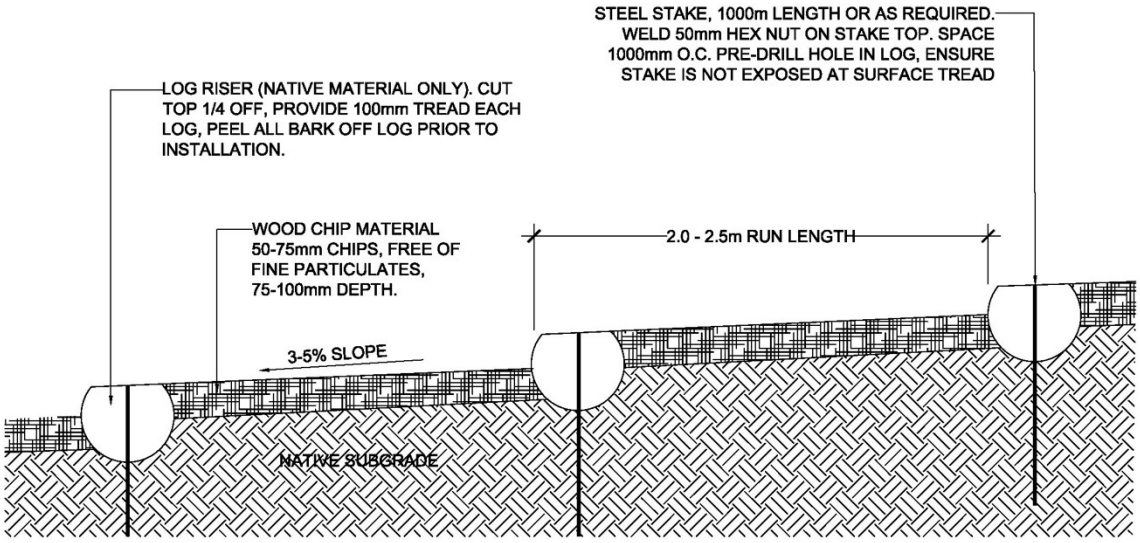
DETAIL 4 - BOARDWALK TRAIL



DETAIL 5 - CROSS SLOPE EROSION CONTROL



DETAIL 6 - LATERAL SLOPE EROSION CONTROL



8.0 Phasing Strategy & Budget

8.1 Tentative Phasing Plan

Proposed trail segments of different types have been included in Figure 3 – Proposed Trail System. We have developed a tentative phasing plan that breaks development into:

- Near Term Development: as shown on Figure 4 – Phasing Strategy Near Term Development, these segments primarily fill in gaps and create loops for the existing trails network. This figure also identifies key trail segments that have been identified by stakeholders as priority developments. Four of the ten trail heads are proposed in near term development.
- Medium Term Development: as shown on Figure 5 – Phasing Strategy Medium Term, these segments are recommended for development in a five to ten year horizon. These trails meet current needs for creating loops and segments for longer trail experiences. They also help connect near term growth areas such as urban development on the east end of Town, and perimeter trails along the north and west edges of Edson. Creekside trails (both gravel and single track) at the west end of Town have been included in this phase. Airport authorities must be consulted with on any trail development in close proximity to the airport. Five of the ten trail heads are proposed in medium term development; and
- Long Term Development: as shown on Figure 6 – Phasing Strategy Long Term, these segments are recommended for development beyond a ten year horizon. These trails are primarily in areas of long term urban growth, where ASPs have yet to be completed, or in areas where trails would not be of near term benefit. The two proposed Highway 16 corridor and rail crossings are included in long term development as they would be most feasible once the future Highway 16 bypass to the south of Town is developed and the traffic volumes of the existing Highway 16 through Town are likely to

diminish significantly. One of the ten trail heads is proposed in long term development;

Refer to Figures 4, 5 and 6 for graphic representation of each of the three phases. It is important to recognize that some of the medium and long term trail segments have been represented by lineal corridors, while at the time of trail planning these segments will likely deviate and take different alignments once the surrounding urban form is determined.

The Town must work with the development industry to expand upon the proposed trail system as new urban form is determined. The proposed trails shown in future growth areas are minimum connections, and it is essential that additional trails be included as part of the proposed public open space and roadway network. A pedestrian first attitude to urban development in new growth areas is essential to promote a healthy, sustainable and comprehensive trails network.

8.2 Capital Budget

Appendix B – Conceptual Cost Estimates includes a detailed summation of costs for the proposed developments in each of the three phases of development. Note that several items have not been included in the detailed cost estimate, such as boardwalks, additional clearing outside the trail right-of-way, erosion control, etc. The requirement for these measures cannot be determined until time of detailed design and when site specific conditions are investigated. Costs for the three phases can be summarized as follows:

1. Near Term Development - $2,191,750;

2. Medium Term Development - $2,769,000; and

3. Long Term Development - $2,676,037.

Costs for near term development were based on 2017 values for comparable work completed in the Edson region. A cost escalation of 20% has been applied to medium term development, and a cost escalation of 35% has been applied to long term development.

Near Term

	Unit	*Quantity*	*Total*
Gravel Trails	meters	875	$43,750
New Paved Trails	meters	6850	$1,370,000
Single Track Trails	meters	0	$0
Streetside Connectors	meters	3350	$402,000
Paved Gravel Trails	meters	2150	$344,000
Trail Head Development	allow	1	$32,000
			$2,191,750
	Price Escallation		**$2,191,750**

Medium Term

	Unit	*Quantity*	*Total*
Gravel Trails	meters	8100	$405,000
New Paved Trails	meters	9000	$1,800,000
Single Track Trails	meters	1200	$48,000
Streetside Connectors	meters	0	$0
Paved Gravel Trails	meters	0	$0
Trail Head Development	allow	1	$54,500
			$2,307,500
	Price Escallation		**$2,769,000**

Long Term

	Unit	*Quantity*	*Total*
Gravel Trails	meters	5150	$257,500
New Paved Trails	meters	5600	$1,7200,000
Single Track Trails	meters	0	$0
Streetside Connectors	meters	0	$0
Paved Gravel Trails	meters	0	$0
Trail Head Development	allow	1	$4,750
			$1,982,250
	Price Escallation		**$2,676,038**

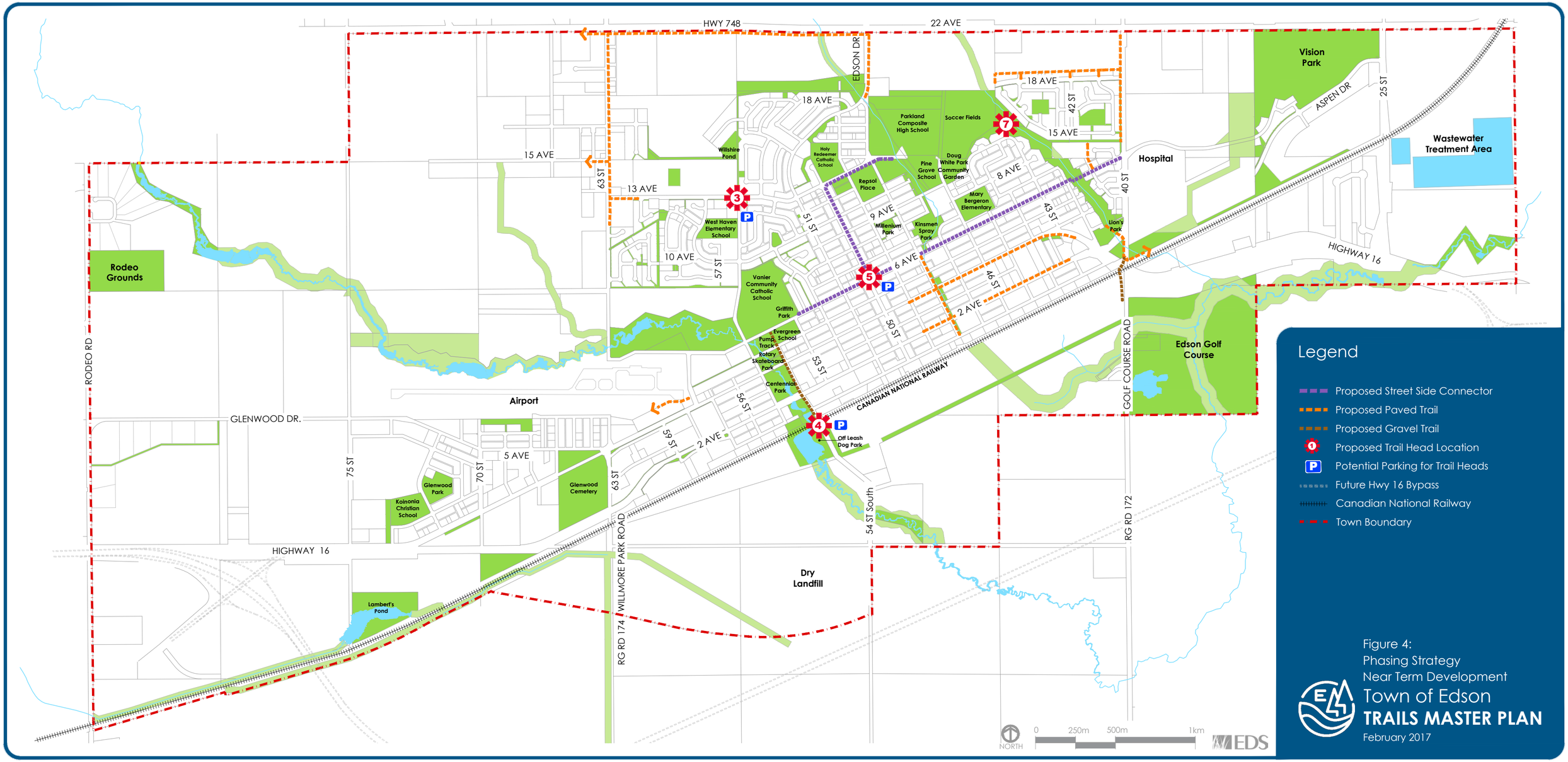
As found in the summation of costs in Appendix B, elements included in the cost estimates include:

- trail development, broken into paved, gravel, single track and roadside connection trails; and
- trail head development, including benches, waste / recycling receptacles, dog waste bag dispensers, different types of signage and kiosks.

Additional costs not included in these estimates may include:

- consulting fees for detailed design, environmental assessments, securing easements, etc.;
- parking lot development;
- addressing the conditions of any environmental approvals;
- land acquisition required to secure trail alignments;
- maintenance costs;
- security and safety monitoring; and
- lighting.

These additional costs will be addressed at the time of detailed design where specific site conditions are assessed in more detail.



Legend

- Proposed Street Side Connector
- Proposed Paved Trail
- Proposed Gravel Trail
- Proposed Trail Head Location
- Potential Parking for Trail Heads
- Future Hwy 16 Bypass
- Canadian National Railway
- Town Boundary

Figure 4:
Phasing Strategy
Near Term Development

Town of Edson
TRAILS MASTER PLAN

February 2017

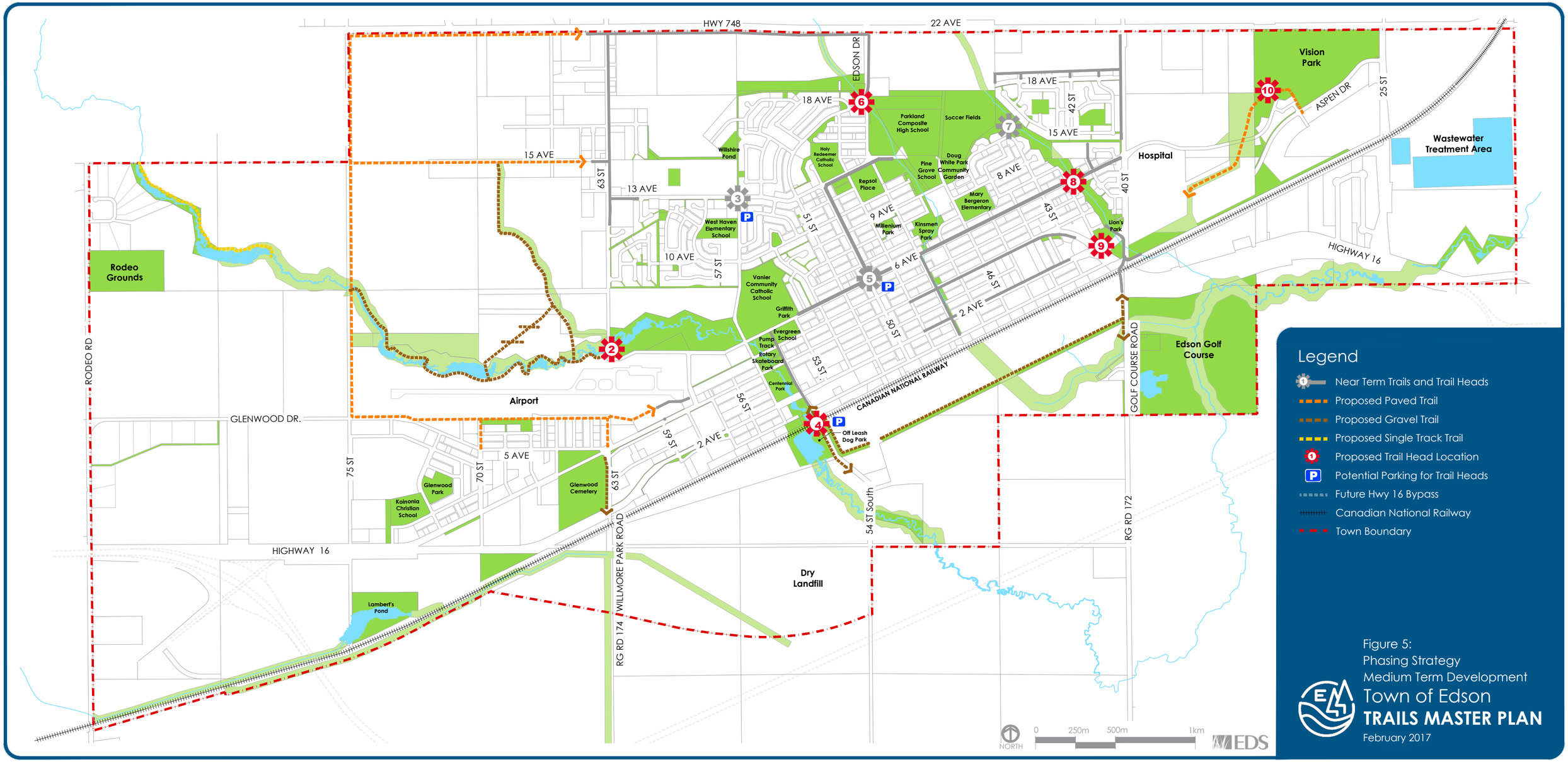
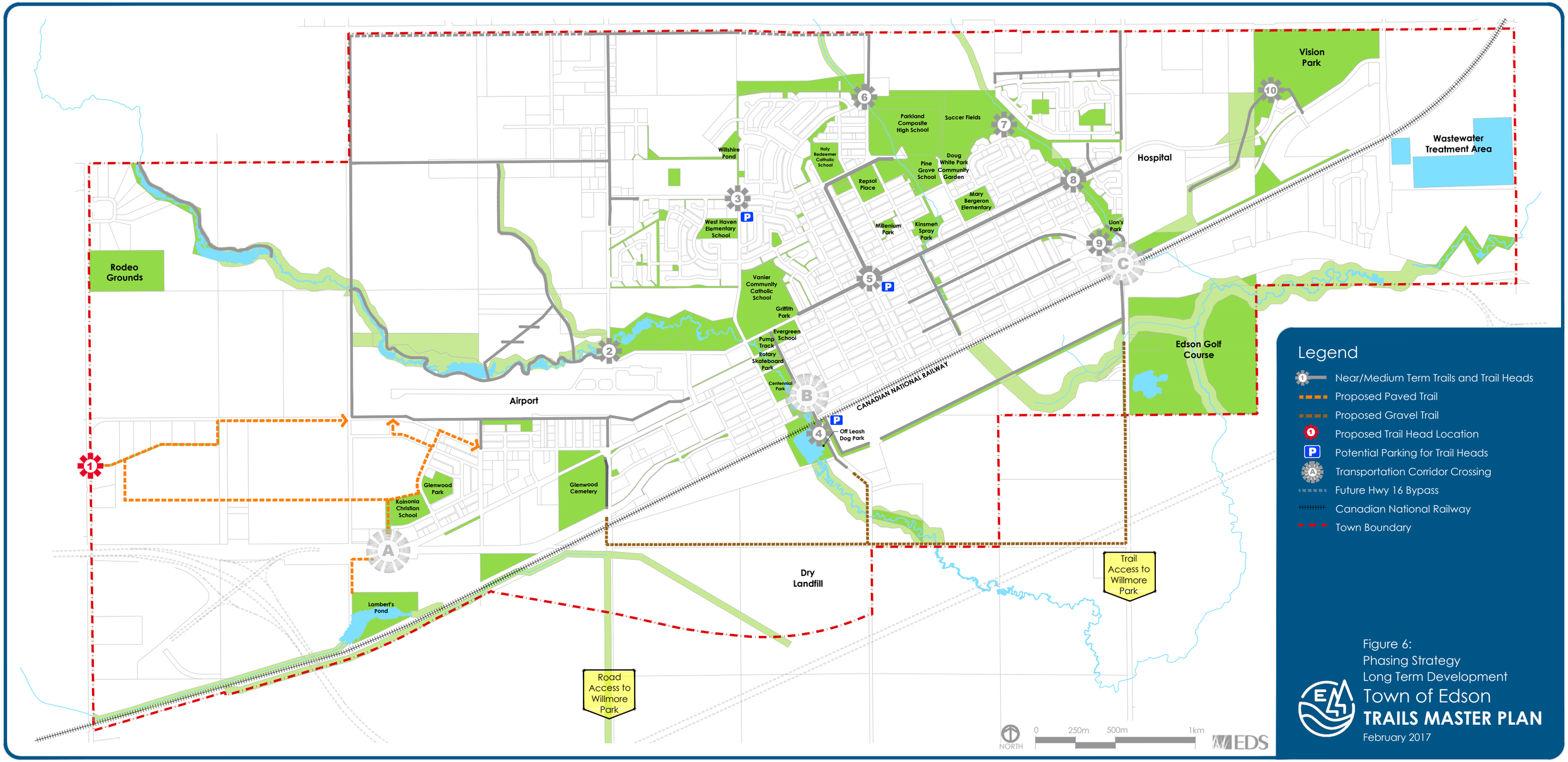


Figure 5:
Phasing Strategy
Medium Term Development

Town of Edson
TRAILS MASTER PLAN

February 2017



Legend

- Near/Medium Term Trails and Trail Heads
- Proposed Paved Trail
- Proposed Gravel Trail
- Proposed Trail Head Location
- Potential Parking for Trail Heads
- Transportation Corridor Crossing
- Future Hwy 16 Bypass
- Canadian National Railway
- Town Boundary

Figure 6:
Phasing Strategy
Long Term Development

Town of Edson
TRAILS MASTER PLAN

February 2017

9.0 Appendices

9.1 Appendix A – Public Survey

TOWN OF EDSON
TRAILS MASTER PLAN SURVEY

To create a trails system that our communities needs, please take a moment to answer the following questions.

1 How often do you utilize the trail system in Edson?

a. Daily
b. Weekly
c. Monthly
d. Not very often

2 If you are a trail user, what is your primary use? (may choose more than one)

a. Cycling
b. Walking
c. Running
d. I do not use the trails

3 Why do you utilize the Edson trail system? (may choose more than one)

a. Enjoyment of natural environment
b. Health benefits
c. Commute to work/school

4 Do you support expanding the current trail system?

a. Yes (if yes, what types of trails and where should they be located?)

_____
_____
_____
_____
_____
_____
_____

b. No (if no, why not?)

_____
_____
_____
_____
_____
_____
_____

5 What challenges do you experience when using local trails?

6 Have you experienced trails in other communities that are memorable? If so, where and why?

7 We are presenting a proposed trail expansion plan, do you have any concerns or recommendations based on the maps that have been shown?

8 We have proposed four concepts for trail signage, please rank in order of preference (1- being most preferred, 4- being least preferred) (provide 1-4 scale)

1. _____

2. _____

3. _____

4. _____

9.2 Appendix B – Conceptual Cost Estimates

EDS

Preliminary Cost Estimate

Project Name:	Town of Edson Trails Master Plan
Job Number:	32075
Schedule Date	February 12, 2017

1.0 Near Term Development	$2,191,750.00
2.0 Medium Term Development	$2,307,500.00
3.0 Long Term Development	$1,982,250.00

Contract Summary	
Total Contract Cost	$6,481,500.00

Preliminary Cost Estimate

Project Name: Town of Edson Trails Master Plan

Job Number: 32075

Schedule Date February 12, 2017

	Size	Unit	Quantity	Unit Rate	Amount
1.0 Near Term Development					
1.1 Supply and install gravel trail	1.5m	l.m.	875	$50.00	$43,750.00
1.2 Supply and install paved trail on exist. gravel	3.0m	l.m.	2150	$160.00	$344,000.00
1.3 Supply and install streetside trail treatments		l.m.	3350	$120.00	$402,000.00
1.4 Supply and install paved trail	3.0m	l.m.	6850	$200.00	$1,370,000.00
1.5 Supply and install trail head #3		allow	1	$6,750.00	$6,750.00
1.6 Supply and install trail head #4		allow	1	$10,250.00	$10,250.00
1.7 Supply and install trail head #5		allow	1	$7,250.00	$7,250.00
1.8 Supply and install trail head #7		allow	1	$7,750.00	$7,750.00

Total 1.0 - Near Term Development **$2,191,750.00**

Preliminary Cost Estimate

Project Name: Town of Edson Trails Master Plan

Job Number: 32075

Schedule Date February 12, 2017

		Size	Unit	Quantity	Unit Rate	Amount
2.0	**Medium Term Development**					
2.1	Supply and install gravel trail	1.5m	l.m.	8100	$50.00	$405,000.00
2.2	Supply and install single track trail	1.0m	l.m.	1200	$40.00	$48,000.00
2.3	Supply and install paved trail	3.0m	l.m.	9000	$200.00	$1,800,000.00
2.5	Supply and install trail head #2		allow	1	$11,750.00	$11,750.00
2.6	Supply and install trail head #4 (additions)		allow	1	$10,250.00	$10,250.00
2.7	Supply and install trail head #6		allow	1	$8,750.00	$8,750.00
2.8	Supply and install trail head #8		allow	1	$6,250.00	$6,250.00
2.9	Supply and install trail head #9		allow	1	$8,750.00	$8,750.00
2.10	Supply and install trail head #10		allow	1	$8,750.00	$8,750.00

Total 2.0 - Medium Term Development **$2,307,500.00**

Preliminary Cost Estimate

Project Name: Town of Edson Trails Master Plan

Job Number: 32075

Schedule Date February 12, 2017

	Size	Unit	Quantity	Unit Rate	Amount
3.0 Long Term Development					
3.1 Supply and install gravel trail	1.5m	l.m.	5150	$50.00	$257,500.00
3.2 Supply and install paved trail	3.0m	l.m.	8600	$200.00	$1,720,000.00
3.3 Supply and install trail head #1		allow	1	$4,750.00	$4,750.00

Total 3.0 - Long Term Development **$1,982,250.00**